



KNOWLEDGE OF DERIVATIONAL SUFFIXATION IN ENGLISH AS L2 AT THE UPPER
PRIMARY LEVEL: AN EXPLORATORY STUDY

SOMAK MANDAL¹, MADHAVI GAYATHRI RAMAN²

¹Assistant Professor, Department of English, West Bengal State University & Ph.D. scholar, School of ELE English and Foreign Languages University, Hyderabad, Email:somcv2009@gmail.com.

²Assistant Professor, School of English Language Education, English and Foreign Languages University, Hyderabad, Email: gayathriraman@yahoo.com



ABSTRACT

Acquisition study has been for years an intriguing and productive field of academic investigations in the domain of ELT/ELE research. One of the most important components of language acquisition is vocabulary development. Young learners learn vocabulary primarily in two ways, namely i) explicit learning and ii) incidental learning (Nation, 1990; Rieder, 2003; Sonbul and Schmitt, 2012). Research studies in both L1 and L2 acquisition have shown that incidental vocabulary learning is more effective than direct teaching in the acquisition of new lexical items. As the young learners grow up, they encounter more low frequency complex words; words with multimorphemic structure which they have not come across before. One of the most effective strategies one applies to infer the meanings of those words is the use of morphological information and generalisation (Anglin, 1993; Bowers & Kirby, 2009; McCutchen & Logan, 2011; Wysocki & Jenkins, 1987). Awareness of Derivational morphology, therefore, is key to vocabulary development. Among the derivatives, the words with suffixes pose a critical problem for the young learners and particularly the words with non-neutral suffixes are difficult to grasp. Therefore, there is a need to study the level of morphological knowledge of the young learners to reveal, analyse and find solutions to the difficulties in the developmental stages of morphological and vocabulary development.

Key Words: Derivational morphology, suffixation, neutral and non-neutral suffixes.

©KY PUBLICATIONS

1. Introduction and literature review

Ever since Berko's seminal essay (1958) on children's vocabulary acquisition through morphological decoding, a considerable amount of research focus has been invested on the developmental stages of vocabulary growth and how this growth can be accounted for by the correlational correspondence between morphological awareness and lexical acquisition (Anglin, 1993; McBride-Chang et al. 2005; Nagy, 2012). Anglin (1993) writes "...this research does suggest that morphological problem solving contributes substantially to the growth of vocabulary knowledge".

Compounding and derivation are the most productive morphological processes in English. Going by dictionary entries, derivation is the most productive of the two and according to Anglin (1993), Webster's Third edition contains more derived words than words of any other of the four types i.e., *i) root words ii) inflected words, iii) literal compounds, and iv) idiomatic compounds*. Knowledge of derivational morphology, therefore, is crucial in vocabulary acquisition. It is estimated that between ages 12 and 17, i.e., from 6th grade to the first year of high school, children are exposed to 10,000 new words with root-affix combination (Clark, 2003). It is impossible for learners to store these words in long term memory through rote learning. To learn these words learners must make morphological rule generalisations and work out the meaning of those words by applying the rules. The knowledge of morphological analysis, breaking complex words into and identifying the meaning of their morphological components and composition, synthesising the meanings of the component morphemes to figure out the meanings of the complex words is important in vocabulary development.

The crucial component in children's morphological learning is their development of mental representations of bound morphemes. Through the affix discovery principle (Carlisle & Fleming, 2003) children monitor the mental lexicon for correspondences between form and meaning. In the context of language processing, derivational morphology plays an important role in facilitating this correspondence (Tyler and Nagy, 1987). The knowledge of derivational morphology can help the learners in three distinct ways: first, it helps in lexical access; secondly, it aides in understanding the syntactic structure of sentences and thirdly, it helps in inferring meanings of new derivatives.

While interpreting multimorphemic derived words, young learners have maximum difficulty with suffixed words. One reason is that derived words with suffixes are rare in informal oral discourse, "... nominalizations (nouns formed from verbs by adding suffixes, such as performance or representation) are twice as frequent in lectures as they are in conversations, and three times more frequent in academic papers. In general then, derivational suffixes are associated with the more complex syntax of written language and formal discourse" (Nagy, Diakidoy and Anderson, 1993, pp.157) and, therefore, most of the suffixes are unfamiliar for the young learners when they encounter them in print. Secondly, the meanings of suffixes are less paraphrasable and more abstract (Nagy, Diakidoy and Anderson, 1993). Learners need to be familiar with suffixes through adequate exposure in print to develop their knowledge of what suffixes contribute to the meanings of the derived words.

