



## Morphological Awareness and Reading Comprehension: A Cross-linguistic Study

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### Abstract

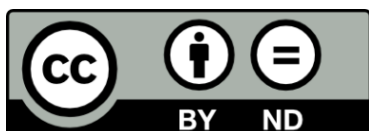
This study investigated the association between cross-language morphological awareness and reading comprehension among the second language (English) adult learners who speak Sinhala as a first language. Measures of morphological awareness and reading comprehension (sentence-level and passage-level) in both languages were administered to appraise learners' morphological awareness and reading comprehension. The results of the regression analyses indicated that although Sinhala morphological awareness was associated with sentence-level English reading comprehension, it did not associate with passage-level English reading comprehension. Furthermore, the results demonstrated that English morphological awareness did not associate with sentence-level Sinhala reading comprehension. The results suggested that cross-language associations between morphological awareness and reading comprehension differ depending on the language background and level of reading comprehension: passage-level or sentence-level comprehension.

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**Keywords:** Adult Learners, Cross-language, Morphological Awareness, Reading Comprehension, Second Language



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### INTRODUCTION

Reading comprehension is an integral skill that is required in many aspects of society and many individuals need to master it. The goal of developing reading skills is to improve one's understanding of language and its various components such as phonology, morphology, syntax, semantics, grammatical structure, and vocabulary knowledge. Reading comprehension is a multi-component and conscious process (Snow, 2002; Wurr, 2003; Yang, 2006) that involves the reader's interaction with the text and with thought and language (Harris & Hodges, 1995; Goodman, 1970) and as a result, it is a complex process. Therefore, comprehending texts is a challenge for both children and adults, and cross-language transfer, which is defined as "the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired" (Odlin, 1989, p. 27), has been focused on in reading literature to address this challenge.

### LITERATURE REVIEW

In reading literature, it has been argued that first language or previous linguistic awareness potentially assists in the process of receiving or producing meaning in a second language or a new language. For example, Clarke, (1980) and Cummins, (1981) argued that readers strategically handle the

difficulties of reading comprehension by transferring their first language reading skills to their second language reading skills. In line with this, Royer & Carlo (1991) argued that reading skills of a second language largely depend on reading skills of the first language and prior linguistic ability can help readers in acquiring meaning in a new language. They claimed that reading skills of languages are interrelated. In consistent with this, Goodman (1976) explained that the reading process is similar in all languages, with the exception of the grammar structures and writing systems. In particular, he argued that the reading approaches that are used in the first language and a second language are similar in nature. In line with this view, Tang (1997) examined the relationship between the first language (Chinese) and second language (English) reading processes and revealed that the strategies used by Chinese speaking learners to comprehend written texts are similar to the strategies used by second language learners to comprehend written texts. Furthermore, Lee and Musumeci (1988) claimed that readers can use the reading skills of their first language in the process of second language reading comprehension. As reading skills are similar or interconnected across languages, it can be argued that reading skills are commonly assimilated across languages. As a result, it is possible to argue that reading skills learned in one language be transferred to reading comprehension in another language. In

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recent years, researchers (Wang et al., 2006l; Ramírez, Chen, & Pasquarella, 2013; Koda, 2000; Jarvis & Pavlenko, 2008; Chow, McBride-Chang, & Burgess, 2005) have argued that various properties of linguistics skills such as morphological awareness, phonological awareness, metalinguistic awareness, orthography, and syntax can be transferred across different languages during the reading comprehension process. However, among these aspects, little attention has been paid to the role of cross-linguistic morphological awareness between L1 and L2 reading comprehension. The role of cross-linguistic morphological awareness between L1 and L2 reading comprehension has been investigated in only a few studies (Memiş, 2019; Fumero & Tibi, 2020; James, Currie, Tong, & Cain, 2021; Jarvis & Odlin, 2000). Therefore, more studies are required to research the role of cross-language morphological consciousness in reading comprehension between L1 and L2. Awareness of the morphemic structure of words is often perceived as a way to allow readers to identify familiar units in unknown words (Carlisle & Feldman, 1995). It can also enable readers to recognize and manipulate the structures of words and mentally reconstruct the meanings of words (Kieffer et al., 2013; Kieffer & Lesaux, 2012) and help the reader to comprehend the syntactic features in new words in the process of retrieving meaning from written text (Perdijk, Schreuder, & Verhoeven, 2005; Carlisle, 2000; Carlisle & Fleming, 2003).

