# Relations between Morphological Awareness and Disciplinary Literacy in Inclusive Social Studies/ History Classrooms Among Young People With and Without Learning Difficulties

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*The aim of this cross-sectional study was to examine the contribution of morphological awareness to the prediction of content-area vocabulary knowledge and understanding of historical terms. The target group consisted of 35 university students with or without learning difficulties (LDs), in Years 1–4, enrolled in a teacher education program. Because there are no standardized measures of morphological awareness and content-area vocabulary for university students in Greek, such measures were developed and validated. The results showed that students' performance in morphological awareness is related to their performance in understanding historical terms irrespective of student achievement status. This study makes theoretical, empirical, and practical educational contributions. It shows the relationship between morphological awareness and content-area vocabulary as well as establishes the plausibility of a long-lasting link between morphological awareness and historical understanding. In practice, this study contributes valid measures for assessing morphological awareness and historical understanding in Greek at the university level.*

*Keywords:* **morphological awareness, vocabulary knowledge, university students, learning difficulties, disciplinary literacy**

## INTRODUCTION

In the field of history and social studies, students are required to use discipline-specific strategies such as developing higher-order thinking and reasoning skills to successfully read and understand history sources (e.g., Bulgren et al., 2013; Monte-Sano et al., 2017; Rainey et al., 2018). Young people need support to independently engage in discipline-specific strategies (e.g., Damico et al., 2009; De La Paz et al., 2017; Reisman, 2012). To acquire these strategies is especially challenging for students with learning difficulties (LDs) who require explicit reading and writing instruction in each discipline (International Literacy Association, 2017; Kent et al., 2015). More specifically, young adult populations with LDs or at risk for LDs struggle with content area reading and writing because they lack basic literacy skills that are essential for developing discipline-specific strategies (Faggella-Luby et al., 2012). For example, students with LDs or at risk for LDs face significant challenges in reading comprehension, on which historical reasoning often relies (Ciullo & Dimino, 2017).

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One can see that using discipline-specific strategies proficiently calls for strong foundational and metacognitive skills (Okolo & Kopke, 2013). The development of key literacy skills promotes disciplinary learning because the ability to read text for understanding and write argumentative texts is fundamental to the social studies curriculum. In developing these advanced literacy skills, morphological awareness—that is, the ability to identify and manipulate the smallest units of meaning within words, called morphemes—is of paramount importance (Pittas & Nunes, 2014).

This paper discusses the role of morphological awareness in disciplinary literacy, focusing on supporting young people with LDs or at risk for LDs to help them develop strategies that promote reading for understanding and writing in social studies.

### The Contribution of Discipline-Specific Strategies to Learners' Discipline-Specific Learning in the Field of Social Studies

Students with LDs or at risk for LDs often face difficulties with tasks concerned with higher-order processing because of the lack of mastering basic literacy skills and comprehension strategies (Lee & Spratley, 2010). Consequently, this influences their later performance in using discipline-specific strategies such as higher-order reasoning, text understanding, information organizing, concept understanding, etc. as the transitions between different stages of education (elementary school–middle/high school–higher education) involve the transition from "learning to read to reading to learn" (Bulgren et al., 2013; Goldman, 2012; Lee & Spratley, 2010). These advanced and more sophisticated/specialized literacy skills (content area literacy skills), as required from young people, are used within each academic discipline/content area to understand complex discipline-specific texts (Shanahan & Shanahan, 2012).

Reading subject-specific texts such as historical texts is a major challenge for young people with LDs or at risk for LDs because disciplinary texts are characterized by increasing complexity; thus, vocabulary knowledge is essential in reading comprehension. Writing subject-specific texts is another major challenge for this group of students as planning, reviewing, and organizing are essential higher-order elements in the writing process. Therefore, if students have not yet mastered reading and writing, they have difficulties in processing higher-order historical thinking skills.

