The Significance and Implication of Teaching Derivational Morphology for Chinese L2 Learners[*]

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This study mainly explores the relationship of derivational morphology awareness between vocabulary acquisition and reading comprehension. The individual focus relates to the lexical inferencing ability among Chinese-speaking English language learners (ELLs), originating from two major groups of participants in Hong Kong Baptist University: English Language for Teaching (ELT) and Child and Adolescent (C & A). In order to assess students' abilities in decoding derived words, the project utilizes an experimental task to evaluate their performances regarding reading comprehension and breadth of vocabulary knowledge on different occasions. In addition, using the ANOVA[1] (data-based sampling) method, the study found derivational awareness was a significant factor contributing to the acquisition of vocabulary and reading comprehension by means of mediating student's lexical ability, directly or indirectly, which were strengthened by two measures compared with two groups (one has derivational awareness and the other was not). Compared the results with two groups, the experimental group with morphological awareness demonstrated obviously a better performance than the other group. Based on the experimental samples, the results can indicate that teaching and learning derivational morphology may yield benefits for Chinese L2 learners in English language learning, especially for effective vocabulary building and reading comprehension, at least among ELT group participants. There is also a hint that non-English major leaners may have benefits in response to vocabulary acquisition and may be receptive to morphology knowledge.

Keywords: derivational morphology, vocabulary acquisition, reading comprehension, English language learner

Introduction

The Difficulty of English Studying

It is universal for English language learners (ELLs) to face the difficulty of unknown vocabulary or reading materials with no comprehension in learning English. For example, learning new vocabulary may be the first difficulty which students need to overcome, requiring them to memorize a few tens of words. In terms of spelling, it is easy to forget the word and cannot be used for different occasions. Moreover, the reading and writing skill is another difficulty for learners who cannot understand what a sentence means in the article. In addition, students exhibit significant difficulty in writing English paper without the mastery of vocabulary and grammar. It requires them not only to master the English proficiency immediately, but also to get a high mark

[1] ANOVA: A collection of statistical models and their associated procedures (such as "variation" among and between groups) used to analyze the differences among group means.

academically.

The previous researchers have suggested that derivational morphological awareness contributes a lot to reading comprehension as well as vocabulary acquisition (Nagy, Berninger, & Abbot, 2006). However, few studies have been done about this academic field. Thus, this study mainly tests the significance and its further implication of derivational morphological awareness, especially morphological skills, among Chinese-speaking learners during the lexical acquisition and reading comprehension.

The Research Gap in Derivational Morphology Knowledge

Derivational morphology may have the unique significance in learning and teaching vocabulary, as well as the skills of reading English material. Some researchers, however, have examined the significance of studying derivational morphology for native language learners, which they consider that an effective learning method is to acquire and strengthen vocabulary (Freyd & Baron, 1982). Based on previous L1 literacies, this study proposes that there may have similar implications on L2 learners, but is not articulate what details or strategies for L2 learners can apply. That being deduced, instructors are not to require explicitly teaching each individual word one by one. This project also proposes there has some conclusive methodologies contained to extend vocabulary and uncover the implication of its meaning. This critic of thus far derivational morphology education is not the focus of the lexical base, but provides the knowledge to explore the inferential meaning in known vocabularies (Darch & Kameenui, 1987). Oxford and Scarcella (1994) consider the particular and precise word instructions should be developed, not only in learning words according to different context, but also through typical strategies for acquiring vocabulary from in-class or extra curriculum activity.

Explain the Significance of Doing This Paper

The purpose of study is to investigate the significance of imparting derivational morphological knowledge through analyzing the data of the second language learners, especially in vocabulary acquisition and reading comprehension. The aim focuses on a typical aspect of derivational knowledge related to lexical building in English reading comprehension for adult L2 learners, because some issues exist including theoretical problems and methodological (applied) problems.

Literature Review

Morphology Awareness

Many researchers have identified the meaning of morphological awareness. Carlisle and Anderson report (2006, p. 2): "morphological awareness is assumed as some abilities to react and match the morphemes and morphological structure of words". Carlisle and McBride also argue respectively in 2000 and 2008 that morphological awareness has been regarded as an indispensable component of lexical learning and development. It not only contributes to lexical awareness, but also infers to the reading comprehension both of which affect lexical manipulation. Thus, English word morphology creates basic foundation for adult English learners, who prefer to use inferential techniques to decipher unfamiliar vocabulary.