Derivational suffixes can be divided into two subgroups namely, neutral and non-neutral suffixes (Tyler & Nagy, 1987). Neutral suffixes, i.e., *-ness, -er, -ment* etc. are different from non-neutral suffixes, i.e., *-ity, -ous, -ation* etc. in many respects. Neutral suffixes attach to independent words to make derivatives which usually enjoy a transparent semantic relation with the stem (*happy-happiness*). Neutral suffixes also do not usually cause phonological or orthographic change to the stem or even if they do it is predictable. Non-neutral suffixes, in contrast, are often attached to bound morphemes; the stems which cannot function as independent words, for example, the suffix *'-ify'* is attached to the stem *'grat'* to derive the word *'gratify'*. The non-neutral suffixes also cause changes on the stress pattern and alters the vowel quality of the stem to which they are attached, such as the pronunciation of the *'a'* in the stem *'profane'* changes in the derived word *'profanity'*. The derived words with the non-neutral suffixes sometimes do not carry any semantic association with the stems, such as the derived words, *'carnival'* or *'carnation'* are not transparently related to the stem *'carn'*, meaning meat. On account of the reasons, neutral suffixes are observed to be learned more easily and early than the non-neutral suffixes (Dale and O'Rourke, 1974)

The knowledge of derivational suffixes involves three aspects: lexical semantic, syntactic and distributional properties (Tyler and Nagy, 1987). The lexical semantic information of a derivational suffix helps in understanding the internal structure of the derivatives and identifying the meaning constructed by the morphemic structure. The syntactic information helps in determining the syntactic categorisation of the derived words and distributional information refers to the constraints in stem-affix association. The lexical-semantic knowledge is the most basic knowledge (Tyler & Nagy, 1987), followed by syntactic and then, distributional knowledge.

2. The present study

This paper is based on a study of derivational suffixes because "... they represent the most abstract and difficult aspect of morphology..." (Nagy, Diakidoy and Anderson, 1993). The knowledge of derivational suffixation is acquired later than inflectional suffixation and compounding (Berko, 1958) and though young learners can locate the stem in a suffixed word at an early level of schooling, their knowledge of the meanings of derivational suffixes continues to develop till higher grades (Tyler and Nagy, 1987). The complexities in L1 context becomes all the more complex in the L2 context particularly in India where learners have limited exposure to English as L2. In this study, we attempt to describe and analyse the level of morphological knowledge primarily in relation to derivational suffixes in L2 context. Two inflectional suffixes were also included to see the developmental differentiation between derivational and inflectional morphology. Additionally we also undertake a comparative study of developmental pattern of neutral and non-neutral suffixes. Our hypotheses are as follows:

- i) subjects' knowledge of inflectional morphology will be better than derivational morphology
- ii) subjects' performance on neutral suffixes will be higher than that on non-neutral suffixes
- iii) among the neutral suffixes the subjects will show higher awareness for those suffixes with transparent and concrete meanings
- iv) lexical-semantic knowledge will be greater than syntactic and distributional knowledge.

2.1 Participants

The subjects of the study were 30 7th standard students, 18 boys and 12 girls in the age group between 13;0 and 14;0 from a recognised government aided regional medium secondary school, located in south Kolkata. The students' profile shows that the subjects were from an underprivileged background. Though the subjects had started learning English as L2 from 1st grade at the age of 6;0, they were deprived of positive attitudinal and home-based support that plays a critical role in second language development (Ajit K. Mohanty, 2006).

A conscious decision was taken to undertake the study with 7th standard students¹ who have had six years of exposure to English in a school environment. The decision regarding the 7th standard students was taken to ensure that they have had a reasonable amount of exposure to English as L2 and encountered the suffixes a sufficient number of times to be able to acquire the knowledge of suffixes. This decision was supported by an analysis of the text book analysis which showed that their level of exposure to the derivational morphology was comparable to the exposure level of the kindergarteners in L1 context. The 7th standard subjects, therefore, were expected to show developmental trajectory in terms of morphological knowledge types and derivational suffix varieties.

