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## EDUCATIONAL ASSESSMENT & EVALUATION | RESEARCH ARTICLE

# Dynamic assessment of morphological awareness in the EFL context

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**Abstract:** The Vygotskian concept of the Zone of Proximal Development forms the basis of DA which endorses interaction between teacher and learner during the assessment procedure. Although morphological awareness constitutes a key aspect of reading comprehension, little research has addressed the effect of morphological dynamic assessment (DA) on EFL learners' reading comprehension in EFL settings. The primary purpose of this study was to investigate the DA effect on reading comprehension. The other aim of the study was to examine which method of assessing morphological knowledge could predict and account for the EFL learners' reading ability. To fulfill these aims, 50 intermediate EFL learners, divided into experimental and control groups, participated in the study. The participants in the experimental group were assessed using a dynamic assessment procedure, while the participants in the control group were taught the morphology following the methodology proposed by the institute. The Nelson–Denny Reading Test and Test of Morphological Structure were applied as posttests. The results indicated that dynamic assessment of morphology developed EFL learners' reading comprehension. Furthermore, the dynamic assessment task could predict EFL learners' reading comprehension over and above the static assessment task of morphology. The findings provide preliminary support for the usefulness of a dynamic assessment of morphological awareness within an EFL context.

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### PUBLIC INTEREST STATEMENT

One of the EFL learners' problems relates to the best way of learning vocabulary. Given the importance of vocabulary, further understanding of how to teach word learning strategies is needed. The use of morphological awareness as a word learning strategy can be used to teach the meanings of unfamiliar words. Aside from the best way of teaching morphology which is a word strategy, the best way of measuring it seems to be a challenging issue. The current study has applied the principles of dynamic assessment to the teaching and assessment of EFL learners' morphological awareness in order to offer an alternative perspective in this regard. This method may open a new horizon in teaching and assessing morphology paving the way for language learners to learn vocabulary more efficiently.

**Subjects: Education; Classroom Practice; Assessment & Testing**

**Keywords: dynamic assessment; morphological awareness; reading comprehension; zone of proximal development; EFL learners**

### 1. Introduction

According to Carlisle (2003), morphological awareness refers to the ability to reflect on and manipulate morphological structure of words as well as morphemes. Wolter and Pike (2015) state that morphological awareness is the metalinguistic ability to understand and manipulate the smaller meaningful parts of language such as prefixes (e.g. re-), base words/roots (e.g. cycle), and suffixes (e.g. -ing, -ist) to develop morphologically complex word forms (e.g. recycle, cycling, recycling, cyclist). Considering the linguistic nature of morphological awareness and its relationship with other aspects of vocabulary knowledge, it is crucial to investigate the development of this skill for English language learners. Morphological awareness also plays an important role in the development of reading comprehension and reading-related skills (Mahony, Singson, & Mann, 2000; Nagy, Berninger, Abbott, Vaughan, & Vermeulen, 2003). Most of the studies that have revealed the unique contribution of morphological awareness to reading comprehension have been conducted on monolingual children, particularly those speaking English (Kieffer & Lesaux, 2008; Ku & Anderson, 2003; Wang, Cheng, & Chen, 2006; Wang, Ko, & Choi, 2009) or adolescents (Nagy, Berninger, & Abbott, 2006). Ku and Anderson (2003) have indicated that morphological awareness accounted for a significant amount of variance of reading comprehension without taking into account vocabulary knowledge in the analysis. Similarly, Nagy et al. (2006) conducted a study on child and adolescent English readers and examined the extent that morphological awareness and vocabulary knowledge contributed to reading comprehension using the SEM method. The results showed that morphological awareness not only contributed significantly to vocabulary knowledge, but it also predicted reading comprehension when the impact of vocabulary knowledge was excluded.