Researchers (Kuo & Anderson, 2006; Jeon, 2011; Wade-Woolley & Geva, 1999; Carlisle, 2000; Haomin & Koda, 2018; Kieffer et al., 2013) argued that recognizing morphological structure in words can be helpful to the reader in understanding the functions of unfamiliar words in reading comprehension across languages as well as within languages, and they proposed the aspect of morphological awareness transfer to be considered in studies of language learning and teaching. In reading literature, it has been suggested that morphological awareness is cross-linguistically related to reading comprehension in different languages (L1 and L2) which have similar morphological structures and noticeably different morphological structures (Ramírez, Chen, & Pasquarella, 2013; Lam, Chen, & Deacon, 2020; Vaknin-Nusbaum, & Saiegh-Haddad, 2020; Wang et al., 2006; Wang et al., 2009; Schiff & Calif, 2007). However, only a few pairs of languages have been studied so far: English and Arabic (Saiegh-Haddad & Geva, 2008), English and Korean (Wang et al., 2009), Spanish and English (Ramrez et al., 2013), and Chinese and English (Jie et al., 2010; Wang et al., 2006). For instance, among Korean students speaking English as a second language, Wang et al., (2009) investigated the cross-linguistic morphological associations with word reading and reading comprehension. In this study, the results indicated that even though morphological awareness is cross-linguistically related to word



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reading, it did not associate with reading comprehension. This study is consistent with the study of Deacon et al., (2007) that focused on the cross-linguistic relationship between reading and morphological awareness in French and English students. According to the findings, reading French was significantly associated with English morphological awareness, and reading English was significantly associated with French morphological awareness. They also indicated that cross-linguistic transfer could happen between different writing systems and suggested that the effects of English language morphological awareness may be influenced by different writing systems. Furthermore, studies (Wang et al., 2005; Wang et al., 2006; Pasquarella et al., 2011) suggested that cross-linguistic transfer can occur between alphabetic and non-alphabetic languages (e.g., English and Chinese). They argued that such transfer can occur between both comparable writing systems (e.g., English and Spanish), and different writing systems (e.g., English and Chinese). Chinese and English use different writing systems. Characters are mapped onto a grapheme and a syllable in Chinese, and therefore are 'morpho-syllabic'. As opposed to this, English has an alphabetic writing system, where each letter corresponds to a phoneme. According to Wang et al., (2006) and Deacon et al., (2006), morphological awareness may associate with a more competent language with a considerably weaker language.

Additionally, morphological awareness is thought to be transferred from a language with a more complex morphological system (e.g., Arabic, Hebrew) to a language with a simpler morphological system (e.g., English). Therefore, more research is needed since there is a possibility of morphological transfer even between typologically dissimilar languages such as Sinhala and English, and cross-linguistic morphological association to reading comprehension which is not well explored.

Both the Sinhala and Tamil languages are the official languages of Sri Lanka. The Sinhala language is also known as Hela or Elu. Although both Sinhala and Tamil are spoken in Sri Lanka, the majority of the population speaks Sinhala (Jayaweera & Dias, 2014; Letterman, 1994; Disanayaka, 2012). The Sinhala language is a branch of the Indo-European language family (Fairbanks, 1968; Disanayaka, 2012) and originated from two Indian classical languages namely Sanskrit and Pali. Furthermore, this language has been influenced by a variety of European languages that were introduced to Sri Lanka respectively during the early 16th century (Chandralal, 2010). After Sri Lanka gained its independence from the British in 1948, this language was used in different domains. This resulted in the language's development, which is evidenced by its numerous grammatical structures and words. The smallest unit in a language is called a



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morpheme. In the Sinhala language, words contain at least one morpheme, as in most other languages. The morphemes in Sinhala display various grammatical distinctions such as definite-indefinite differences, the time, the case, dative, and the negative and interrogative difference and as a result, one morpheme can provide deeper knowledge about the words (Fernando and Weerasinghe (2013); Herath et al., 2007).