3. Task Development and Administration

A list of fifteen suffixes, thirteen derivational and two inflectional was made for the purpose of the tasks. The derivational suffixes were selected from two lists. The first list contains the ten most common derivational suffixes in English (Nagy, Diakidoy and Anderson, 1993). The ten suffixes are *-able*, *-er*, *-ful*, *-ise*, *-ish*, *-ism*, *-ist*, *-less*, *-ly* and *-ness*. The second list is based on the analysis of the English text book for 5th and 6th standard, *Butterfly*, prescribed by the West Bengal Board of Primary Education, 2013. The list contains the ten most frequently used suffixes in the text book. The suffixes are, *-able*, *-al*, *-less*, *-er*, *-ful*, *-ian*, *-ity*, *-ly*, *-ous* and *-ness*. The rationale behind preparing two lists was that the first list presents a list of suffixes already standardised and administered in L1 studies and, therefore, be used as a reference for the L2 study and the second list presents a list of suffixes which the subjects were already exposed to and, therefore, their knowledge on them can be tested. This approach would give the test results more reliability. While making the final suffix list, suffixes common to both the lists were selected, e.g., *-able*, *-er*, *-ful*, *-ly*, *-ness* and *-less*. Interestingly, all six are neutral suffixes. Then from the second list based on the text book four non-neutral

¹ L1 research studies investigating into morphological and vocabulary knowledge have sampled data from kindergarteners between 5 to 6 years (McBride-Chang, Wagner, Muse, Chow & Shu, 2005; McBride-Chang, Tardif, Cho, Shu, Fletcher, Stokes et al. 2008).

suffixes were selected, e.g., *-al*, *-ian*, *-ity* and *-ous*. This would make the tasks more balanced and the findings more reliable. The rest three suffixes, e.g., *-ise*, *-ish* and *-ist* which are all neutral were selected from the standardised list. The final thirteen derivational suffixes in the list were *-able*, *-al*, *-er*, *-ful*, *-ian*, *-ise*, *-ish*, *-ist*, *-ity*, *-less*, *-ly*, *-ness* and *-ous*. Nine of these suffixes are neutral and four are non-neutral. The derivatives with non-neutral suffixes used in the test items do not show any phonological or orthographic change in the stem. This is to ensure that the subjects need to employ their morphological awareness (implicit or explicit) only. With their phonological and orthographic knowledge controlled, it is expected that a more reliable assessment of their morphological awareness could be done. Since the subjects were exposed to both the neutral and non-neutral suffixes, both the suffixes were tested to see the developmental differentiation. Two (2) inflectional suffixes were also included to make the study more inclusive, reflecting the subjects' morphological awareness more comprehensively. The inflectional suffixes include, *-ed* (past tense) and *-s/-es* (third person singular present tense).

Morphological awareness was tested through one production test that consists of blending task and two recognition tests that comprise segmenting task and suffix function test.

3.1 The Production Test

3.1.1 Blending Task: The blending task was designed to assess the distributional and syntactic knowledge (Tyler and Nagy, 1987) of derivational morphology of the subjects. The subjects were required to read a given sentence with a blank. Then they were supposed to fill in the blank with a derivative by adding an appropriate suffix to the stem already given. For an appropriate combination the subjects were given *1* and for an inappropriate combination *0*. For example, '**farm**: My uncle grows crop and he is a _____.' If the subject writes '*farmer*', he is given *1*.

3.2 The Recognition Test

3.2.1 Segmenting Task: The segmenting task was designed to assess the lexical-semantic knowledge (Tyler and Nagy, 1987) of derivational morphology. It is the most basic level of morphological development. Lexical-semantic knowledge entails the awareness of the internal structure of the words. The subjects were tested to see whether they could identify the morphemic components of the derived words. The subjects were required to read a derived word and segment the word into its morphemic components. Then they were required to write the stem in the blank provided. The subjects were required to identify the stem or the suffix to appropriately mark the morphological boundary correctly. Each appropriate segmentation was scored *1* and an inappropriate one was scored *0*. For example, '**driver**: These boys are too young to _____.'. If a subject writes '*drive*', he is given *1*.

3.2.2 Suffix Function Test: In the second recognition task, the syntactic function of the suffixes was tested since derivational suffixes primarily serve to mark the derivatives for particular parts of speech. Words made up of familiar stems and suffixes in unfamiliar combinations were used in this task. For example, '*butter*' is a familiar high-frequency stem and *-less* is also a common suffix but, when the suffix is attached to a stem it derives a rarely occurring 'novel' derivative '*butterless*' with very low frequency. This was to make sure that the subjects needed to identify the suffix and comprehend the syntactic information encoded in the suffix in order to complete the task successfully. The subjects were required to read a novel combination with a familiar stem and a suffix. They needed to decide on the part of speech of the novel word by analysing the suffix. Then they needed to tick the sentence where the novel word's part of speech was correctly maintained. The subjects had to understand the syntactic information encoded in the suffix to get the correct answer. Each correct answer was scored *1* and each wrong one was scored *0*. For example,

The word '**repairer**' is correctly used in the sentence-

- i. He can repairer the cycles very well.
- ii. I need a repairer cycle to go to the market.
- iii. He is a good repairer of cycles.