Education policies to address the above challenges have proposed the integration of literacy in the disciplines (disciplinary literacy) and have put forward ways of reading, writing, and thinking that are embedded in content teaching (Wissinger et al., 2019). In meeting these disciplinary literacy challenges, it is deemed appropriate that university students/young adults, with or without LDs, who are enrolled in teacher education programs are trained both in developing content area literacy skills and in using disciplinary literacy tools that are used by subject matter experts (Shanahan & Shanahan, 2012). Therefore, in the field of social studies, they will be able to use reading and writing not only to boost their understanding of discipline-specific texts but also to use specialized approaches. From this perspective, the field of social studies and history and the field of literacy can be combined so that each can compensate the other to successfully support students with LDs or at risk for LDs (Wissinger, 2018). To this end, disciplinary historical literacy can be integrated into the curriculum so that students, through the use of primary sources, learn

how to interpret the past, how to comprehend conflicting source documents, and how to write historical arguments (Learned, 2018; Wissinger & Ciullo, 2018). With regard to young adolescents with LDs or without LDs, studies reveal that discipline-specific strategies contribute to historical literacy skills. Kinder and Bursuck (1993) examined the connection between disciplinary literacy instruction and reading comprehension. Lower secondary school students with LDs (N = 24) and teachers (N = 3) participated in the intervention sessions, which lasted for three to six weeks. The students practiced taking notes, constructing timelines, and determining vocabulary meaning. The study reports significant effects on the students' reading for understanding historical texts. Similarly, De La Paz (2005) investigated the effect of disciplinary literacy instruction on students' performance in writing argumentative history texts. The students (N = 70) were in their final year of middle school (eighth grade) and received historical reasoning and writing instruction for 12 days and 10 days, respectively. When the student outcomes were scored for length, persuasive quality, number of arguments, and historical accuracy, the results showed significant progress in the students' writing and historical reasoning. This is in line with other studies that showed that subject-specific strategies for historical reading, writing, and thinking promote critical reading and writing (e.g., Wissinger, 2018).

Another kind of intervention program designed to enhance disciplinary literacy in social studies is the "think before reading, think while reading, think after reading" (TWA) method. Instruction in TWA helps students apply discipline-specific comprehension strategies and develop independent reading skills. Using a randomized controlled trial, Mason et al. (2013) developed an individualized program for improving the reading comprehension performance of students with LDs. Fourth-grade students (N = 77) received subject matter instruction in reading and writing. The students were pre- and post-tested in a standardized reading test and in semantic and syntactic measures. The findings showed that the students in the intervention group significantly outperformed the students in the control group in reading comprehension and in writing social studies texts.

Wissinger et al. (2019) developed an intervention study focusing on historical literacy. The intervention sessions included instruction on how to build background knowledge, how to analyze historical sources, and how to construct history arguments. The sixth-grade students, with and without LDs (N = 187), were pre- and post-tested in a 20-item multiple-choice test for examining their subject matter understanding, in a quantitative measure for examining their written texts, and in a reading comprehension test. The results indicated that all the students performed significantly better in reading historical sources, in writing in a historical context, and in reading comprehension. Similarly, Fenty and Brydon (2017) examined the causal connection between disciplinary literacy instruction and content knowledge. Third-through fifth-grade students (N = 47) with or at risk for learning disabilities received training in content literacy instructional strategies focusing on comprehension and vocabulary—e.g., teaching sessions in science and social studies included text prediction strategies to facilitate comprehension. The instructional sessions took six to eight weeks, and the students were assessed in content pre- and post-tests. The results showed that the students achieved significantly better scores in content knowledge across all content areas.

With respect to late adolescents, Reisman (2012) examined the contributions of explicit disciplinary strategies of historical reading to the development of higher-order thinking skills in history learning by carrying out a quasi-experiment control study. The 11th-grade students (N = 236), assigned to either an experimental group or a control group, were pre- and post-tested in (1) historical thinking, (2) transferring historical thinking strategies to current situations, (3) mastering factual knowledge, and (4) general reading comprehension. The six-month intervention, "Reading Like a Historian," consisted of 83 history lesson plans aimed to enhance the students' skills in sourcing, contextualization, corroboration, and close reading by meticulously examining the author's word choice and historical thinking and by carefully assessing the author's probity and interpreting historical texts. The intervention sessions (two to three sessions per week) were delivered by teachers in their classrooms who attended four-day training. The results demonstrated that the intervention group outperformed the control group in two historical thinking measures, in factual knowledge and in reading comprehension. The results of this study are robust in showing that the explicit teaching of disciplinary strategies of historical reading improves students' historical thinking skills.