Despite the fact that morphological awareness transfer has been studied among early grade students, mid-primary students, and upper-middle school students (Schiff & Calif, 2007; Deacon, Wade-Woolley, & Kirby, 2007), little is known about the association between morphological awareness and reading comprehension among adult learners. Additionally, the question is whether these findings can be generalized to adults since their exposure to language is different from children. Currently, as far as research is concerned, no research study that studies the transfer of morphological awareness of the Sinhala language to other languages was located. Therefore, this study aims to investigate if this transfer occurs among adult second language (English) learners studying in a university in Sri Lanka. This study may support the need for higher education institutions to improve the literacy of their students and help the English learning efforts of local Sinhala speakers. Moreover, the findings of this study extend the

research in the field of morphological awareness and second language literacy development. The findings of this study provide an enriched field of research that addresses the issues related to morphological awareness transfer among new language communities.

### RESEARCH QUESTIONS

- (i) Does morphological awareness of the Sinhala language (L1) have a relationship with reading comprehension of the English language (L2)?
- (ii) Does morphological awareness of the English language (L2) have a relationship with reading comprehension of the Sinhala language (L1)?

### RESEARCH METHODOLOGY

#### Participants

The study involved 189 Sinhala speaking undergraduates who learn English as a second language in a State university in Sri Lanka. They were volunteers who gave their informed consent before participating.

#### Measures

In order to gauge the participants' reading comprehension and morphological awareness, eight measures: four in Sinhala and four in English were used. The demographic



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information of the participants was also collected using a questionnaire.

The researcher developed the English sentence level reading comprehension measure based on the website English Marven (<http://englishmaven.org>). Other English measures used in this study were obtained with permission from the authors cited in the literature (Curinga, 2014; Brooks et al., 2004). When the study was conducted, standardized Sinhala measures were not available. As a result, the researcher developed the Sinhala measures based on the English measures and their testing procedures. The Sinhala measures were developed using past test papers, textbooks as well as Disanayaka's book *Pada Nirmanaya* (word creation) published in 2014. The measures were reviewed by experts who had spent many years teaching the Sinhala language to undergraduate students. The reviewers' comments were used to improve the measures. Finally, pilot studies were carried out and the measures were revised based on the statistical results of the studies with groups of students within the university population similar to those who would be targeted for the main study.

In the passage reading comprehension measure, the participants were asked to read each passage and write short answers for the questions (open-ended) based on the passage. All of the questions were passage-based, with some requiring memory of details from the passage and others requiring an

inference. The participants could not predict the correct answer if they did not read and understand the passages. The questions and passages were presented separately on the test sheets. When the questions were answered, the test takers were not permitted to turn the pages back. The objective of this test was to determine how much information a student could retain and comprehended. The test consisted of four passages followed by comprehension questions, with passage lengths (from 150 to 300 words on average) and grade levels gradually increasing throughout the test. The goal of the exercise was to measure text reading comprehension levels, hence participants were not penalized for misspellings or grammar mistakes during the marking process. When it came to scoring this activity, a correct answer received one point, while an incorrect answer or a blank indicating no answer received zero.

The reading comprehension (Cloze) measure was used to determine how well participants could comprehend texts at sentence level (Williams, Ari, & Santamaria, 2011). Participants were given a list of sentences and were required to pick the most appropriate word or phrase to interpret the sentence. They were required to determine which word or phrase was semantically appropriate to each sentence. In this way, participants were unable to easily solve the items based solely on their grammar knowledge. For this task, an answer that was correct



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was awarded one mark, while an incorrect answer, or an unanswered sentence, was awarded zero. Reading comprehension at the sentence level was selected as opposed to passage-level reading comprehension. Linking large sections of text was less of a requirement for this measure than it would have been for the passage-level reading comprehension measure. Therefore, the two measures together allow for the assessment of both passage- and sentence-level comprehension.