If a subject ticks the option '*iii*', he will be given *1*.

4. Task analysis and discussion

In the blending task, the subjects showed relatively good performance in the derivational suffix, **-er** and the inflectional suffix, **-ed** with 50% and 27.27% correct answers respectively. What accounts for the better performance in suffix, **-er** is that it is a neutral suffix and its meaning is more transparent and constant than the meanings of other neutral suffixes (Peccei, 2006). The subjects show relatively good performance on **-less** and **-ness** (9.09% correct answers on both). The simplicity principle (Clark as quoted in Peccei, 2006, p19) may account for the performance. The simplicity principle says that "... when children first start to acquire derivational affixes, they will use those that make the fewest phonological changes to the base word." The two suffixes '-less' and '-ness' cause minimal phonological or orthographic alteration to the stems provided in the task. The performance on the non-neutral suffixes (**-al, -ian -ity, -ous**) shows that they are harder to learn than the neutral suffixes and the acquisition of non-neutral suffixes occurs later as shown by earlier studies (Tyler & Nagy, 1987). But, what was surprising was the poor performance on suffixes like, **-able, -ful**, which were neutral suffixes with transparent meaning and **-ly**, which had largest token size in the text book analysis. This can be accounted for by the factors like the subjects' socio-economically backward background, their low parental qualifications and their minimal exposure to English outside the classroom. Since no classroom observation was made, no comment could be made on the classroom resources and their effects on the subjects' performance.

The subjects performance on the inflectional morphemes shows that young learners first pick up the regular past tense ending and then 3rd person singular present tense marker and it corroborates what has been claimed earlier (Brown studies as quoted in Peccei, 2006, p22). The possible explanation for this order of acquisition can be that the regular past tense marker that involves the sense of time is cognitively less demanding than the 3rd person singular present tense which involves the concepts of time, number and person.

In the segmenting task, the subjects show a remarkable and significant improvement in the segmenting task. The test results corroborate the fact that lexical-semantic knowledge is the basic level of morphological knowledge (Tyler & Nagy, 1987) and the "recognition of morphological relatedness" (Nagy, Diakidoy & Anderson, 1991), which is the ability to identify the stem in an affixed word, is the most basic level of morphological knowledge and, therefore, this knowledge is acquired first. The subjects show greater lexical semantic knowledge for neutral suffixes than non-neutral suffixes. The highest average of correct answers for the neutral suffix, **-er** is 86.36%, whereas, the highest average of correct answers for the non-neutral suffix, **-ous** is 50%. It was evident that the subjects found out difficult to segment a derived word with a non-neutral suffix. The reason could be the applicability factors for the suffix categories. The neutral suffixes have a wider range of applicability as they are attached to the word-class whereas the non-neutral suffixes which are attached to specific roots only. The token size and frequency of the neutral suffixes are greater than those of the non-neutral suffixes and it definitely affects the rate and order of acquisition as it is evidenced in the test results. The performance in other neutral suffixes significantly improved.

But it can be said that the gap in performance across the derivational morpheme categories (neutral/non-neutral) in the segmenting task is much less than that of the blending task. The reason could be when the subjects were tested their syntactic and distributional knowledge of morphology was at an elementary stage, reflecting diverse rate and order of acquisition across the morphological categories. But, their knowledge of lexical-semantic aspect of morphology reached near optimal level showing little differential acquisitional patterns. The data also corroborate the previous studies that the lexical-semantic aspect of morphology is learned much earlier than the other two aspects and though knowledge of syntactic and distributional properties of the suffixes develop through high school into the college level, lexical-semantic awareness, needed for the segmenting task is learned by 4th grade and does not show much developmental pattern thereafter (Nagy, Diakidoy & Nagy, 1991).

Among the inflectional morphemes, the subjects performed, in contradiction to the blending task, better on the 3rd person singular present tense marker than on the regular past tense ending. The only plausible reason can be the item for the 3rd person singular present tense was easier.