With the Exception of the significance of acquiring the lexical knowledge, Carlisle and Nagy maintain that derivational morphological awareness has also been regarded as an essential component of reading comprehension, being described from three dimensions[2] (Table 1) such as form, meaning, and usage (case, tense, and agreement). Derivational morphology, besides three-dimensional aspect, can also be explained by

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[2] Three-Dimensional Grammar Framework: components-form/structure, meaning/semantics, and use/pragmatics.

the additional affix. For example, a word with a derivational suffix "-*ness*" in some circumstances can be expressed as "happy-happiness" and "care-carefulness".
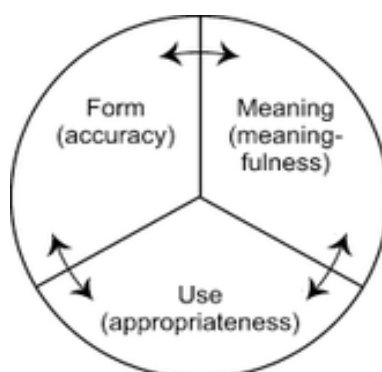

Figure 1. Three-Dimensional Grammar Framework.

Table 1

Three-Dimensional Grammar Framework and Examples

Form/structure	Phonological pronounce: /nƏs/
	Orthographic pronounce: /ness/
Meaning session	The situation of "happy" and "care"
Usage/practical	From verb to noun Can be added suffix -*ful/-less* to form relative words Cannot be added with suffix -*able*

Inflectional Morphology Awareness

Morphology constitutes the smallest element in words, however, how are words formed?

A morpheme is regarded as the principle unit of morphology, being defined as the smallest meaningful unit of a word which cannot be decoded into other units (Adedimeji, 2005). For example, the word "reconsiders" contains three obvious morphemes: "*re-*, *consider*, and *-s*"; each has its own meaning in the holistic word; "reconsiders" for "*re-* and *-s*" cannot stand alone like a meaning unit; thus, being named as the bound morphemes[3] (can hold the central meaning). The other, in reverse, free morphemes can alternatively be used alone.

It is reported by Carlisle and Anderson in 2003 and 2006, that English morphological awareness can reflect the derivational morphological framework of one particular language. Carlisle (2003, p. 69-74) states: "morphological awareness is the ability to 'reflect and manipulate' the morphemic structure". Complex English vocabularies are mainly structured of three processes: first inflection, then derivation, and finally compounding. This paper will not focus on the compounding process. The other two processes are nothing but constructed by an amalgamation[4] of roots and affixes.

Inflectional Morphology

Inflectional morphology is the variant formation added with different inflectional affixes, based on the same vocabulary from a stem (Rothou & Padeliadu, 2015). Kuo and Anderson illustrate (2006) the younger learners acquire inflectional morphological awareness, the more opportunities can be guaranteed to manipulate

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[3] Bound morpheme: a morpheme can. Appear only as part of a larger word.
[4] Amalgamation: the process of combining or uniting multiple entities into one for.

and recognize in inflectional morphemes. For example, the verbs can be ended with inflection morpheme "-*ed*" changed into past tense: "I watch-I watched" as shown in Table 2. Moreover, inflectional morphemes neither transfer the meaning of vocabulary nor the grammatical form of original base word. Take "bottle" for example; the base word "bottle" whose plurality of morpheme "-*s*" does not change its grammar nor change its meaning form during affixation. Consistence with Booij (1994, p. 1):

> Inflection composes two parts; one is inherent without being required through syntactic contexts like infinitives or participles, and the other is contextual inflection. Inflectional context can be decoded by syntax (sentence structure), such as making up verbs with person and number case.

Table 2

Branches of Morphology

Branches of morphology		
Inflectional (grammatical forms)	Word-formation (word form is a word in concrete sense)	
+*es/s/ies* +*ed*	Derivation (affixation) Complex lemmas (not discuss)	Compounding
+*ing* +*er/est* Case Irregular forms…	+*able* +*ity* +*er(person)* +*al/il…*	More than one word childcare

Table 2 concludes seven possible patterns during inflectional process, including number, gender, case, tense, aspect (complete/incomplete internal structure), voice (passive or active), and mood and modality (express attitudes of fact/wish/predicting). Regarding the afore-mentioned cases, six different occasions stand for various situations such as the sentence "he gives his daughter a book in the shop with both his hands" printed in different colors in order to highlight the various grammatical components. "He, his, daughter, a book, shop, both his hands" stand individually for the normative case, genitive case, dative case (indirect object), accusative case (direct object), locative case, and instrumental case. This paper lists three main terms to illustrate the forms and give the relative examples to make it clear to the reader.

Table 3

Forms of Nouns, Verbs, and Adjectives

Terms	Types	Forms	Examples
Nouns	Inflected nouns	Regular	
		Irregular nouns	Ox-oxen hippopotamus-hippopotami
	Uninflected nouns (unchanged in plural)		Deer-deer
Verbs[5]	Syncretism (sameness)	Regular	Watch-watch*es/ed/ing*
		Irregular	Give-gave-given
	Suppletion (difference) Same morpheme but looks so different = allomorphs	Case 1	Go and wen*t (t means past tense form) allomorphs: the same morpheme but look so different
		Case 2	Good and bett*er allomorphs: the same morpheme but sound so different

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[5] Strong verbs: change vowel gradation (ablaut) or sound changes; weak verbs: end words with *-t or -ed.*

(table 3 continued)

Terms	Types	Forms	Examples
Adjectives		Regular	*-er* (comparative) *-est* (superlative)
		Irregular	suppletion: good-better-best: periphrastic: more + adjective

However, most studies have predicted that inflectional morphological awareness gradually assists child leaners. For instance, some researchers find most inflectional awareness begins in early childhood, first English language children particularly, during acquiring the basic rules of inflectional morphology (Berko, 1958). That can be compared with two groups of elementary school students in the picture test demonstrated by Berko. It is reported that the first children group is given a picture of one bird, named "wug" (no explicit definition). When they are given another picture with two birds, most students say "wugs". Berko and Brown argue that the inflectional morphological knowledge can be developed profoundly before enrolling elementary schools.