Similarly, Kent et al. (2015) conducted an experimental study to examine the impact of team-based learning (TBL) practices on content acquisition (U.S. history) for 11th-grade students with LDs attending social studies classes in public schools. The students (N = 24), identified as having specific learning disability (SLDs) or speech and/or language impairment (SLI), were randomly assigned to either an experimental group or a control group and were pre- and post-tested in content knowledge and in reading comprehension. Students identified by the school as higher-proficiency readers were excluded from the sample. The intervention sessions, which required the students to apply critical thinking and content knowledge for problem solving, were implemented within three 15-day cycles and were delivered by teachers in their classrooms who attended one-day training. The results demonstrated that the students with LDs, after controlling for prior knowledge, made significantly greater gains in content-area vocabulary when learning with TBL than the control group. The findings of this study provide evidence for a link between TBL practices and content-area vocabulary knowledge for struggling learners who made gains even in a short period.

Monte-Sano and De La Paz (2012), in a cross-sectional study, examined the contribution of writing prompts to the quality of students' written arguments. The 10th- or 11th-grade students (N = 101) were tested in four document-based writing tasks related to the Cold War: (1) imagining yourself as a historical agent (situated prompt), (2) considering the authors' motivations or purposes (sourcing prompt), (3) corroboration (document analysis prompt), and (4) causation (causal prompt). Multiple regression analysis showed that the writing tasks significantly accounted for 31% of unique variance in the quality of the students' historical reasoning after controlling for differences in the students' backgrounds. A more detailed analysis, using MANOVA, showed that writing prompts related to sourcing, document corroboration, and causation are better predictors of adolescents' attention to historical perspectives than tasks that prompt students to write first-person essays as they imagine themselves as historical agents. Overall, the findings suggest that

argumentative writing and "writing to learn" tasks boost students' historical reasoning and discipline-specific learning.

Taken together, the above studies suggest that discipline-specific strategies such as determining vocabulary meaning, using historical reasoning skills, applying close reading, argumentative writing, etc. contribute to discipline-specific learning and historical literacy/thinking skills such as reading for understanding historical texts, writing in a historical context, reading comprehension, content knowledge, and content-area vocabulary knowledge. Morphological awareness is arguably relevant to disciplinary literacy because students' awareness of morphemes, the smallest unit of language that conveys meaning, predicts word reading, reading comprehension, and spelling. As the above studies show, although students with LDs and at risk for LDs struggle to learn to read and write, they learn to comfortably read and write as historians after appropriate instruction, especially in vocabulary knowledge, is provided. In the following section, we specifically discuss how morphological awareness is linked to developing students' discipline-specific strategies, such as academic vocabulary.

### *Morphological Awareness and its Contributes to Students' Discipline-Specific Strategies*

This section reviews studies that have examined the connection of morphological awareness with reading/spelling and vocabulary in different languages. The studies extend research that targets the development of disciplinary literacy in the context of social studies in an attempt to support students with or without LDs.

Nunes et al. (2012) argued that the use of morphemes as units in reading impacts comprehension because morphemes include meaning in the decoding process. In a longitudinal study with a large sample of English children (N = 5,838; mean age 9–10 years), they found that morphological knowledge predicts comprehension over a period of four years. Thus, morphological awareness may also contribute to predicting disciplinary literacy if the measure involves comprehension and is not restricted to word recognition. Similarly, Carlisle (2000) found that for children (N = 60) in the third and fifth grades, coming from middle to upper-middle socioeconomic backgrounds, the test of morphological knowledge was significantly and moderately correlated with the reading comprehension test. Therefore, both studies suggest that morphological knowledge is related to vocabulary and reading comprehension.

