



Research article

Examining the predictive role of derivatives of morphological knowledge to reading comprehension

Md. Kamrul Hasan^a, Abdul-Hafeed Fakih^b, Prodhan Mahbub Ibna Seraj^{c,*}, Badruddin Kaddas^d^a English Language Institute, School of Humanities and Social Sciences, United International University, Dhaka, 1212, Bangladesh^b Department of English, Najran University, P.O. Box- 1988, Saudi Arabia^c Department of English, American International University, Dhaka, 1229, Bangladesh^d Islamic Communication and Broadcasting Study Program, Universitas Islam Makassar, Makassar City, South Sulawesi, Indonesia

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ABSTRACT

Morphological knowledge has been established as a critical sub-skill in the learning of bilingual reading and a strong predictor of spelling, word reading, and reading comprehension skills. The goal of this study was to investigate the prediction of morphological knowledge to reading comprehension in 185 university-level English as a Foreign Language (EFL) students, using the four primary derivatives of morphological knowledge (i.e. adverb, adjective, verb, and noun). The current study, which took a quantitative method, used multiple regression analysis to analyse two English competence tests, i.e. a reading comprehension test and a morphological knowledge test. The findings indicated that verb derivative form statistically and significantly predicted the reading comprehension most. Additionally, the verb word class affected greatly in elucidating the dependent variable, namely reading comprehension, followed by the adverbial derivative form, the adjective word class, and the noun derivative form of morphological knowledge. Further consequences of the current study's findings will be felt by English language teachers, curriculum designers, and academics.

1. Introduction

The term morphological knowledge or morphological awareness is frequently used to refer to an understanding of word production that combines tacit awareness with precise knowledge of the internal structure of words (Mokhtari et al., 2016). Mokhtari et al. (2016) further add that one of the classes of morphological formations in English refers to words that vary in their derivational affixes but have a share in a morpheme or base root word. An example can be cited here: the words “instructor” and “instruction” are usually regarded as to be separate words and have different meanings, but they share the root word “instruct”. According to Carlisle (2004), readers who have the ability to comprehend the morphological structure of words have the upper edge for both decoding words and vocabulary items and comprehending the processing of texts. In terms of the role of morphology in reading comprehension, Snow et al. (1998) claim that morphological knowledge is significant since it helps readers associate word forms and meanings within the structure of sentences. In addition, Mokhtari et al. (2016) maintain that understanding morphemes allows learners to identify

associations in words; as a result, decoding for meaning might take place more efficaciously.

Regarding knowledge of word families, Schmitt and Zimmerman (2002, p. 146) posit that a word family is a base word which is made up of its derivatives and inflections. Additionally, they claim that researchers and teachers may infer that a student's familiarity with a single member of a word family (for example, allow) enables him or her to learn other members (e.g. authorization, authority, authoritative, authoritatively). Even if knowing of one member of a word family unquestionably improves the receptive competence of other members, a small number of prior researchers have argued that L2 learners frequently encounter difficulties developing different derivative forms within a word family (Schmitt and Zimmerman, 2002). For example, a learner needs to use assumption where a noun is required; on the other hand, in the context of a verb, he or she needs to use assume. Without knowledge of either of the forms, he or she unavoidably would either utilize only the form of the word he or she knows or would replace with another word which would be associated with its grammatical forms.

* Corresponding author.

E-mail addresses: mahbub.seraj@aiub.edu, mahbub@graduate.utm.my (P.M. Ibna Seraj).

2. Literature review

2.1. The rationale for conducting the study

The central views of vocabulary knowledge implicate that knowledge of vocabulary has variegated dimensions. Vocabulary knowledge entails mastering the spelling, meaning, collocations, register features, and grammatical and morphological qualities of a word (Zhang and Koda, 2017; Schmitt, 2014; Nation, 2001; Qian, 1998, 1999). Since a learner needs to grasp many components of words, vocabulary knowledge must be considered to be incremental, for a learner would not be able to learn all of these dimensions completely after having one exposure to a particular word class. Similarly, the plausible inter-relationships between the dimensions indicate that acquisition of one form of word class is possibly linked with the acquisition of other forms of a word class (Schmitt, 2000).