Not much research has been conducted on morphological awareness by EFL learners as a construct of central interest in this field of inquiry. Nonetheless, few studies conducted on English L2 learners are insightful and illuminating regarding the relationship among morphological skills, vocabulary knowledge and reading comprehension (e.g. Kieffer & Lesaux, 2008; Mochizuki & Aizawa, 2000; Wang et al., 2006, 2009). As an example, Mochizuki and Aizawa (2000) observed that Japanese secondary school and college EFL learners' knowledge of English prefixes and suffixes was positively associated with their vocabulary size. Studies also indicated that morphology plays an important role in making informed guesses about meanings of ambiguous words during textual reading on behalf of EFL learners (e.g. Paribakht & Wesche, 1999).

Morphological awareness has been considered as a construct which seems to be hard to measure. As a matter of fact, to date several measures have been used in order to distinguish this construct from other aspects such as vocabulary knowledge, isolated word reading, general reading comprehension, and spelling (Carlisle, 2000; Ku & Anderson, 2003). A new approach in measuring morphology was adopted in this study which targeted the shortcoming of measures of morphological awareness which have been dually voiced in the literature (Apel, Diehm, & Apel, 2013; Moats & Smith, 1992). Criterion-referenced and norm-referenced assessments have not adequately assessed derivational morphology (Moats & Smith, 1992); therefore, the researchers have turned to a new method of assessment i.e. dynamic assessment to examine morphology.

The dynamic assessment task of morphological analysis (DATMA; Larsen & Nippold, 2007) developed as a measure of morphological awareness can be used to better understand the underlying thought processes of students as they encounter unfamiliar morphologically complex words. The DATMA has demonstrated adequacy to evaluate word-learning potential in a typically developing population (Larsen & Nippold, 2007). Recently, Ram, Marinellie, Benigno, and McCarthy (2013) adapted Larsen and Nippold's (2007) dynamic assessment for third- and fifth-grade students. As expected, Ram et al. found that children in fifth grade performed better than those in third grade on their dynamic

assessment measure, and performance in both grades reflected a wide range of measured variability. Further research is necessary to explore this tool for other populations and different contexts.

The Vygotskyan concept of the Zone of Proximal Development (ZPD) forms the basis of DA which endorses interaction between teacher and learner during the assessment procedure. As a theoretically developed and experimentally tested measure since the 1950s, DA has been considered to be a valuable measure of assessment in psychological research as well as educational research which focuses on teaching or learning various school subjects. Nonetheless, language educators have only recently embarked on examining the pedagogical applications of DA in various domains of language learning (e.g. Ableeva, 2008; Antón, 2003; 2009; Lantolf & Poehner, 2004; Poehner, 2005).

The DATMA's utility has not been investigated in the EFL context and is worthy of attention as this innovative method of assessment provides opportunities to understand the strategies that the EFL learners employ to generate meanings for unknown words. The purpose of this study was to gain an in-depth understanding regarding the effect of morphological dynamic assessment in the EFL context. More specifically, the study was designed to achieve the following research objectives: first, to investigate whether the DATMA could improve reading comprehension of intermediate EFL learners in comparison with the results of the traditional tests of morphological awareness and reading comprehension. The second aim was to examine whether the DATMA contributed new information that obtained with conventional measures of morphological awareness such as the Static Morphological Awareness Test (SMAT). The study aimed to address the following research questions:

- (1) What is the effect of dynamic assessment on EFL learners' reading comprehension?
- (2) To what extent can DATMA and Test of Morphological Structure (TMS) scores predict EFL learners' reading comprehension following the dynamic assessment treatment sessions?

## 2. Methodology

### 2.1. Participants

The participants of this study were two groups of female students each consisting of 25 learners between the ages of 14 and 18, all of whom enrolled at intermediate level general English classes in Iran Language Institute, Yazd branch. The students could have enough exposure to reading passages because in every session they had to study one reading passage. Additionally, learning vocabulary was one of the important parts of the book considered difficult to learn and remember on the part of the learners. However, morphological awareness is not included in the pedagogy. That's why most of the teachers ignore this essential aspect except the few morphological points which are mentioned in the workbook. Therefore, this study aimed to target morphology using a new way of assessment.