Casalis and Louis-Alexandre (2000) studied the longitudinal connection of morphological knowledge and learning to read in French. Children (N = 50) were followed from kindergarten to the second grade. During kindergarten, the children were assessed in nonverbal ability through a vocabulary test in which they were asked to choose from four pictures the one that matched the word they heard. During the first grade, the children were assessed in word reading, and during the second grade, they were assessed in both word reading and reading comprehension. The morphological and phonological awareness measures were given in kindergarten. These measures consisted of a number of subtests and examined the children's knowledge of the derived and inflected forms of verbs and nouns. For example, in a sentence completion task, the children had to give the derived form of the word

"repair" (i.e., "A man who repairs is a ——"); in an oral task, the children had to give the inflected form of a noun or a verb given orally by the researcher (i.e., the feminine form of the word "un boulanger" is "une boulangere," "a baker"). A stepwise regression analysis examined whether morphological awareness during kindergarten predicted performance in reading during the first and second grades. The results showed that age, IQ, vocabulary, and the syllable deletion task explained 30% of variance in word reading during the first grade, while morphological awareness accounted for an additional 5.7% of variance. The second regression analysis showed that age, IQ, and vocabulary explained 30.7% of variance in reading comprehension during the second grade, while morphological awareness accounted for an additional 22% of variance. The results of this study showed that there is a connection between morphological knowledge and reading in French.

In a longitudinal study, Pittas and Nunes (2014) examined the contribution of morphological awareness to the prediction of reading and spelling in Greek. The target group (N = 404) consisted of children aged six to nine years at the start of the project. The children were assessed in morphological awareness measures, in phonological awareness measures, and in reading and spelling tests. A concurrent analysis of the first wave of data collection showed that morphological awareness made a unique contribution to the prediction of reading and spelling in Greek. The longitudinal analyses showed that morphological awareness predicted performance in reading eight months later, even after partialling out the effects of grade level, verbal intelligence, phonological awareness, and initial scores in reading and spelling. This study makes theoretical and empirical contributions to disciplinary literacy. It shows the long-term and specific relation of morphological awareness with reading and establishes the plausibility of a causal link between morphological awareness and reading, which must be tested in further research using intervention methods. Thus, morphological awareness tasks can be used in history and social studies classrooms to help students with LDs grasp the meaning of words and read for understanding.

As far as young/late adolescents are concerned, Lesaux et al. (2014) conducted an intervention study by means of a Cluster-Randomized Control Trial with linguistically diverse adolescents. The sixth-grade students (N = 2,082), identified as students with low academic performance, received 20-week classroom-based training in academic vocabulary and were pre- and post-tested in standardized and researcher-developed tests in the areas of vocabulary, morphological awareness, reading comprehension, and writing. The 50 teachers, who received professional development training prior to the intervention implementation, were randomly assigned to the treatment or control group. The intervention sessions lasted for 45 minutes per day and involved instructional practices related to vocabulary, reading comprehension, and writing development and instruction. The results indicated that the students significantly improved in written language skills, academic vocabulary knowledge, comprehension of discipline-specific texts, and morphological awareness skills. This result is particularly noteworthy if we consider that morphemes, as language units, convey meaning and thus can help students in reading/writing learn for academic success in each discipline.

Goodwin (2015) further examined the link between morphological instruction and the understanding of discipline-specific texts. Fifth- or sixth-grade

students (N = 203) were randomly assigned to the intervention group (N = 110), receiving training on morphological problem solving within comprehension strategy instruction, or the control group (N = 90), receiving training on comprehension strategy instruction. The students were pre- and post-tested in vocabulary, reading comprehension, word reading fluency, and morphological awareness. Ten researchers with teaching experience delivered the four 30-minute intervention sessions. The results revealed that the intervention group significantly outperformed the control group in vocabulary knowledge and morphological awareness. It is worth noting here that whereas the training sessions were useful for all the students, they were most beneficial for the lowest-proficiency readers.