Still, the question remains whether a learner's appropriate use of one form of a word family affirms that the teachers or researchers would be in a position to presume that the learner has grammatical knowledge of other one of the word family. Researchers, like Schmitt and Zimmerman (2002), on L2 vocabulary acquisition, have attempted to address this question. Their examination included a discussion of essential concepts and studies on the acquisition of related forms of language. Additionally, they looked at the extent to which a learner's common competency with a target word implies knowledge of related words, such as verb, noun, adverb, and adjective. According to their findings, it was rather uncommon for learners to be familiar with all four versions of a word or with not one of the four classes of terms associated with the provided target word. Learners typically showed to have partial knowledge of the derivatives, and out of provided 16 prompt words, producing two or three forms of a prompt word was usual.

In connection with the importance of morphological knowledge, Li and Kirby (2015) consider morphological knowledge as a significant dimension of knowledge of vocabulary, and they contend that affixes and root knowledge can assist students in comprehending the structure of words. Furthermore, comprehension strengthens learners' grasp of word associations. Additionally, they remark that morphology may act as a unifying factor between phonology and spelling by integrating word meaning (Bowers and Kirby, 2010; Kieffer and Lesaux, 2008; Perfetti, 2007; Proctor et al., 2009; Qian, 1999). Nagy, Berninger, and Abbott (2006) declare that morphological knowledge has a significant role in determining the way students read and learn new, long words; moreover, their proficiency affects their reading comprehension.

In terms of research gap related to morphological knowledge in the literature, various longitudinal research works (Tyler and Nagy, 1990; Deacon and Kirby, 2004) have been conducted to investigate the association between morphological knowledge and reading comprehension. In controlled laboratory contexts, the majority of psycholinguistic research has focused on morphology related processing and learning (Hasan and Shabdin, 2017a). In addition, students from second-to fifth-grade (Deacon and Kirby, 2004), students from sixth-grade (Kieffer and Lesaux, 2012), and students from fourth-to fifth-grade (Deacon and Kirby, 2004) were among the participants in those studies (Kieffer and Lesaux, 2012).

Additionally, Gottardo, Mirza, Koh, Ferreira, and Javier (2018) studied English second language learners from a Spanish background between the ages of 9 and 13; by contrast, Zhang and Koda (2018) studied Chinese as a heritage language (CHL) learner. Moreover, the study of Liu et al. (2017) dealt with second-grade Hong Kong Chinese children; in addition, the study of Spencer et al. (2015) comprised elementary-aged children; Tighe and Schatschneider's (2015) study included Adult Basic Education (ABE) students; the study of Goodwin et al. (2017) incorporated seventh and eighth graders. Finally, Mokhtari, Neel, Matatall, and Richards's (2016) study comprised seventh grade students. Bangladeshi students studying English as a foreign language

(EFL) at the postsecondary level demonstrate a lack in a variety of English language abilities (Yakub and Hossain, 2018). Yakub and Hossain (2018) add that their deficiency in their English language skills is demonstrated primarily by morphological errors, which in turn negatively affect their reading comprehension, i.e. academic performance. There were no tertiary-level students as participants in any of the aforementioned research papers that tested morphological knowledge and its relationship to reading comprehension. As a result, morphological knowledge is included in the current study as a component of vocabulary depth knowledge.

Considering the above-mentioned learners and research gap, the present study selected university students as the sample for the study. Furthermore, contemporary study in the subject of language knowledge indicates that it is multifaceted. The current study depends on past work in the field of vocabulary knowledge by investigating the four most common derivatives of morphological knowledge (adverb, adjective, verb, and noun) and how they relate to reading comprehension. The findings and discussion (under results and discussion sections) of the current study advance the existing thinking of the multidimensionality nature of vocabulary knowledge.

With knowledge of the members of a word family, learning inflections will not have the same learning weight as derivations, as inflections are rule-based, in contrast to derivations, which are item-based (proper form case by case) (Schmitt and Zimmerman, 2002). For instance, the members can be produced by attaching a verb with the suffixes -ed, -ing, and -s. Due to the fact that the production of derivatives entails a greater depth of knowledge and learning about each item, the current study used derivative forms of word classes rather than inflections to indicate the knowledge of members of a word family. Additionally, because derivational suffixes are critical in academic and formal discourse (Chafe and Danielewicz, 1987), the current study examined the four primary derivational word classes and their predictive value for academic reading comprehension.