Derivational Morphology

Derivational morphology. Compared with the inflectional process, this study focuses on the other procedure: derivational process, being more complex and flexible. Derivation is one of the main branches of morphology, which is the process of adding affixes modified by Bauer (1986, p. 1173-1182): "(a) produce new lexemes; (b) invert the base to what will be added; (c) not a regular meaning; and (d) not be fully productive and generalized". The English prefix "*be-*" can be added with noun words like "bedew", "beguile", etc. This prefix creates new lexemes such as "BEDEW" originating from "DEW" etc. The process changes a noun word into a verb with the suffix initially being meaningless, which cannot plus to all nouns. For example, "berain", "becunning", and "beday" rarely occurs in English words (Bauer, 2003). Adjunctively, the derivation can be categorized as a set of operations on lexemes that derives other lexemes. For example, the derivational suffix "*-able*" can combine with the base word "touch", thus, the derived word "touchable" has the new meaning. Furthermore, word "touchable" also can be further added to with the derivational prefix "*-un*" to "untouchable". Readers can recognize the transformation from birthing of a verb to an adjective, or a change in meaning from "touchable" to "untouchable" in grammatical classification. As mentioned in previous paragraphs, derivational suffix "*-able*" and prefix "*-un*" alter the holistic meaning of the original vocabulary, exception, the derivational suffix "*-able*" (Friedline, 2011).

Derivational morphology awareness. Derivational morphology is the structure like a building. It is designed advantageously to change various words through student's ability, and recognize the relationship of various morphological formations and work out new derivations of known words (Haomin, 2014). In linguistics, therefore, Kamal (1994, p. 73-89) argues: "derivational morphology is the course of consisting a new vocabulary from an existent known word added with the prefix or suffix".

The Relation of Inflectional and Derivational Morphology

Similarity. Few studies discuss the similarity between the morphology. In terms of frequency and semantic factors in the process of decoding the complex words, either inflectional or derivational primes are preceded through unaffixed targets (Michal, 2002). For instance, there are two main similarities between inflection and derivation: The first one helps to recognize what is inflection or derivation, which can only be achieved with the high frequency words. The other one is concluded from Michal's second experiment: "Both semantic and morphological varies as a function".

Distinction. The difference between the inflection and derivation has been a controversial discussion among linguists in almost two decades. Some researchers like Dutch linguist A. W. de Groot (1996, p. 446-451) states: "Inflection is always sub-ordinary to derivation, and unlike the inflection, derivation is often irregular semantically". Oppositional arguments from Rainer (1996, p. 83-91) stipulate that, however, should not recognize alone as counter arguments, but holistically, because there are equally strong merits.

- Meaning-Changed Difference

It is common to see that a word is added with a derivational affix, which always changes its original meaning whereas the inflectional affix does not. Ending with suffix "-ness" is a noun in derivational procedure, even if the core meaning has not exhibited any change. Alternatively, it alters the seniors associate with the word.

- Semantic Difference

Semantic categories expressed by inflection and derivation have distinct differences among the word formations. Inflection, however, is used limitedly in linguistics. For example, the dominating inflectional categories have various performances depending on different nouns, verbs, and adjectives (Table 4).

Table 4

The Performance of the Inflectional Category

Nouns	Verbs	Adjectives
Number Case Definiteness Gender	tense aspect mood person gender number	number gender case definiteness degree

On the other hand, derivation has a much wider range than inflection among the semantic categories, which is more approachable in lexical meaning. Regarding the term "semantic relevance", "A meaningful element is relevant to another meaningful element if the semantic content of the first directly affects or modifies the semantic content of the second" (Bybee, 1985, p. 13). He suggests the core meaning is expressed in inflection or derivation depending on two elements: relevance and generality. The less relevant to express, the more likely to be inflectional. For example, the word "touchable" is often used in derivational expression, the meaning being similar to the stem "touch". Moreover, take tense among inflectional categories as an example, it is strongly related to its verbal stem, while maintains relevant to the attributive clause. Therefore, tense cannot change the meaning of the verbal stem. Based on semantic distinctions, the project can conclude that the tense presented by derivational morphology is more widely used than the expression of "touchable". Based on the previous theory of Bybee, the semantic difference among inflection and derivation mostly depends on which location comes up first. Derivational factors with a higher semantic relevance are closer to the inflectional factors.