The morphological awareness of participants was assessed using two different morphological awareness measures in both English and Sinhala: Word Structure and Morpho-Syntactic Structure.

Word Structure Measure was designed to examine the participants' awareness of the association between words and their internal morphological structures (Feldman and Andjelković, 1992). The test had two pairs of words followed by the words "YES" and "NO". Participants were asked to circle the word "YES" if they thought that the second term came from the first word. If they thought that the second word did not derive from the first word, they had to circle the word "NO". In this measure, only half of the pairs of words had semantic similarity. A right response received one point, whereas an inaccurate response or a blank denoting no response received zero points.

To examine participants' morphological awareness on a syntactic level, the Morpho-Syntactic Structure Test was designed. The measure assessed test takers' understanding of syntactic structure of words in context. For this test, each sentence was followed by four words from the same family (noun, verb, adjective, adverb, etc.), each ending in a different suffix. The participants were required to circle the word that best suits the blank. A right response received one point, whereas an erroneous response or a blank signifying no response received zero points.

In order to determine the reliability of each measure, Cronbach's Alpha reliability indices were computed. Reliability ratings were acceptable for each measure (greater than 0.77). After reliability calculations, Pearson correlations were computed to determine the degree of association between the common construct reading comprehension and morphological awareness within and across languages. The results indicated that these measures are assessing common predicted constructs.

Reading comprehension of one language was significantly correlated with the morphological understanding of the other language. Although the measure of sentence-level Sinhala reading comprehension showed good correlations with the other measures, the passage-level Sinhala comprehension measure did not show



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any correlations with them. It was noted that the underlying skills used in the passage-level Sinhala reading comprehension assessment were problematic; that is, this measure may have contained skills that were not commonly used in the comprehension of written texts. As a result of lack of expected construct validity (see: Fuchs, Fuchs, & Maxwell, 1988; Greene, 2001), the scores of all the measures except the Sinhala reading comprehension passage-level test were analysed to find potential solutions to the research questions of the study.

## RESULTS AND FINDINGS

Hierarchical regression analysis was used to examine the relationship between Sinhala morphological awareness and English sentence-level reading comprehension. In this analysis, the measure of English sentence-level reading comprehension was the dependent variable whereas the measures of Sinhala morphological awareness were the independent variables.

During the analysis, variables were entered in a particular order. As a first step, the variables age (in years) and gender were entered as controls. Thereafter, English morphological awareness tests were entered, and they were able to explain 63% of the variance in English reading comprehension. The Sinhala morphological awareness measures were then entered and the analysis

indicated that these measures were statistically significant. A significant increase of 3% was observed in the level of prediction of English reading comprehension when Sinhala morphological awareness was included. The results indicated that the addition of Sinhala morphological awareness improved the ability to predict English sentence-level reading comprehension.

Similar analysis was conducted to determine if Sinhala morphological awareness predicted passage-level English reading comprehension. A specific order was used for entering the variables. In order to control the effects, gender and age (in years) were entered first, then tests of morphological awareness were entered. It was demonstrated that although the English morphological awareness measures were statistically significant, the Sinhala morphological awareness measures were not statistically significant. Furthermore, the analysis revealed that English morphological awareness accounted for 54% of the variance in passage-level reading comprehension in English. This analysis found, however, that Sinhala morphological awareness did not explain a significant portion of the variance in passage-level comprehension of English. Overall, the findings suggested that English passage level reading comprehension was not associated with Sinhala morphological awareness. Sinhala morphological awareness improved





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the level of prediction of sentence level English reading comprehension, so further analyses were performed to determine if cross-linguistic relationship occurs in both directions: Sinhala to English and English to Sinhala. First, the variables: gender and age were entered in step 01 and the variables of Sinhala morphological awareness were entered in step 02. Finally, the variables of English morphological awareness were entered at step 03. According to the results, Sinhala sentence level reading comprehension does not seem to be influenced by English morphological awareness.