Additionally, research undertaken on youngsters has produced inconsistent conclusions about the qualities of morphological and lexical knowledge (Tighe and Schatschneider, 2015). However, there has been little research done on the main derivatives of morphological knowledge and how they predict reading comprehension. The goal of this study was to see how well the four basic derivatives of morphological knowledge predicted reading comprehension among English as a Foreign Language learner at the tertiary level.

2.2. Theoretical background

Morphological knowledge is closely related to word reading (Zhang, 2016; Zhang et al., 2016). According to Share (2008), theories and empirical findings about morphological knowledge are constrained by a finite amount of observations based on the English language. Additionally, reading science demands "a profound understanding of the universal and script-specific characteristics shared by all writing systems" (Zhang and Koda, 2017, p. 58). Moreover, Goodwin et al. (2017) contend that currently, researchers have found a dearth of evidence to substantiate any theoretical explanation concerning the aspects of morphological knowledge since theoretically; dimensions of morphological knowledge vary in significant ways and associate separately with manifold literacy measures.

Additionally, learners place a premium on mastering the morphological aspects of their vocabulary knowledge (Wen, 2014). According to de Bot et al. (1997), many aspects of vocabulary knowledge, including the morphological dimension and word associations, are substantially associated with reading comprehension. The following research questions were constructed to cover a research gap observed in previous studies and to take into consideration the findings of the literature review.

1. To what extent can EFL learners' academic reading comprehension performance be predicted using the four basic derivative word classes of morphological knowledge?
2. What is the nature of the correlation between the four primary derivative word classes of morphological knowledge and reading comprehension?
3. How important is knowledge of the four basic derivative word classes, affecting EFL students' academic reading comprehension?

3. Method

3.1. Participants

This research paper encompassed 185 English as Foreign Language learners (five sections/classes) in their first year of undergraduate studies at a top-notch Bangladeshi private university. The present study included 106 individuals from three business school sections, including Bachelor of Business Administration (BBA) in other majors or in Finance ($n = 41$), Bachelor of Business Administration in Accounting ($n = 35$), and Bachelor of Science in Economics ($n = 30$). There were 59 female students (55.7%), and 47 were male students (44.3%). Their average age was 19 years and 45 days ($SD = 1.32$, ranging 17–25). Additionally, 79 engineering students participated in the current study. There were 28 females (35.4%) and 51 males (64.6%) among them. Their average age was approximately 19.16 (Standard Deviation = 1.026, ranging 17–22). One class comprised 38 students, and they were studying Bachelor of Science degrees in Electrical and Electronic Engineering (EEE). The other class encompassed 41 learners, and they were studying Bachelor of Science degrees in Computer Science and Engineering. The researchers chose all the students on the basis of their successful completion of the English 1 course, and the course was roughly equivalent to the A2-B1 level on the Common European Framework of Reference. The study's participants averaged 12 years of exposure to English instruction. The researchers conducted two tests, the reading comprehension test and the morphological knowledge test, which are explained in the next section.

3.2. Measures

The researchers used one morphological knowledge test that consisted of the four key derivatives of morphological knowledge for the present study. In addition, they also employed a reading comprehension test which had three passages with multiple choice questions.

3.3. Morphological knowledge test

The researchers directed the students to write the target word's suitable derivative word form in each of the provided blanks. The participants were asked plainly to jot down an X in the blank when they came to know that there was no derivative form of the target word in English. The researcher did not take any attached inflections into account because the primary stress of the test was on the derivational forms of the target words. The current study's researchers adopted the morphological knowledge test (Hasan and Shabdin, 2017b), which was based on the Schmitt and Zimmerman test (2002). The researchers selected words that could be found in the Academic Word List (Schmitt and Zimmerman, 2002; Coxhead, 2000) which was produced primarily for English as a Foreign Language or English as Second Language students because the learners were university-level English as a Foreign Language students. Each learner received one point (mark) for correctly answering one question. Incorrect responses received no points. Because the morphological knowledge test contained 30 blanks, the maximum achievable score was 30. The responses to accepted derivative forms of prompt words were derived from Schmitt and Zimmerman's Appendix A (p. 168)

of accepted derivative forms of prompt words (2002). The following is an example item:

Release	
Adverb:	The prisoner left town.....
Adjective:	The.....prisoner left town.
Verb:	The police had to.....the prisoner yesterday.
Noun:	The.....of the prisoner was delayed.