- Properties Difference

It is said that the inflectional process has rich production, while the process of derivation has expressed various degrees of productivity, which means inflection is more compulsory than derivation during the decoding process. Nevertheless, some of inflectional processes may not be productive. In terms of English plural noun, the most productive process is regularly added with suffixation requiring /s/ or /z/, to occasionally be pronounced as /iz/ or/is/. However, there truly exist some irregular productive processes like "sheep" where

the single and plural remain the same. Another example is English verb. Most English verbs with suffix "*-ed*", make up the past tense form, while some irregular verbs can only change the vowels, example "sit-sat". Thus, the inflectional process can be unproductive.

Occasionally, the derivational rules are categorized by Halle as idiosyncratic and by Jackendoff as semi-productive in 2002, because these rules cannot be applied equally to all words. For example, a simple morpheme "*-en*" can be added as derivational prefix or suffix to transfer the adjective, into verbs with greater force ("able" to "enable"), while "cold" to "colden" seems rare, despite there being nothing wrong within its meaning. So not all the rules can be applied to form the derived words.

It is likely to decode the meaning of regular inflectional forms during the conversational process, which can be interpreted by speaker and listener, whereas derivational forms should be reserved as mental lexicon and rouse holistically the production and perception. The two psycholinguistic processes are often regarded as a whole process, which is just divided into two sections in different order, which means the primary part receives the accurate meaning for a derived vocabulary as a foundation since the inflectional word formation can be analyzed. However, the irregular inflectional forms can be received in the same manner as the derived words. For example, the past tense of "talked" should be predicted from the origin "talk", whereas the origin verb "rise" cannot be inferred to the past tense "rouse".

In the other hand, Stemberger and MacWhinney (1986) have found that the regular forms of inflection can also be stored in vocabulary as long as they are high frequency words. Thus, inflectional word forms can be analyzed without the lexical formation. Another psycholinguistic difference pointed out by Baayen in 1997 suggests the word family affect the words of inflection and derivation, as well as argued by Booij (2006, p. 654-661): "the larger word family is, the more words they can create".

• Closure Distinction

Stump (2001) argues that inflectional words can be ended with other words to form a new derivational word. Reversely, derivational words cannot achieve the same result. For instance, the derivational affix "*-ness*" can be ended with the affix "*-ful*". Example the English word colorfulness; whereas the affix "*-ful*" cannot be combined the plural as "colorsful".

The Gap of Teaching and Learning Derivational Morphology

The affirmed discussion as explained what inflection and derivation is alongside their grammatical relationship which provides some insights into the boundary of how learners can recognize them. However, there still remain some questions that require to be answered. Given the primary definition and relation of inflection and derivation, it is essential to explore the skills for teaching derivation and the values for learning it as L2 adult learners. It is important to exam the potential influence of derivation, teaching on word extension and reading comprehension for ELLs.

This study examined the English Language for Teaching (ELT) students' understanding of derivational morphological awareness compared with C & A students. In particular, the ability to extend the new vocabulary based on the origin words (e.g., touchable from touch). The project hypothesized that the number of derived words that ELT participants created would be more than what C & A students developed, as well as derivational awareness contributed to English reading comprehension, spelling, writing ability, and particular, to vocabulary acquisition.

Therefore, the project focused on adult EFL-Chinese learners and used the quantitative data-based

sampling method. The aim of this study is to uncover the relationship and values between the derivational teaching and learning for EFL learners in the following fields.

Research Questions

• Do L2 adult learners take derivational morphology as a words-building strategy to extend the word families? (as example treatment effect) In what order L2 learners acquire affix/derivational knowledge?

• Does derivational morphology awareness directly affect English reading comprehension for L2 adult students with limited vocabularies?

• Do derivational morphology awareness, vocabulary knowledge, and lexical inferencing ability benefit reading comprehensions, spelling and writing ability and vocabulary acquisition?

Methods

This study mainly explores how derivational morphological knowledge can provide assistance in understanding words for L2 learners. Participant's understanding is measured during the multiple choices component of questionnaire. The general questions are about whether participants can recognize the meaning of different words based on various formations. Additionally, questions will be assessed whether participants can extend the new words according to the derivational morphology they have learned.

Participants

There were 30 participants in this study working on their master' degree (15 for ELT and 15 for C & A) at Hong Kong Baptist University. The medium age of participants was 23.9 years from two different classes in education department. Nine participants had passed CET 4 (College English Test), six of whom had passed both CET 4 and CET 6. Twelve students had passed TEM 4 or 8. All participants had passed IELTS as an enrolling entrance of postgraduate education. For ELT participants, they spent a 13-week semester to study the lexicon knowledge as well as word-formation. However, the English instruction they received was impaired. All of the participants had undertaken formal English knowledge, but the length of instruction in derivational morphology was not ruled. Most participants began their English studying from Grade 6, which was equal to the middle school level, with a small number from Grade 5, depending on the educational system in the different districts. During data collection, participants studying ELT course had required English course from grade six to their current postgraduate degrees. It was total eight years, while other participants, who had undertaken four years of English bachelor's degree, accumulated a total 12 years practice.