In the same vein, Collins et al. (2020) carried out an experimental study to examine the effects of morphological instruction on reading and writing for adolescent students with LDs attending a clinical summer camp. The students, identified as having reading and/or language disorders, participated in a two-week summer camp and were pre- and post-tested in vocabulary, syntax, story grammar elements, and spelling. They received lessons targeting morphological awareness related to Latin and Greek roots (target roots in isolation—e.g., which word roots come from Latin or Greek to help students determine the meaning of unfamiliar words), lessons using Latin and Greek roots contextualized in a writing activity, and lessons targeting morphological awareness in isolation through word building, word sorts, and word decomposition. The results showed that the students with LDs made significantly greater gains in reading and spelling when integrating morphological instruction. The findings of this study support the link between morphological awareness and literacy for struggling adolescents with literacy deficits.

In summary, the cross-sectional, longitudinal, and intervention studies showed that discipline-specific strategies (i.e., determining vocabulary meaning) contribute to struggling and non-struggling adolescents' discipline-specific learning (i.e., content-area vocabulary knowledge). An important conclusion is that morphological awareness contributes to both reading/spelling and the comprehension of discipline-specific texts, and as such, it can be a valuable resource for supporting young people with or without LDs in developing discipline-specific strategies for reading and writing to learn.

This overall pattern of results provides the basis for examining the hypothesis that young people's performance in morphological awareness (predictor measure) contributes to their performance in the content-area vocabulary knowledge/understanding of historical terms (outcome measure) irrespective of student achievement status.

## Method

### Participants

A sample of 35 Greek and Greek Cypriot university students, in Years 1–4, was recruited. The students are enrolled in a teacher education program in an accredited higher-education institution in Cyprus. All the students were invited to participate irrespective of any learning or language difficulties, which resulted in a total sample of seven students with low academic performance. According to

the university rules, students with a cumulative point average (CPA) below what is required for good academic standing (<2.0) are considered as struggling learners. We invited both student populations to participate as evidence shows that students, irrespective of student achievement status, make greater gains when receiving explicit instructions in discipline-specific strategies. All the participants read and write in standard modern Greek, which is the medium of instruction in Greek Cypriot institutions. The sampling strategy (cluster sampling) involved random procedures from all the class sections during the semester. The students were assessed early in the academic year, none refused to cooperate, and those who missed some of the tests did so because of illness (the dropout rate was low at 3%).

### Design

This cross-sectional study involved one phase of data collection. The study was carried out at one point in time to examine whether there is any connection among the variables. Cross-sectional designs provide ways for raising hypotheses and exploring the data in determining whether an association between variables exists and also for developing measures, examining their validity and reliability in a representative sample of the population (Cohen et al., 2017). Thus, the aims of this cross-sectional study were to first validate the new measures to be used in the study and to then examine the concurrent connection of morphological awareness with content-area vocabulary knowledge. The students were assessed in all the predictor measures (morphological awareness measures) and the outcome measure (content-area vocabulary knowledge/understanding of historical terms).

### Measures and Procedures

To obtain face validity, all the measures were selected after several discussions with experts in the field of social studies for students with LDs. The tasks used in this study were adapted from those developed by pioneers in the field (e.g., Berko, 1958) and have been tested by many researchers in different languages. The words included in the tasks were selected from Year 1–4 course books used at the university. The most commonly used words were based on the consonant–vowel (CV) syllabic structure. In the morphological awareness measure, pseudowords were included to make sure that the students had not come across the items before; these had the same syllabic structure as the real words. The construction of the pseudowords took account of the fact that Greek phonotactics has restrictions on which consonants are allowed in word-final position (Holton et al., 2004).

The tasks were developed or adapted for group presentation. The morphological awareness task was presented orally. The content-area vocabulary knowledge/historical terms' understanding test was developed as a judgment task. To develop a judgement task, correct as well as incorrect stimuli were used for avoiding response bias. To make the task less predictable, we used different numbers of correct and incorrect choices. During the assessments, the students were given no feedback.