### 2.2. Instruments

#### 2.2.1. The Nelson-Denny reading test

In instructional studies, care must be exercised to be assured of the similarities and differences between learners in terms of their initial ability of the area under study. So, regarding the reading ability of intermediate EFL learners, the Nelson-Denny Reading Test (NDRT) was selected to obtain the students' baseline knowledge as it was considered an instrument to measure the students' reading comprehension. (see Appendix A)

#### 2.2.2. Dynamic assessment task of morphological awareness

For the present study, the original Dynamic Assessment Task of Morphological Analysis, developed by Larsen and Nippold (2007) was adapted for the EFL learners. For the EFL students, the task was renamed the dynamic assessment task of morphological awareness (DATMA). We designed the DATMA task following the method of Larsen and Nippold (2007), which included (a) selecting morphologically complex stimulus words, (b) creating assessment scaffolds, and (c) generating a system for scoring.

### 2.2.3. Test of morphological structure

This task was the adaptation of the Test of Morphological Structure (TMS) developed by Carlisle (2000) consisting of two tasks, namely the Production task and the Decomposition task each composed of 10 items which encompass producing complex words and extracting base forms, respectively. There are equal numbers of transparent word relations in each task (i.e. in the derived form, the sound of the base form is intact, such as *reasonable* derived from *reason* *The Educator's Word Frequency Guide* (Zeno, Ivens, Millard, & Duvvuri, 1995), a resource containing words rated for frequency of occurrence in written language was used to ensure that stimulus words contained high-frequency base words and low-frequency derived forms appropriate for the intermediate students (See Appendix B).

## 3. Procedures

After assigning the learners to two groups; namely experimental and control groups, the following steps were taken: pretest, intervention, and posttest. The experiment lasted for ten weeks (roughly two and half-months) with Monday and Wednesday for the experimental group and Tuesday and Thursday for the control group. A full account of each stage is given below.

### 3.1. Phase one: Pretest

First, all of the participants of this study who were at the same level of general English proficiency based on institute's policies in the experimental and control groups were tested on reading comprehension passages (NDRT). NDRT was administered to the participants in the very beginning of the study to obtain a measure of the students' baseline knowledge in their English reading competency.

### 3.2. Phase two: Dynamic assessment

#### 3.2.1. Stimulus development

Following the model developed by Larsen and Nippold (2007), the purpose of DATMA was to ascertain whether the participating EFL students could use their knowledge of familiar base words and suffixes to determine the meaning of uncommon morphologically complex words. As an attempt to avoid a ceiling effect and to control for the requirement to use their morphological awareness knowledge, familiar or high-frequency base words and derivatives were chosen that became rare or low-frequency derived words. Given that Larsen and Nippold's (2007) task was originally designed for sixth grade, the task stimuli were examined to determine whether they would be appropriate for intermediate EFL students. First, the level of morphological awareness was considered, and consistent with Larsen and Nippold's task, derivational morphemes were used in the task. Stimulus items included 10 derived words that were considered transparent, and no change in sound was made between base words and related or derived forms (see Appendix C).

#### 3.2.2. Task procedures

The conceptual framework of the prompting system used for the study was based on a graduated prompting system used in the dynamic assessment task of morphological analysis (DATMA) (Larsen & Nippold, 2007). The 10 stimulus items from the DATMA were presented to the experimental group in written form, with each word displayed on an index card to the students in one-on-one testing sessions.

It was hypothesized that the scaffolds would be increasingly helpful in defining the meaning of the stimulus words as well as progressing toward the independent performance of a certain language feature. The engagement with the researcher created Vygotsky (1978) ZPD. The gradual hints provided enabled the teacher to identify the borders of the ZPD for every learner in the classroom by giving scores. When the mediator offered a prompt, she paused for up to 5 s in order to give the learner adequate time to respond; if no response was given or the answer was incorrect, the language learner was provided with the next prompt. All test administrations were audio recorded and checked. The following script was used when administering this task:

Examiner: I will tell you some words and you tell me their meanings. I will also show you the word in written form. If some of the words are hard, I will give you some help. Are you ready?