The rational for this study was to observe how learners made use of the derivational morphological analysis to build new lexis with the knowledge they had studied under the no-target words teaching situation. For example, Freyd and Baron have carried out a series of practical experiments to explore whether the average learner, without lexical learning (C & A learners), can become the better lexical learners. The intension was to determine whether the participants who had taken the relative English word instructions. However, there was no obvious outcome to prove it.

Methodology

Materials. The questionnaire involved five sections: the English level checklist test; a vocabulary test; an appropriate word matching test; a direct test of morphological knowledge; reading comprehension; and a test of current problems participants have.

- English Level Test

To assess the participant's previous English knowledge, there were some basic questions about what English certification had participants taken so far, etc.

- Vocabulary Test

This section was carried out checklist tests involved 40 questions concerning words and non-words brought up by Anderson and Freebody to evaluate the participants' recognition capabilities. Only were they required to circle the option YES or NO if they knew either a word definition or its functions. The vocabulary checklist (Table 5) consists of the following parts.

Table 5

The Instruction and Examples of Test

Instruction	Example
10 target experimental words 50%words with derivational suffix, the other not	likeness
Low-frequency words for nouns Low-frequency words for common words (15)	leukemia
English words with error spelling (if participants can recognize them, the error spelling they will correct)	Bed cold (bad cold) Apprantice (apprentice)

This section test measured the participant's vocabulary, alongside both their knowledge of each individual word. These randomly sampled words were selected to use the university straight word primary. Participants needed to do: first, matched the 15 target experimental words, half of which had derivational suffix with the correct definition. Considering the half participants had exhibited high English proficiency from completing an ELT major, they can match quickly and precisely. Second, in terms of vocabulary depth, participants were recorded in the latter two tests, whereby they recognized the low-frequent words and corrected the wrong spelling.

This section could measure the participants' lexical inferencing ability as well. Lexical inferencing can be compared to work out the accurate meaning of unknown sophisticated words, related inner lexical morphological hints (Zhang, 2012). In order to infer the appropriate meaning, participants not only had to focus on the functions and meaning of unknown words with complex derivational affixes, but also, synthesized or integrated structural and semantic information on each target word. The participants needed to refer to the suffix and predict its meaning.

This study selected two groups with different levels of word frequency, one related to high frequency and the other to low. In fact, word frequency can affect the result of lexical tasks for different groups (Baayen, Dijkstra, & Schreuder, 1997). It was generally expected that high frequency words were more easily recognized than those were less frequent. It was assumed that participants could perform better in this situation.

This section aimed to examine whether participants could choose the appropriate words to match the correct sentence. There were two options with different derivational suffix. For example, induction and inductive:

(1) This is an <u>induction </u>motor.

(2) While a capacitive load is reverse of an <u>inductive</u> load.

Participant could elicit the meaning of a sentence to determine the right correct words in example listed while following to two sentences avoid this kind of situation. For example:

(1) All operators of discussion platforms must be <u>manipulation.</u>

(2) All operators of discussion platforms must be <u>manipulative</u>.

• Direct Test of Morphological Knowledge: Task to Be Filled

The previous tasks above provided one branch of derivational knowledge, which was neither systematic nor holistic, whereas in this section, other elements were considered. In order to attain more information, this component mainly focused on the derivational affix, to determine how many words could generate.

The questions were blank filling tasks. There were three main questions:

(1) What relative vocabulary can you refer to the origin word "touch"?

(2) Classify the words above you mentioned according to morphological knowledge.

(3) Try to describe the problems during learning new English words.

The aim of these three questions was to evaluate whether participants had access to require knowledge concerning derivational input.

• Reading Comprehension

The aim was to match the appropriate words, randomly selected high frequency words with the correct sentence filling the blank to create the comprehensive sentences. The words provided were not nouns but conjunctions or preposition; participants needed to select the best possible option to fill in each blank. There were three paragraphs with the average length of 100 words. All three paragraphs were selected from the TEM 8[6] paper and IELTS reading sections. They had 10-20 minutes to complete all questions, depending on their level of competency.

Procedure. Two groups of post-graduate participants took the assessments in the quiet space. The assessments were administered within 30 minutes in the last semester of the academic post graduate year. Regarding the participants and open-ended questionnaire with the semi-structured interview, 37 students undertook "English as Language Teaching" postgraduate's Master Degrees (all of them received Chinese mainland education). All the participants had been given the original questionnaire consisting of three main sections: The first part was to fill the basic information about each participant; the second was to give a written response on as many possible relative words they could postulate in regard to the word "touch"; the last section was to determine the reading comprehension without conjunction words. All participants had one hour to complete the task.