3.4. Reading comprehension test

This study's reading comprehension test was a reading comprehension test with multiple choice questions in passages. The researchers adopted the reading comprehension of Test of English as a Foreign Language authored by Longman (Phillips, 2006; Hasan and Shabdin, 2017b). They chose three reading comprehension texts out of several passages for this study because the passages were suitable for university-level students (because those who pass the TOEFL exam can get admitted to a university) and the study's focus was on examining the prediction of morphological knowledge to reading comprehension. Because there were a total of twenty multiple-choice questions in the study, the highest plausible marks (i.e. 20) a student could obtain in the reading comprehension test (Hasan and Shabdin, 2017b). Because of its validity and reliability, the TOEFL reading comprehension test was used in this study. "Before being used, all official TOEFL examinations have been carefully tested for validity and reliability as a recognized standardized language test" (Qian, 1998, p. 55). Using reading passages from a TOEFL version, Qian (1998, 2002) assessed the relationship between vocabulary knowledge and reading comprehension as well as the prediction of vocabulary knowledge to reading proficiency.

3.5. Sampling

Purposive sampling was used initially, followed by random sampling. The researchers chose the university where the data were obtained for the current study, using purposive sampling because they had the option to obtain an allowance from the authority to conduct the tests. Out of the total number of the whole population (i.e. 3,640) that consisted of 104 sections (i.e. classes), employing random sampling, the researchers extracted participants/sample size from the total population. The extracted participants were 185, consisting of 5 sections. According to Creswell (2014), an educational researcher requires roughly 30 learners for a correlational study with variables. As a result of the correlational nature of this research (research design), 185 was the sample size of this research paper, and 185 was a valid sample size.

3.6. Experimentation with sampling procedures for conducting research and collecting data

To highlight the probable prediction between the variables in the current study, the researchers used multiple regression analysis which falls under correlation research design (Creswell, 2014). Correlation research design comes under quantitative research method. The researchers gave the students a written letter of their permission to participate in the study and a questionnaire related to their background before conducting two tests, i.e. the reading comprehension test and the morphological knowledge test (Hasan and Shabdin, 2017b). The researchers asked the students whether they would participate in the tests or not. In the letter of informed consent, there was an option ($\sqrt{\text{or X}}$). Students' participation in the tests was not mandatory.

In a normal English classroom, the researchers offered a single reading proficiency test and a morphological knowledge test. A reading

comprehension assessment took 25 min, and a morphological knowledge examination took 30 min. To find relevant determinants of reading comprehension, standard multiple regression analysis was conducted by the researchers. To put it another way, the researchers determined the important significance of morphological knowledge in explaining academic text comprehension, and they employed force-entry multiple regression analysis. In addition, they avoided using stepwise analysis. The researchers used version 24 of SPSS software as their primary statistical application to examine the data.

3.7. Validity of the Study's instruments

Determining a test has correct and incorrect responses; researchers utilize the Kuder-Richardson Formula 21 (K-R-21) to measure its reliability. Furthermore, researchers create the test in such a way that it can assess exactly what they want to evaluate (Alderson et al., 1995). K-R-21 is also proposed as a method which demonstrates rational equivalence for determining internal consistency (Alderson et al., 1995). Thus, the researchers computed the reliability coefficients for the two tests using K-R-21, and utilized the formula $[n/(n-1)] * [1 - (M^2/(n \cdot \text{Var}))]$, where n denotes the sample size, 'Var' means the test variance, and 'M' denotes the test mean score (Hasan and Shabdin, 2017b).

Table 1 shows the two tests' reliability coefficients that are used to examine the adapted tests' reliability and validity, namely morphological knowledge and academic reading comprehension (Hasan and Shabdin, 2017a; Hasan and Shehzad, 2020).