Overall, it is apparent that Sinhala morphological awareness predicts variability in English reading comprehension at the sentence level but does not predict variability at the passage level. Furthermore, the findings demonstrated that sentence-level Sinhala reading comprehension was not influenced by English morphological awareness. These findings suggest that the cross-language association between morphological awareness and reading comprehension in these two languages is influenced by the level of reading comprehension as well as the learners' language backgrounds (L1 and L2).

## DISCUSSION

The current study was conducted to determine whether there is a cross-language relationship between

morphological awareness and reading comprehension in English and Sinhala. The results indicated that if this occurs, it has only a unidirectional relationship between L1 and L2, and it may be confined to sentence-level reading comprehension. The result of this study is in line with the study of Wang et al. (2009). Wang et al. argued that learners of Korean (L1) speaking English as a second language do not transfer their morphological awareness to L2 passage-level reading comprehension. The two languages: Korean and Sinhala, have similar orthographies and are both agglutinative languages. Both the Korean and Sinhala languages have rich derivational morphology and their morphological systems are comparable in terms of structures and function. Additionally, their suffixes carry more syntactic functions compared to the English language. As in the Sinhala language, the Korean language is also complex in terms of its morphological system and it has a large number of morphological variations for many verbs and nouns (Wang et al., 2009). The Sinhala language also has a great deal of morphological variation in verbs and nouns (Herath et al., 2007; Chandralal, 2010). The results suggest that the cross-language transfer directions are influenced by morphological properties of the language.

In contrast to the study conducted by Wang et al. (2009), in which participants were the third and fourth grade students, this study involved

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adults. As a result, comparing two groups is challenging because their levels of experience and proficiency may vary. In discussing these results, it may be beneficial to consider participants' ages, as morphological awareness enhances as age progresses (Nagy et al., 2006; Katz, 2004; Carlisle, 2000). Because of the distinction in exposure to language and written word among adults and children, the association between morphological awareness and understanding written texts can be different in adults and children (Koda, 2008). The association between morphological awareness and understanding written texts may be influenced by exposure to language across orthographies. All of the participants in this study were native Sinhala speakers and first-year university students (aged 19-24). They had been studying for 13 years in Sri Lankan schools, receiving both primary and secondary education. Therefore, given the participants' ages and educational background, it is likely that they had good Sinhala literacy and morphological abilities, which may contribute to their ability to read in any language.

However, there have been research that have produced results that are inconsistent with the findings of the current study. For instance, Deacon et al. (2007) argued that when the language proficiency level increases, the correlation between cross-language morphological awareness and reading comprehension (for French and

English-speaking children) can be changed. In this light, one possible explanation for the lack of morphological awareness transfer from Sinhala to English reading comprehension could be the readers' inadequate proficiency in the English language. In consistent with this view, Krashen and Terrell (1983) suggested that learners could rely on L1 rules to receive meaning when new knowledge (L2) has not yet been fully formed. In the process of L2 reading comprehension, learners with limited L2 experience may rely on L1 morphological awareness. In line with this view, (Deacon et al., 2007 and Wang et al., 2006) suggest that the direction of transfer depends on individuals' language proficiency. In accordance with this notion, while Schiff and Calif, (2007) and Wang et al., (2006) emphasized that learners' proficiency in the L2 language has a direct impact on the cross-language relationship between morphological awareness and reading comprehension, Upton and Lee-Thompson (2001) claimed that the importance of the L1 (Chinese and Japanese) decreases as L2 (English) proficiency increases. They argued that less proficient students tend to rely on (L1) Chinese or Japanese in L2 (English) reading comprehension. Further, Lee and Schallert (1997) suggested cross-language transfer occurs depending on the level of proficiency of the L2. This conclusion was based on the findings of a study conducted with Korean L1 students in middle and high school.