Data collection and analysis procedures. All the questions were delivered to students in extra time, by the agrees of the Education Department. However, in order to reduce the potential confusion, the observers walked to answer some elusive questions. The English level test and vocabulary test were administered in the first. It was followed by the word matching test and the assessment of participants' morphological knowledge. Finally, the reading comprehension test with three paragraphs was administered last. The whole procedure lasted about 40 minutes.

One participant from the ELT group did not complete all the questions and most participants from C & A could not complete what was expected, delivering excuses like "sorry, I do not know" during the filling the blank session. This study used SPSS 24 to count the means and SD of all the sample variables, as well as the relationship and significance between them.

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[6] TEM 8: Test for English Majors-Band 8 (TEM-8).

Results

In order to examine the influence of derivational morphology on vocabulary acquisition, reading comprehension and English word spelling ability, this study used one-way between subjects analysis of variance (ANOVA). This project examined whether there was significant difference between two groups of participants with different derivational morphological awareness, to assess the individual vocabulary acquisition, reading comprehension, and word spelling ability. The only one independent variable was derivational morphology level (ELT and C & A). The dependent variable was the valid number of vocabulary acquisition in the first test, followed by the reading comprehension and word spelling ability tests. In total, there were three pairs of ANOVA tests depending on different dependent variables.

Table 6

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Lower Bound	Interval for Mean Upper Bound	Minimum	Maximum
ELT group	15	27.60	6.150	1.588	24.19	31.01	19	39
C & A group	15	17.13	5.276	1.362	14.21	20.06	9	28
Total	30	22.37	7.748	1.415	19.47	25.26	9	39

The descriptive table displayed statistics for each of the groups (and for the total sample). Examining the means of the different level of derivational morphological awareness, based on the mean column, ELT participants had the highest number of the accumulated words (mean = 27.60), followed by C & A group (mean = 17.13).

Table 7

Test of Homogeneity of Variances

VOC			
Levene Statistic	df1	df2	df3
0.350	1	28	0.559

Table 8

ANOVA

VOC					
	Sum of Squares	df	Mean Square	F	Sig.
Between groups	821.633	1	821.633	25.024	0.000
Within groups	919.333	28	32.833		
Total	1740.967	29			

Table 9

Descriptives

Read								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Lower Bound	Interval for Mean Upper Bound	Minimum	Maximum
ELT group	15	6.3333	0.97590	0.25198	5.7929	6.8738	5.00	7.00
C & A group	15	4.6000	1.05560	0.27255	4.0154	5.1846	3.00	7.0
Total	30	5.4667	1.33218	0.24322	4.9692	5.9641	3.00	7.0

The table displayed the descriptive statistics of each group. Examining the average results of different ranks in derivational morphology, as shown in Table 9, the ELT participants had the highest average number of reading connections and prepositions (mean = 6.33), followed by C & A group (mean = 4.60).

Table 10

Test of Homogeneity of Variances

Read			
Levene Statistic	df1	df2	Sig.
0.222	1	28	0.641

Table 11

ANOVA

Read					
	Sum of Squares	df	Mean Square	F	Sig.
Between groups	22.533	1	22.533	21.806	0.000
Within groups	28.933	28	1.033		
Total	51.467	29			

A One Way Between Subjects' Analysis of Variance was conducted to examine the impact of different levels of derivational morphological awareness (ELT/C & A groups) on vocabulary acquisition and reading comprehension. The number of lexis acknowledged was varied by different ranks of derivational morphology, $F (1.28) = 25.02$, $p < 0.05$, $\eta^2 = 0.47$, which represented a large effect size. The number of reading comprehension statistics were also varied by different ranks of derivational morphological awareness, $F (1.28) = 21.81$, $p < 0.05$, $\eta^2 = 0.44$, which belonged to large effect. Tukey's post hoc procedure indicates that ELT participants with a considerably derivational morphological knowledge (M = 27.60, SD = 6.15) could recognize more vocabularies than those whose major was C & A without studying derivational knowledge systematically (M = 17.13, SD = 5.28). The similar situation occurred in reading comprehension test by ELT participants (M = 6.33, SD = 4.60). Therefore, there were significant distinctions for derivational morphological awareness in the number of prolific participants with strong vocabulary and reading skills.

Discussion

The Significance of Learning Derivational Morphology

Previous research has indicated that the awareness of derivational morphology plays an essential role in lexical knowledge acquisition for monolingual children (Shu, Peng, & McBride-Chang, 2008). It has been reported that children can acquire new complex words by referring their meanings based on the derivational affix (Nagy & Anderson, 1984). Meanwhile, derivational morphology, vocabulary acquisition, and reading comprehension ability are closely related with each other for adult EFL/ELL learners (Mochizuki & Aizawa, 2000).