The r values (reliability coefficients) for both the morphological knowledge and reading comprehension tests were reasonable, as indicated in Table 1. Notably, the justified K-R-21 score is specified by the way researchers conduct tests (Hasan and Shabdin, 2017a). A score of more than .50 is generally considered satisfactory. The reliability is reckoned low when the value of r is less than 0.50. The reliability is reckoned moderate when the value of r is between 0.50 and 0.80. The reliability is considered high when the value of r is greater than 0.80 (Hasan and Shabdin, 2017; Salvucci et al., 1997). Despite the fact that it uses less data to compute, K-R 21 always produces a lower reliability values compared with other approaches (Alderson et al., 1995). Finally, the internal consistency of all of the items included in the two instruments utilized in this study was satisfactory. In other words, two tests' r values suggest that they were both valid and trustworthy.

4. Results

"To what extent can EFL learners' academic reading comprehension performance be predicted using the four basic derivative word classes of morphological knowledge?" is the first research question. In addition, "What is the nature of the correlation between the four primary derivative word classes of morphological knowledge and reading comprehension?" is the second research question. The third research question is "How important is knowledge of the four basic derivative word classes, affecting EFL students' academic reading comprehension?" The first and third research questions were formed to determine the most significant, unique predictor and to examine the degree of prediction for the main derivatives of morphological knowledge in reading comprehension.

In terms of student scores at Business and Engineering schools, the regression analysis findings, as given in Tables 2 and 4, reveal the

Table 1. The values of the reliability coefficients.

Name of the Tests	Maximum Possible Score	K-R Reliability Coefficients
Morphological Knowledge Test	30	0.615
Reading Comprehension Test	20	0.736

Table 2. Prediction Values of All Students' score.

R^2	Adjusted R^2	F	Sig
.762	.750	13.737	<.001

coefficient values and prediction value regarding all four independent variables and the dependent variable.

As shown in Table 2, when the 'f' statistics reached significance at the .001 level ($R^2 = .762$, $F(4, 171) = 13.737$, $p < .001$), the suggested model of regression was declared well-fit for the data. The coefficient values and prediction value for each of the four independent variables (adverb, adjective, noun, and verb) with respect to the dependent variable (reading/text comprehension) are shown in Tables 2 and 4, as well as the significant value for the fitness of the model concerning scores of the students.

Table 3 shows the correlations between the four primary derivative word classes and reading comprehension of the students from both schools, Business and Engineering.

As in Table 3, a statistically significant and positive correlation was found between verb word class and reading comprehension at the level of 0.001 ($r = .636$; $p < .001$). As shown in Table 3, when compared to the relationships between other independent variables (adverb, adjective, and noun) and the dependent variable, reading comprehension, the correlation between verb word class and reading comprehension was the strongest.

Table 4 demonstrates standardized coefficients for all variables for Business and Engineering students.

Table 4 shows that the noun word class explained approximately $(.225)^2 = 5.06\%$ of the variance in reading comprehension, the verb word class explained approximately $(.604)^2 = 36.48\%$ percent of the variance in reading comprehension, the adjective word class explained approximately $(.520)^2 = 27.04\%$ percent of the variance in academic reading comprehension, and the adverbial word class explained approximately $(.538)^2 = 28.94\%$ percent of the variance in academic reading comprehension. The accompanying explanation illustrates that the verb derivative type of morphological knowledge explained the greatest percentage of unique predictions in academic reading comprehension (36.48 percent).

The third research question is "How important is knowledge of the four basic derivative word classes, affecting EFL students' academic reading comprehension? Research Question 3 was proposed or suggested to determine the degree to which the major derivatives of morphological knowledge have effect on the reading comprehension of EFL learners.

Table 4 shows that verb derivative form had the greatest effect on explaining reading comprehension when the variation was explained by the other three variables together ($\beta = .625$; $t = 2.521$, $p = .013$ (significant) ($p < .05$)). Other independent variables' (i.e. adverb, noun, and adjective derivatives) beta values show that to some extent, the adverb derivative form ($\beta = .567$, $t = 1.788$, $p = .076$ (not significant; $p > 0.05$))

Table 3. Relationships between derivative word classes and reading comprehension.