The suffix function test was designed to assess the subjects' syntactic knowledge of derivational morphology. The subjects' performance was better in neutral suffixes than in non-neutral suffixes. The result proves that neutral suffixes are easier to learn and they are learned earlier than the non-neutral ones. Among all the suffixes, *-ful* managed maximum correct responses with over 90% correct answers. It is because the suffix is semantically transparent and is one of the most frequent suffixes used in the school textbook. The subjects could understand its syntactic properties as an adjectival suffix which can be attached to any noun. The same argument can be put forward for the suffixes like *-er* and *-ly*. The lowest average of correct answer (9.09%) was recorded against the non-neutral suffix, *-ous*. In this task the inflectional suffixes were not included, because the inflectional morphology does not entail syntactic alteration of the stems in affixation.

The overall analysis of the data shows that the subjects performed better in the recognition task than in the production task. The subjects performed best in the segmenting task, reflecting that they have adequate lexical semantic knowledge to appreciate the internal structure of the derivatives and identify the stems in the suffixed words. But, this knowledge was not matched by their syntactic and distributional knowledge. Though the subjects demonstrated their knowledge of morphological relatedness, their knowledge of individual word parts (Nagy, Diadikoy & Anderson, pp 4), the ability identify the suffixes along with is not developed adequately. The poor performance in the blending task suggests the subjects' rudimentary knowledge in distributional properties of suffixation. The syntactic knowledge was tested across two tasks. Though the subjects did very poorly in the blending task, they performed relatively better in the recognition task. It can be said that with their syntactic knowledge at the given developmental stage, the subjects can decompose a suffixed word but cannot use the knowledge systematically to produce new words.

5. Conclusion

The study shows that in the acquisition of L2 there is a developmental pattern similar to L1 context. The acquisitional stages in the development of morphological knowledge in L1 and L2 appear to be similar. L2 learners exhibit the same level and type of knowledge in derivational morphology as L1 learners of the same maturational level. However, we cannot draw make firm conclusions until the findings from this study are validated with a larger sample. Also, the tasks include two representative inflectional suffixes and three representative non-neutral suffixes. This may be considered inadequate to make a conclusion about the subjects' comprehensive morphological knowledge.

References

1. Anglin, J.M. (1993). Vocabulary development: a morphological analysis. *Monographs of the Society for Research in Child Development*. 58(10).
2. Berko, J. (1958). The child's learning of English morphology. Retrieved Sept. 30.2012 from <http://childes.talkbank.org/topics/wugs/wugs.pdf>.
3. Carlisle, .F. & Fleming, J. (2009). Lexical processing of morphologically complex words in the elementary years. *Scientific Studies of Reading*, 7(3), 239-253.
4. Clark, E.V. (2003). *First language acquisition*. Cambridge: CUP.
5. Dale, E & O'Rourke, J. (1974). Towards a science of vocabulary development. The Hague: Mouton
6. McBride-Chang, C., Tardif, T., Cho, J.R., Shu, H., Fletcher, P.,Stokes, S.F. et al. (2008). What's in a word? Morphological awareness and vocabulary knowledge in three languages. *Applied Psycholinguistics*, 29(3), 437-462.
7. McBride-Chang, C., Wagner, R.K., Muse, A., Chow, B.W-Y, & Shu, H. (2005). The role of morphological awareness in children's vocabulary acquisition in English. *Applied Psycholinguistics*, 26(3). 415-435.
8. Nagy, W.E., Diakidoy, I-A. N. & Anderson, R.C. (1991). The Developmental Knowledge of Derivational Suffixes. *Center For The Study Of Reading, Technical Report No. 536*. Illinois: University of Illinois at Urbana-Champaign.

9. Nagy, W.E., Diakidoy, I-A. N. & Anderson, R.C. (1993). The acquisition of morphology: learning the contribution of suffixes to meanings of derivatives. *Journal of Reading Behaviour*, 25(2), 155-170.
 10. Peccei, J.S. (2006). *Child language: A resource book for students*. London & New York: Routledge.
 11. Tyler, A. & Nagy, W. (1987). The acquisition English derivational morphology. *Center for the Study of Reading, Technical reportno.407*. Illinois: University of Illinois at Urbana-Champaign.
-

Bio-note

SOMAK MANDAL is an assistant professor at the dept. of English, West Bengal State University and presently pursuing a doctoral research programme in ELE at EFL University, Hyderabad. His areas of interest include L1 and L2 acquisition, cognitive linguistics, morphology, vocabulary.

MADHAVI GAYATHRI RAMAN is Asst. Prof. at the English and Foreign Languages University, Hyderabad, India. Her interests include materials design, curriculum development and specific language impairment & dyslexia in an ESL context. She has authored articles on the assessment of dyslexia, school-level English textbooks, language playbooks and a book chapter with TESOL on the use of plays to teach language.