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Consequently, it is also possible to argue that language proficiency is another key factor that can influence the cross-linguistic association between morphological awareness and reading comprehension, in addition to the morphological system of the language. According to (Walisundara & Hettiarachchi, 2015; Wijewardene, Yong, & Chinna, 2014), Sinhala speaking ESL learners' English language proficiency is low. Furthermore, Subjects Grades Statistics published by the Department of Examinations of Sri Lanka – (2017) indicates a 60 percent of a failure rate in the General Certificate of Education (Ordinary Level English) and the Advanced Level Examinations (General English) within the period 2014-2016. Therefore, it seems that L2 proficiency of the participants of this study is not at a satisfactory level. However, future research which focus on cross-linguistic transfer needs to take language proficiency into consideration.

Although morphological awareness may contribute to the cross-linguistic transfer, consistent with Comeau et al., (1999), it can be argued that morphological awareness of English may not support reading comprehension in Sinhala until the ESL learners acquire sufficient knowledge of the L2.

When learners have similar proficiency levels in the two languages, bidirectional transfer may be possible. Similar to this view, Jie et al., (2010)

argued that high-proficiency learners could transfer morphological knowledge from one language to another (English) in the process of reading comprehension, but that reverse transfer was only possible among high-proficiency learners. Furthermore, in consistent with this notion, Schiff and Calif (2007) and Saiegh-Haddad and Geva (2008) found that more competent L1 learners transfer their awareness of morphology in the process of reading comprehension than the less competent L2 learners. Therefore, based on the findings of the current study, it can be argued that cross-linguistic morphological transfer may vary depending on the learners' language abilities. It seems that the Sinhala L2 learners whose language abilities did not reach the competency level may not have been able to obtain the benefit of their L2 morphological awareness when they read in their native language. In line with studies (see also Liu, Bates, & Li, 1992; Hernandez, Bates, & Avila, 1994), it appears that even though L1 and L2 may share comparable linguistic features, depending on the language ability of the learners, cross-linguistic transfer of morphological awareness may differ.

Despite the fact that Sinhala (L1) morphological awareness contributed significantly to English (L2) reading comprehension among Sinhala ESL learners, English morphological awareness had no significant impact on Sinhala reading comprehension. This



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finding may be explained by the fact that morphological awareness and reading comprehension cross linguistically are associated because of the learners' language skill level. Before transferring across languages, a specific level of linguistic proficiency may be required. However, in this study, whereas Sinhala morphological awareness is associated with sentence-level English reading comprehension, it is not associated with passage-level English reading comprehension. Although linguistic proficiency may influence on morphological awareness transfer across languages in the process of reading comprehension, it seems that this transfer depends on the type of reading task the individual is working on. As a result, characteristics including language competence and the type of reading measurements should be considered in future language transfer studies. The present study adds to our understanding of the relationship between morphological awareness and reading comprehension across languages, particularly when it comes to adult Sinhala speakers learning English as a second language. The findings support previous research that has found that morphological awareness in one language associates with reading comprehension in another language. However, even though this study focused on the association between morphological awareness and reading comprehension, it did not explore the causal relationship between morphological awareness and reading

comprehension. This study, therefore, cannot make any causal claims about cross-language morphological awareness transfer. Longitudinal and intervention studies are certainly needed in future research to establish the directionality of the association between morphological awareness and reading comprehension in both Sinhala and English.

## CONCLUSION

The aim of this study was to examine the cross-linguistic relationship between morphological awareness and reading comprehension among adult Sinhala speaking English language learners. In this study, there was no evidence that English morphological awareness supported Sinhala reading comprehension, although Sinhala morphological awareness supported English reading comprehension. The results contribute to the existing understanding of the behaviour of morphological awareness of one language in the process of reading comprehension in another language. Overall, such findings contribute to reading literature and may support the development of reading models in general and the development of reading comprehension skills in language learners in particular.

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