	Nou ¹	Ver ²	Adj ³	Adv ⁴
Ver	.643**	—		
Adj	.619**	.658**	—	
Adv	.539**	.649**	.689**	—
Reading ⁵	.417*	.636**	.548**	.579**

* $p < .01$, ** $p < .001$;

¹ Noun,

² Verb,

³ Adjective,

⁴ Adverb, and.

⁵ Reading Comprehension.

Table 4. Standardized coefficients for all variables for business and engineering students.

	Coefficients (Standardized)	t	Sig.	Correlations		Collinearity Statistics	
	β			Partial	Part	Tolerance	VIF
Noun	.236	.068	.946	.226	.225	.810	1.235
Verb	.625	2.521	.013	.608	.604	.747	1.339
Adjective	.537	1.552	.123	.523	.520	.757	1.322
Adverb	.567	1.788	.076	.549	.538	.772	1.295

and adjective word class ($\beta = .537$; $t = 1.552$, $p = .123$ ($p > .05$ not significant)) had effect on explaining reading comprehension; the same can be said in favour of noun word class ($\beta = .236$, $t = .068$, $p = .956$ ($p > .05$; not significant)) concerning its effect on reading comprehension. One of the key derivative word classes (verb) had the strongest effect on reading comprehension compared with the other derivative word classes, and this is according to the Beta values of the four major derivative word classes (i.e. verb, adverb, adjective and noun). Furthermore, adverb, adjectives and nouns did not affect the dependent variable, reading comprehension.

According to the findings, (i) students with greater knowledge of the verb word class had better performance in reading comprehension compared with students with greater knowledge of the adjective, adverb, and noun word classes of morphological knowledge; and (ii) when the variance was explained by three derivatives of morphological knowledge together, the verb word class made a significant contribution. Furthermore, when the variance was explained by the other three derivatives of morphological knowledge, the verb derivative form of morphological knowledge affected the most in explaining reading comprehension.

5. Discussion

As of now, there has been minimal quantitative study that includes the association and prediction of the four primary derivative word classes to reading comprehension. Consequently, there is minimal opportunity to compare or contrast the findings of this investigation with the findings of the previous studies. The study of [Schmitt and Zimmerman \(2002\)](#) included morphological knowledge in their study; however, they did not investigate the correlation and prediction of the four major derivatives to reading comprehension. According to [Schmitt and Zimmerman \(2002\)](#), verbs with a production proportion of 67 percent were the most well-known derivatives, whereas nouns had a production percentage of 63 percent. Notably, the current research shows that verb word class has a considerable and distinct effect on reading comprehension skill. In the current study, however, noun word class exhibited the least unique prediction strength and effect in explaining reading comprehension. The element of identifying which of the four major derivative word families underwent quantitative research contributed to the uniqueness of the current study's lexical knowledge domain.

The adverb, adjective and noun word classes of morphological knowledge did not contribute more uniquely in explaining reading comprehension and had no bigger effect on reading comprehension than the verb word classes, as indicated in [Table 4](#). This result indicated that at least one independent variable contributed statistically and significantly concerning the prediction of key derivatives to reading comprehension in the administered regression model. The data also suggested that verbal words were the easiest to learn for EFL students, followed by adverbial, adjective, and noun derivative forms.

The morphological knowledge dimension of vocabulary knowledge, especially the verb word class, is critical for reading comprehension success, and the key derivative of morphological knowledge was the most useful predictor variable for reading comprehension-this can be concluded. The findings of this study are similar to those of [Deacon and Kirby \(2004\)](#), who found that morphological awareness was a major predictor of reading comprehension in grades 4 and 5.