- (1) Tell me what the word *cooking* means (paused 10 s).
- (2) If the learner answered correctly, the mediator would say: How did you know that? If the learner responded incorrectly, the mediator would proceed directly to step 3. (Unless the learner has referred to the individual morphemes).
- (3) Does the word *cooking* have any smaller parts? What are those parts? (pause 10 s; if the learner cannot respond or it is incorrect, the mediator would proceed to step 4. If the learner is correct, the mediator would ask: Now can you tell what the word means?)
- (4) The smaller parts in this word are *cook* and *ery*. Now can you tell what the word means?
- (5) Listen to this sentence and then tell me what *cooking* means (the sentence is provided).
- (6) Which of these choices gives the best meaning of the word? (The mediator presented three choices).

The stimulus words were presented in written as well as auditory form, with each word presented on an index card throughout the cueing hierarchy. The students were allowed to access the orthographic representation of the target word which served two purposes: to reduce the load on working memory and to encourage the visual detection of the root word. Two practice words were presented first. It was hypothesized that the scaffolds would be increasingly more helpful in determining the meaning of the stimulus words. All test administrations were audio recorded and checked. On the other hand, the EFL learners in the control group were taught the list of words according to the syllabus provided by the institute.

### 3.2.3. Scoring

The scoring stipulations of Larsen and Nippold (2007) were further adapted for EFL students and were similar to those of Ram et al. (2013). Like Ram et al., scoring stipulations did not require formal literate language phrases such as “the act of” or “the state of” to notate the change in morphological meaning. Instead, plausible intermediate-level-appropriate terms were accepted. For example, instead of requiring the formal definition of “the state of smelling bad” for the word *odorous*, we accepted the intermediate-level definitional wording of “something is smelly.”

The language learners could refer to the root form of the words in their attempts to define the words. However, it necessitated that they understand the change in meaning which was caused by the suffix. A maximum score of five points could be obtained for each word. Therefore, the language learners could earn five as the maximum score and zero as the minimum score. The aim of this scoring system was to capture individual differences among participants on the basis of the amount of assistance they required to define the target word successfully.

The more prompting the students required, the more points were subtracted. The following system is used here: For each word, a maximum of five points could be earned. For each step in the hierarchy presented before the student defined the word, one point was deducted.

5 points = the language learner answered #1 and #2 correctly and completely

A correct and complete answer for #1 consisted of an adequate definition of the target word. In addition, the EFL learners’ response to “How did you know that?” had to refer to both morphemes in the word as well as the definition of the root morpheme. It was not expected that learners be able to verbally define the suffix due to the very high level of abstraction required (Carlisle, 2000). An example of a correct response to “Tell me how you know it means that” for the target word *cooking* might be: “Because *cook* means making food and then it has the suffix-*ery*.”

- 4 points = the language learner explained the word correctly after prompt #3.
- 3 points = the language learner explained the word correctly after prompt #4.
- 2 points = the language learner explained the word correctly after prompt #5.
- 1 point = the language learner explained the word correctly after prompt #6.
- 0 points = the language learner did not explain the word correctly.

The scoring system was aimed to capture individual differences among the participants based on the amount of assistance needed to successfully define a target word. The students were explained what they were supposed to do and how to do it. What is more, the participants were told that the interactions would be tape recorded. After each DA session, the students were allowed to listen to their own voice on the tape, and they were given the chance to comment on their own performance.

### 3.3. Phase three: Posttest

The last stage of the study was the posttest. The major intention of this stage was to evaluate the extent to which the intervention had affected students' reading comprehension. Similar to the pretest, all participants (CG, EG) took the reading test again. It is necessary to note that since there were more than two months interval between pre and posttests, there was no objection to use the primary test again for posttest. The study also aimed to investigate which measurement of assessment is more predictive of reading comprehension. In this regard, the traditional TMS was administered in order to compare it with the Dynamic Assessment Task of Morphological Awareness (DATMA). Once all posttest instruments were collected, the researcher entered the data for all relevant variables in SPSS for analysis.

## 4. Results

### 4.1. Pretest results

As Table 1 indicates, the mean score for the control group on pre-NDRT was 4.60, while the mean score for experimental group on pre-NDRT was 4.68 which are quite similar to each other. The higher standard deviation of the control group indicates more variance among the scores from the mean.