Additional research has focused on how morphological awareness affects vocabulary knowledge inferencing for L1 learners rather than concentrating on Chinese EFL learners. Zhang Dongbo and Keiko Koda (2011, p. 4-18) argue: "some effects of morphological awareness on EFL vocabulary knowledge are realized via learner's skill to integrate structural (derivational morphology) and semantic (morpheme meaning) information to infer meanings of unknown complex words". This article proves that language learners who

possess better morphological awareness, especially in derivational knowledge, can recognize more words than those who do not. We can also infer that there are some relations between vocabulary acquisition and reading comprehension ability, which have some effects on derivational morphological awareness conversely.

Awareness not only contributes to vocabulary defined by lexical inferencing ability, but also takes a straight effect on vocabulary knowledge, even though this finding is not surprising. Students can infer the meaning through the word's stem or affix, which can also enhance their ability of mental lexical and vocabulary items (Sandra, 1994).

This study also produced two findings among ELLs to test whether derivational morphology contributed to vocabulary acquisition and reading comprehension, and the final results indicated that the later was more difficult. There were two key findings. First, derivational morphology played an essential role in extending the extra vocabulary and reading comprehension for adult L2 learners. The other related to extra factors like reading skill and lexical awareness, which still existed an indispensable and considerable relation between derivational awareness and reading comprehension among EFLs.

Contribution in reading comprehension. This study showed that derivational awareness had the reasonable and unique effect on vocabulary knowledge for morphological analysis. This helped learners decode the meaning of unknown derived words, as well as the affix structure which could improve one's ability to read sentences and improve the textual comprehension for L2 learners. The findings, argued by Jeon (2011) and Kieffer (2008), combined with previous research, demonstrates an increasing performance of young learners.

Contribution for vocabulary. Suffix is a main factor in the derivational formation, which dominates what complex words can be. However, why is suffix formation of the uttermost importance in vocabulary acquisition? It can be related back to the *relational knowledge* of Tyler and Nagy in 1989. They regard this knowledge as the capacity to define the relation between the similar words such as "seek and seeker, seeker and explorer". Affixal formation contributes more to process the morphological sophisticated words (Bertram, 1999; 2000).

Finally, affix formation is the role that derivational morphological structure plays in the process of lexical acquisition. The study showed that adult L2 learners could benefit from using derivational morphology in referring the meaning of words. It also provided particular assistance when they focused on speech or reading materials with a great number of low-frequency vocabulary. As shown in study, L2 learners could receive help from derivational morphology, to take full advantage of the low-frequency word field.

Contribution for spelling and writing development.

- Spelling

Derivational morphology has been proven to predict and infer words definitions and reading comprehensions, however, less is known about contributing to writing skills (Northey, McCutchen, & Sanders, 2015). Apel (2014, p. 65-75) discusses: "morphological awareness should consist of [knowledge] of spoken and written morphemes of formation and awareness of changing meaning through changing affixes, which affixed with spelling and syntactic categories to the base words". For example, the word "operate" is regarded as a verb while the transmutation into a noun "operation" can illustrate the importance derivational morphology in accordance with spelling as well as reading. Consistent with Nunes, Bryant, and Bindman (2006), morphological knowledge can deal with a large number of confusing English words. For instance, lexical morphology can explain why the same pronounced words have different spellings like deer/dear. Based on multiple studies, it has been documented that lexical morphological instruction can improve the spelling (Goodwin & Ahn, 2013).

- Writing

Menyuk (1988) argues that most students begin speaking language with inflectional morphology such as tense and plural forms (talked and apples), especially from six to eight years. However, Carlisle and Green in 2003 maintain that most written inflectional forms carried forward on derivational structures, which helps children more with writing skills than that of inflection, particularly in early childhood (Berninger, Abbott, & Nagy, 2010). There are three major writing processes provided by Hayes and Flowers in 1980: planning, translating, and reviewing. Berninger and Amtmann later explain the processes of writing, transcription, and text generation, which help to compile in the limited working memory resources for writing. Therefore, this only increased the fluency of the former two steps and enhanced the writing ability because more precise of lexical language was used. However, the more varied complex syntactic structure should be adopted (McCutchen, 2000).

In addition, derivational morphological awareness can be implied in syntactic development. Consistent with the discussion of Berninger and Amtmann (2003), lexical morphological awareness can improve writers to operate written language more effectively, as to complete a higher rhetorical goal and maintain the syntactic accuracy during the extended sentence text. Derivational morphological skills have proved there is an effective relationship between reading and writing English sentences or other text materials.

Pedagogical Implications

Most of the derivational affixes come up from reading texts or examinations incidentally. English teachers, for example, may not concentrate on teaching some derivational structures in word formation. In most situations, they will explain them one by one if only these affixes come up. However, it would be totally the mistake in teaching English especially it comes to vocabulary acquisition. However, appropriate teaching pedagogy should illustrate the affix systematically at the beginning of class and input derivational awareness before learning word formation.