The results of the present study vary from the study of [Qian \(1998\)](#). In terms of test item design, the current study's morphological knowledge component differs from [Qian's \(1998\)](#). The morphological knowledge test in this research comprised words which demanded learners to write the correct forms of parts of speech (e.g. adverb, adjective, noun, and verb) whereas the research work of [Qian \(1998\)](#) encompassed words which required learners to identify affixes in order to determine whether or not there was a change in parts of speech. Furthermore, the current study's results on the four major derivative word forms cannot be compared to those of [Qian \(1998, 1999\)](#) because [Qian's \(1998\)](#) study found that when multiple regression procedures were used, the affix part and parts of speech aspects of morphological knowledge did not predict reading comprehension statistically and significantly. When understanding current theory, research, and practice, it is vital to understand the characteristics of morphological knowledge. The outcomes of this study show that morphological knowledge can be considered as a multifaceted entity, as evidenced by the four major derivative word classes that express the numerous components of speech linked with it.

6. Pedagogical implications

Many English language teachers would agree that morphological knowledge is critical to the academic reading performance of their students. Despite this, the teaching of morphological knowledge in EFL environments, particularly in Bangladesh, has been largely ignored. This is because Bangladeshi English teachers at all levels of education have a tendency to blindly follow the mandated texts or curriculum of western countries. The findings of the study will aid teachers in raising student awareness of the importance of adverb, adjective, verb, and noun word forms, which will improve other English language abilities. Teachers can adopt numerous activities that could be beneficial to students. Teachers could, for example, provide pupils a list of terms that solely contains basic or root words. Then, the instructors would demand the pupils to give them other word classes, provided the students could employ derivational prefixes or suffixes. Teachers can examine all students' responses, point out the proper derivative word classes to them, and talk about corrections with them if someone gives him or her the incorrect derivative word classes. As a result, students' reading comprehension will be enhanced by their understanding of adverb, adjective, verb, and noun word forms. [Laufer \(1992\)](#) argued that instructors should foster a desire for students to expand their vocabulary beyond the level at which they were functioning ([Schmitt, 2014](#); [Schmitt and Zimmerman, 2002](#)).

When teachers employ morphological attributes to assist learners learn novel terms by linking them with familiar words or prefixes or suffixes, students can grasp morphological traits of vocabulary knowledge. Since a large number of words in English are constructed with affixes, teachers should teach the learners several commonly occurring affixes. Instructors at the tertiary level might demonstrate how to distinguish morphologically complicated terms to their students. Students' breakdown of morphologically complicated words is motivated by their (students) desire to learn their (words) meanings, and students will also learn how to use morphemes and root affixes to form more complicated words. When broken down into morphemes, however, the spelling of many English words is entirely systematic. The phrases *sickness*, *madness*, and *recklessness*, for example, all end in a double. Due to

the unalterable spelling of the suffix *ness*, the appearance of doubles is totally anticipated. Students can develop a large vocabulary by understanding the morphological features of words. As a result, students will have better understanding of how to spell derivative word forms, and their understanding of the word forms will enhance their reading comprehension.

Language teachers cannot presume that learners would be able to learn the derivative forms of a word family without any attention given to the words, or only one exposure to them would suffice. Rather, emphatic attention to forms of word family would bear significant improvement in the performance of EFL learners' English language skills. Nation (1990, 2001) argued for a long time for the inclusion of categorical teaching of word parts in the curriculum. By incorporating the derivative words in their teaching curriculum, EFL instructors would be able to teach the words to the students; thus, students will be benefitted and they will improve their reading comprehension skill.

7. Conclusion

Finally, students who had a better knowledge of the verb word class did better in academic reading. Furthermore, verb word class was the most important variable when it predicted reading comprehension. Furthermore, the verb derivative form affected the most in explaining the dependent, reading comprehension. The current study revealed an understanding of the predictive association between four essential morphological derivative word classes and reading comprehension; nonetheless, significant limitations remain. Because the study only included students from one university, expanding the number of participants from other educational backgrounds would make it more inclusive. There is a paucity of research on studies that combine the key derivatives of morphological knowledge and their predictive ability for reading comprehension. The present study, which combined the four major derivative word classes in determining their predictive ability for reading comprehension through quantitative method, has added to that body of knowledge.

Declarations

Author contribution statement

Prodhan Mahbub Ibna Seraj: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Md. Kamrul Hasan: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Abdul-Hafeed Fakhri & Badruddin Kaddas: Contributed reagents, materials, analysis tools or data.

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The data that has been used is confidential.

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The authors declare no conflict of interest.

Additional information

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