Also, to make sure that the difference in the control and experimental groups in terms of reading comprehension was significant, an independent sample t-test was conducted. As Table 1 shows, there was no significant difference between the control and experimental groups [ $t(48) = 3.13$ ,  $p = .85$ ] suggesting that both groups were similar in terms of reading comprehension level before the experiment was conducted (Table 1).

### 4.2. Posttest results

The researchers conducted the posttest to figure out whether participants improved their reading comprehension after dynamic assessment. The scores on the NDRT were determined by the total number of correct responses produced for the reading test. An independent t-test was conducted to compare reading comprehension scores of the control and experimental groups. In general, the experimental group outperformed the control group on reading comprehension. As the table indicates, the experimental group increased its mean score compared with the one obtained in the pretest: (control group: 4.72 vs. experimental group: 5.96).

**Table 1. Independent samples test for reading comprehension between the two groups (pretest)**

| Groups | N  | Mean | SD   | t    | df | Sig. |
|--------|----|------|------|------|----|------|
| DA     | 25 | 4.68 | 1.40 | 3.13 | 48 | .85  |
| NDA    | 25 | 4.60 | 1.66 |      |    |      |

**Table 2 Independent samples test for reading comprehension between the two groups (posttest)**

| Groups | N  | Mean | SD   | t    | df | Sig. |
|--------|----|------|------|------|----|------|
| DA     | 25 | 5.96 | 1.27 | 3.13 | 48 | .00  |
| NDA    | 25 | 4.72 | 1.51 |      |    |      |

As Table 2 indicates, there was a significant difference in the scores for the experimental and control groups in reading comprehension [ $t(48) = 3.13, p > .05$ ]. These results suggest that dynamic assessment of morphological awareness had a statistically significant effect on EFL learners' reading comprehension. Furthermore, Cohen's effect size value ( $d = .88$ ) suggested a large practical significance (Table 2).

Concerning the third question, an exploratory multiple regression analysis was conducted so that the power of both the DATMA and the TMS in predicting reading achievement could be checked. Regression is a technique used to predict the value of the dependent variable based on one or more independent variables. Scores on the TMS were determined by the total number of correct responses produced for the task. Both of the predictor variables were entered in a stepwise fashion, while the TMS was entered in the analysis first in order to understand whether DATMA would account for unique variance.

Table 3 demonstrates the standardized beta coefficients. The examination of the Sig. values demonstrated that DA score had the largest beta coefficient [ $\beta = .601, t = 3.60, p < .05$ ]. It indicates that DA has the strongest statistically significant contribution to reading comprehension. As a result, it is revealed that DA more significantly predicts the reading comprehension scores of candidates. While these results should be interpreted cautiously, the evidence suggests that the dynamic measure outperformed the static measure in predicting reading achievement as measured by the NDRT (Table 3).

The results further revealed that TMS dropped out of the model when the predictor variables were entered in a stepwise fashion (Table 4).

**Table 3. Regression output: Coefficient**

| Model |            | B     | SE B | $\beta$ | t     | Sig. |
|-------|------------|-------|------|---------|-------|------|
| 1     | (Constant) | 3.403 | .738 |         | 4.609 | .000 |
|       | DA         | .699  | .199 | .601    | 3.608 | .001 |

Note: The dependent variable is post-NDRT.

**Table 4. Excluded variables**

| Model |     | Beta In | t     | Sig. | Partial correlation | Collinearity statistics |
|-------|-----|---------|-------|------|---------------------|-------------------------|
|       |     |         |       |      |                     | Tolerance               |
| 1     | TMS | .326    | 1.346 | .192 | .276                | .458                    |

Note: The dependent variable is post-NDRT.

**Table 5. Model summary of the second research question**

| Model | R    | R <sup>2</sup> | Adjusted R <sup>2</sup> | Std. error of the estimate |
|-------|------|----------------|-------------------------|----------------------------|
| 1     | .601 | .361           | .334                    | 1.04                       |

Note: The dependent variable is post-NDRT.

As can be seen from Table 5, the  $R$ -value shows the correlation coefficient. The  $R^2$  is the fraction of the variation that is predicted by independent variables ( $R = .60$ ,  $R^2 = .36$ ,  $p < .05$ ). It can be stated that DATMA could predict about 36% of the variance in performance on reading comprehension. Simply put, DA was found to be a significant predictor of EFL learners' reading comprehension (Table 5).