A great number of researcher's assumptions about the value of derivational teaching are various because they suggest teaching English should concentrate on more complex sessions such as reading and writing skill. Researchers like E. L. Thorndike (1941) argue derivational knowledge stipulates the significance of teaching English suffix for secondary students rather than focuses on suffix teaching. Although this gap was bridged many years later by other authors like Deighton (1970) and O'Rourke (1974) mentioned in White, T. G., there is still no obvious answer for the question: Is derivational morphology a worthwhile subject to teach? If it is, then how can this morphology be applied in teaching English?

In terms of the tests questions, English teachers begin focusing on the derivational words such as characteristics and frequency of affixes instead of attempting to work out all affixed words used in teaching materials. We can concentrate on small group sample with obvious prefixes and suffixes, and explore how many meanings can be obtained from morphological analysis and what kind of affix can stand the meaning alone.

Speaking of the different level of students, we can take a simple test to classify the students' the grades which are mainly separated into two groups, each requiring a different pedagogical practice followed by imparting morphological knowledge. Finally, we can combine the performance and teaching instructions in order to provide an appropriate teaching instruction regarding morphology for vocabulary acquisition.

Limitation

This study design has some limitations which should be considered when the outputs are finalized. One limitation is: It does not have much consideration to select sample accurately. In addition, although both two groups of participants performed well during testing, achieving special outcomes in all teats, this requires a further improvement. This should not preclude speaking and writing abilities. Moreover, as shown, compare the differences and not just focus on reading vocabulary comprehension.

Participants

This study mainly focuses on young learners who have obvious difference in decoding the meaning of vocabulary and sentences; according to Ku and Anderson (2003), the effect on derivational morphological awareness, lexical knowledge and reading comprehension are the ability to compare reflection between these two variances. However, the sample we have chosen is in small number which may not be ideal for future studies and limited in trustiness. Whereas the 30 participants for one-way analysis showed a simple method, which was less relative to model variables and sample size selected, the data collection was manipulated. Because the whole sample was instructed only in one way, they helped learners reduce the unnecessary factors. However, a larger sample can be optimistic for analyzing the data.

There is another case not figured into the present-day study which is the sample field. The author just collects the L2 Chinese learners from different groups, without comparing Chinese learners with L1 learners to explore the effect of derivational morphology for L1 learners during vocabulary acquisition.

Expectation

While the data analysis produces significant differences between two represented groups, we should set the exceptive outcomes before processing the data; moreover, they may not be a clear conclusion from the experimental design.

Limitation of Materials Applied

Another limitation is that we only focus on the effect of derivational morphology, rather than morphological awareness and inflectional morphology. The project only concerns the participants' performances, assuming they were in the same rank to undertake tests. However, even though they studied the same major, there existed different proficiencies. In addition, future study should observe the pre-test and post-test performances of all participants when they begin learning derivational morphology additional observations occurring three months later to assess the performance growth. Thus, the longitudinal test can be conducted before and after the acquisition knowledge.

Summary

This data supports the argument that derivational morphology can provide a basic foundation for extending vocabulary before contributing to other content levels such as decoding texts and interpreting facial expressions. As shown in data analysis, ELT student's knowledge of derivational affixes was directly related to vocabulary, rather in reading comprehension, which also proved the finding of Schmitt and Meara, who argue there may be an accurate order for derivational affixes.

Concentrating on Chinese L2 learners, this current study has explored that derivational knowledge is key to extending vocabulary, and has an effect on reading comprehension. But derivational knowledge is not the only stream of morphological awareness; but for inflectional knowledge, which may be the main element for

grammatical accuracy, while derivational knowledge is key to extending new vocabulary. Assuming the obvious effect of grammatical knowledge not only contributes to lexical development, but also to written and speaking communication; furfure studies investigate how adult language learners form new words, in what stage of proficiency they can adeptly utilize their vocabulary.

In addition, despite exhibiting a proficient commend of vocabulary, the ability to wield words effectively in sentence and express meaning are equally paramount (Weigle, S. C., 2005). Ultimately, this study has elaborated the significance of derivational morphological awareness for vocabulary learning and reading comprehension. This has been achievably by analyzing the original data in conjunction with another author's literature.

There is no doubt that derivational morphology plays a very important role in language studying having an impact on vocabulary acquisition and reading comprehension. This paper describes an attempt to focus on lexical inferencing abilities among Chinese speaking English language learners. The article illustrates and analyses difficulties in English language studying research gaps in Derivational Morphology knowledge and Morphological awareness. The theory and related questions developed a profound revision, in company a practical component aimed at exploring participants' morphological knowledge. Based on the data of 30 participants from Hong Kong Baptist University, undertaking the major English language for Teaching and Child and Adolescent, the study of Morphology can increase the understanding and meaning of words. The positive effect increases in English reading comprehension.

The paper should be recommended for publication with possible corrections regarding grammar and unification of the reference list. The data of this article is of good basis for other investigators with similar theoretical aims. The final intension of this article has been to invent possible alternatives to elicit new experience regarding the teaching derivational morphology in foreign languages for students.

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Appendix

Additional file: questionnaires and interviews