## 5. Discussion

This study examined the effect of DA of morphology as compared to static morphology measure for EFL learners. A pretest, teaching phase, and posttest were provided during the DA. It was hypothesized that DA would enhance EFL learners' morphological awareness and reading comprehension. The results revealed significant increases in scores from pretest to posttest. It was further hypothesized that dynamic assessment would be a better predictor of reading achievement. The results were also indicative of the predictive power of dynamic assessment.

### 5.1. Dynamic assessment and reading comprehension

Regarding the first question, the effectiveness of the DA as a means of assessing morphological awareness was determined by comparing the performance of EFL learners in the experimental group to that of the control group. The reading performance of participants who received the DA improved from pretest to posttest to a greater extent than the performance of participants who only practiced reading comprehension texts in their books. The results showed that the DA used in the present study was an effective means of improving reading comprehension.

The justification behind the first question is that morphology knowledge may have contributed to vocabulary; accordingly, vocabulary knowledge may have led to the improvement in reading comprehension. Furthermore, improvement in reading comprehension may be the result of prompting as the prompts are pragmatically different from explicit correction and a recast; that is, by prompting, the mediator provides cues for learners to draw on their own resources to self-repair; whereas by providing recasting or explicit correction, a repair is both initiated and completed by a teacher in a single move which may not lead to EFL learners' morphological awareness. It can be concluded that prompting, and hence, the increase in EFL learners' morphological awareness lead to a better performance in reading comprehension. Particularly, static measures normally assess the abilities which have already developed while dynamic measures indicate a student's potential to learn new information. Vygotsky's (1978) concept of the ZPD can also be relevant here. During conducting the dynamic assessment, the students' ZPD could be expanded by the assistance provided by the mediator. As a result, the students could perform better on the reading comprehension test.

In the same vein, Grigorenko and Sternberg (1998) propose that dynamic assessment targets student learning potential in a special way which is distinct from static measures. Other studies provide supportive evidence for the effectiveness of the DA of morphology provided in the present study. As an example, DA using a test-teach-retest approach which was used in this study has been most commonly applied to the assessment of children from culturally and linguistically diverse backgrounds (Gutiérrez-Clellen & Peña, 2001; Laing & Kamhi, 2003). Also, a number of studies have demonstrated DA's utility for evaluation of language tasks such as word learning (Peña, Iglesias, & Lidz, 2001; Peña, Quinn, & Iglesias, 1992).

Overall, the results suggest that EFL learners' ability to derive meaning from morphologically complex words, as measured by the DATMA, appeared to contribute to students' ability to derive meaning from reading passages which is consistent with other research studies documenting the influence of morphological awareness on reading comprehension (Kirby et al., 2012; Tong, Deacon, Kirby, Cain, & Parrila, 2011). Thus, the DATMA appears to be a valuable instrument in that it readily measures the morphological word-analysis ability that is facilitative of text-level reading comprehension, a skill which is very crucial for EFL learners.

### **5.2. Dynamic assessment task as the predictor of reading comprehension**

The results of simple linear regression analyses revealed that DATMA contributed significant unique variance to the prediction of reading achievement which was measured by the NDRT. Moreover, when the DATMA and TMS were consecutively entered into a stepwise multiple regression model, the TMS dropped out as a non-significant predictor. Thus, substantial support is provided regarding the idea that the dynamic nature of the DATMA was influential in improving the predictive ability of a static morphological analysis task.

In stepwise regression, the DATMA significantly and uniquely contributed for an adjusted 36% of variance. This suggests that EFL learners' ability to derive meaning from morphologically complex words, as measured by the DATMA, appears to contribute to the EFL learners' ability to derive meaning from reading passages and is consistent with other research endeavors documenting the influence of morphological awareness on reading comprehension (Tong et al., 2011).

The finding that morphological analysis ability was found to be a significant predictor of reading comprehension is consistent with recent research in the special education context demonstrating a relationship between morphological skills and reading comprehension in the third- and fifth-grade children (Carlisle, 2000). In the Carlisle's study, the relationship between morphological skill and reading comprehension was particularly strong for fifth-grade children and less so for third-grade children (although still significant). Similarly, Fowler and Liberman (1995) as well as Tyler and Nagy (1990) have claimed that morphological awareness becomes a predictor of success in reading comprehension. In fact, Ku and Anderson (2003) not only agree with this claim, but also have examined the role that morphological awareness plays in reading proficiency of a language different from English, namely Chinese. They found that morphological awareness is strongly linked to reading ability for the elementary school children they examined in North America and China. They also maintain that the relationship is most likely bidirectional rather than unidirectional. Similarly, the results of the current study are consistent with those of both Spector (1992) and O'Connor and Jenkins (1999) who found that a dynamic measure improves prediction accuracy in young students over a static measure.

The results of the current study further suggest that for EFL learners, morphological knowledge plays an important role in reading comprehension. The results indicated that the DATMA significantly improved the prediction of reading outcomes over and above the static measure, suggesting that the dynamic nature of the former contributed to the prediction accuracy.

In line with the current study, several studies have been conducted on exploring DA's unique ability to predict achievement in comparison with traditional assessment employing multiple regression analysis (Meijer, 1993; Resing, 1993; Rutland & Campbell, 1995; Spector, 1992; Speece, Cooper, & Kibler, 1990; Tissink, Hamers, & VanLuit, 1993). The distinctive contribution of DA following the inclusion of traditional achievement tests in the multiple regression was investigated in two studies (Byrne, Fielding-Barnsley, & Ashley, 2000; Meijer, 1993). Similar to the current study, the studies have indicated that DA accounted for more significant variance regarding predictive achievement in comparison with the traditional achievement tests. For example, Byrne et al. (2000) found that for students in kindergarten, grade 2, and grade 5, DA accounted for an additional 9% to 21% of the variance in phonemic awareness and reading achievement.

Given the above, it can be concluded that DA can predict the significant achievement which cannot be revealed by traditional measures of assessment. The scores which were entered after traditional scores in the multiple regression, accounted for significant variance regarding the prediction of reading comprehension, lending support to the superiority of dynamic assessment in comparison with the static measures.

## 6. Conclusions and implications

This study was the first attempt in investigating morphological analysis skills as well as exploring the power of this instrument in predicting EFL learners' morphological awareness and reading comprehension using a dynamic measure. The findings gleaned from this study can shed light on the impact of dynamic assessment in the EFL context as the instruction was effective in improving EFL learners' reading comprehension. The study adds new information to the current research in the area of factors contributing to reading comprehension. Morphological awareness as measured by the DATMA was found to make a moderate contribution to the prediction of reading proficiency for intermediate EFL learners. The ability to recognize and estimate the meanings of these derived words from a known morpheme would apparently be an important contributor to reading comprehension of EFL learners. Moreover, scaffolds included in a dynamic assessment can be considered a valuable way to not only increase morphological awareness, but also to provide insights as to pinpoint the morphological parts that EFL learners find challenging to cope with. The DATMA task may have potential as a tool to help determine an individualized instruction plan for EFL learners to improve their morphological awareness. Since each successive prompt increases the amount of scaffolding given to a language learner, it could potentially help a mediator how much instructional support needs to be provided. In this study, pre-scripted prompts characteristic of interventionist DA were utilized to construct individual ZPDs that were anticipated in advance of mediation. These findings also indicate that the dynamic nature of DA enhance the predictive ability of a static morphological analysis task. Instruction that helps students pay attention to units of meaning may improve their knowledge of lexicon and thus enhance their ability to understand the text.

As there seems to be no studies available investigating the appropriateness of morphological dynamic assessment in the EFL context, more research endeavors need to be conducted to determine the measure's predictive power, to adequately examine learners' responsiveness to the instruction, and to figure out the measure's effectiveness among other tests of morphological awareness.

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## Appendix A

### Passage one

Economics is a study of the process by which we make and spend our incomes. It is also defined as a study of how man satisfies his wants and needs for economic goods and services. Even more specifically, economics is a study the process by which man attempts to get the most satisfaction possible when he cannot buy all of the goods and services that he would like. The inability of man to buy all of the goods and services that he would like is often referred to as the economic fact of scarcity. Economics, then, is concerned with the production, distribution, and consumption of goods and services. Economic activity at a given time includes everything that is being done to satisfy man's wants and needs through production, distribution, and consumption. Management, labor, and government all contribute to economic activity through which man's wants and needs are satisfied. The end results sought through economic activity are: (1) the creating of economic goods and services for man's use; and (2) the providing of opportunities for man to earn a reasonable income so he can acquire and consume the goods and services he wants and needs.

(1) Economics was definitely said to involve\_\_\_\_\_.

- (a) Making a living
- (b) Satisfying our needs
- (c) Paying taxes
- (d) Planning a budget
- (e) Making investments

(2) The passage mentions\_\_\_\_\_.

- (a) Scarcity
- (b) Surplus
- (c) Depression
- (d) Inflation
- (e) Taxes

(3) The purpose of this passage is \_\_\_\_\_.

- (a) To arouse interest
- (b) To entertain
- (c) To criticize
- (d) To make clear
- (e) To warn

(4) Chief emphasis is on the\_\_\_\_\_.

- (a) How
- (b) Where
- (c) When
- (d) What
- (e) Why

## Appendix B

### Test of morphological structurepre

Name..... Age.....

#### Decomposition

Practice: a. Driver. Children are too young to .....drive.....

- (1) Growth. She wanted her plant to .....
- (2) Dryer. Put the wash out to .....
- (3) Variable. The time of his arrival did not .....
- (4) Width. The mouth of the river is very .....
- (5) Density. The smoke in the room was very .....
- (6) Discussion. The friends have a lot to .....
- (7) Famous. The actor would achieve much .....
- (8) Description. The picture is hard to .....
- (9) Fifth. The boy counted from one to .....
- (10) Election. Which person did they .....

#### Derivation

Practice a. Farm. My uncle is a .....farmer.....

- (1) Warm. He chose the jacket for its .....
- (2) Teach. He was a very good .....
- (3) Permit. Father refused to give .....
- (4) Profit. Selling lemonade in summer is .....
- (5) Appear. He cared about his .....
- (6) Express. OK' is a common .....
- (7) Four. The cyclist came in .....
- (8) Remark. The speed of the car was .....
- (9) Protect. She wore glasses for .....
- (10) Perform. Tonight is the last .....

## Appendix C

### Definitions, and frequency values of the words

- (1) Cookery (n.): the art or practice of cooking; a place or area for cooking.

Derived word frequency: 31.9

Root word frequency (cook): 55.8

- (2) Equalize (v.): to equal; match.

Derived word frequency: 34.8

Root word frequency (equal): 59.0

(3) Oddity (n.): the quality or character of being odd or peculiar; peculiarity; strangeness; singularity.

Derived word frequency: 33.9

Root word frequency (odd): 55.3

(4) Puzzlement (n.): the fact or condition of being puzzled; perplexity; bewilderment; confusion.

Derived word frequency: 31.8

Root word frequency (puzzle): 52.2

(5) Secretive (adj.): inclined to or fond of secrecy; very reticent; indicative of secrecy.

Derived word frequency: 30.5

Root word frequency (secret): 56.7

(6) Payee (n.): a person to whom money is paid.

Derived word frequency: 36.4

Root word frequency (pay): 62.2

(7) Dramatize (v.): to convert into a drama; to put into dramatic form; adapt for representation on the stage.

Derived form frequency: 67.

Root frequency (drama): 28.40.

(8) Crazy (n.): senseless; impractical; totally unsound.

Derived word frequency: 31.6

Root word frequency (crazy): 53.3

(9) Oceanaut (n.): a scuba diver trained to work in underwater installations and conduct, assist in scientific research.

Derived word frequency: 22.1

Root word frequency (ocean): 61.610.

(10) Satisfaction (n): an act of satisfying; fulfillment; gratification.

Derived word frequency: 26.7

Root word frequency (ocean): 45.6



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