The tasks were piloted with a group of typically developing students (N = 5) in Years 1–4. During the pre-pilot study, the first author, a native Greek Cypriot, confirmed that the students understood the test instructions easily and that there were no ambiguous items. The items in each task were randomly ordered and then

presented in a fixed order. In view of the novelty of the measures, for both tasks, a larger pool of items was created than the number to be used in further analyses; item reliability was examined, and items with a low level of discrimination or that are unreliable were discarded. After the unreliable items were deleted, six trials remained for each task, involving a choice between two alternatives.

The first author administered the tests during class time in the students' classroom, with the lecturer present only in a passive role. The same procedure was followed for both tests, which were carried out in each class over a period of 20–25 minutes. The tests were always given together on the same day, with a break of two to three minutes halfway through the tasks. The tests were administered within a single academic school year; testing for the whole sample took approximately three weeks. Prior to the beginning of each task, two to three examples were given as practice so that the students would understand what to do. In these practice trials, after the students had given their answers, the correct answer was presented. The students were given positive feedback for their responses, and the correct answer was briefly discussed with them. During the assessments, no comments were made on the students' answers.

**The predictor: morphological awareness measure**

**Judgment of pseudoword inflection.** This task used a sentence completion procedure following the paradigm developed by Berko (1958) for the inflection of pseudowords. The students heard two sentences; the first one was a complete sentence, and the second one was an incomplete sentence. For example, the item in Greek [(a) "Αυτή είναι μια ατελίνα"; (b) "Αυτές είναι δυο _____"] would be equivalent to [(a) This is a tox; (b) These are two toxes]. The task measures the students' ability to transform a noun from singular to plural and vice versa depending on case, number, and gender. The students could understand the gender of a pseudoword because the gender was indicated by the word ending in the first sentence as well as by the definite article in the second sentence. The correct choice scored one point, and two examples were presented prior to conducting the test. The students were instructed to produce in writing the missing pseudoword. Six trials were used (two masculine, two feminine, and two neutral nouns), and the transformations were from the nominative singular to the plural form and vice versa; five items were transformations from singular to plural and one from plural to singular. These differences between items did not affect the level of difficulty of the item: the mean proportion of success in singular to plural items was virtually the same as the proportion of success in plural to singular items (the correct proportion for both was between .75 and .80). The proportion of correct responses to the most difficult item was .52 and to the easiest item .80. The mean score was 4.06 (out of 6) with a standard deviation of 1.2, and the mode was 4. The negative skew score ($z = -1.17$) was not significant. The negative kurtosis score ($z = -0.37$) was also not significant. After discarding four items, Cronbach's reliability was .321.

**The outcome measure**

Content-area vocabulary knowledge/historical terms' understanding test

Words with prefixes whose spelling is determined by morphology were

selected for this test to examine whether the students use their morphological knowledge to determine the meaning of historical terms. The test involved judgment of whether the correct term had been used in each sentence. The answer sheets had two boxes for each trial, the first with the capital letter "Σ" signifying "correct" and the second with the letter "Λ" signifying "wrong." The students were instructed to circle "right" or "wrong" on their answer sheets, depending on whether the sentence containing the target historical term was right or wrong, respectively. Six trials were used; three right and three wrong judgments were presented. Items left blank were considered incorrect, and each correct choice scored one point. Two examples were presented prior to conducting the test.

The mean proportion of success in right and wrong judgment items was similar (the correct proportion for both was between .55 and .71) with the exception of one item where the students scored below 50% (.43). The proportion of correct responses to the most difficult item was .55 and to the easiest item .71. The mean score was 3.63 (out of 6) with a standard deviation of 1.6, and the mode was 4. The negative skew score ($z = -1.31$) was not significant. The negative kurtosis score ($z = -0.09$) was also not significant. After discarding four items, Cronbach's  reliability was .557.

## RESULTS

The tasks designed for this study were scrutinized through a preliminary analysis to examine the normality of the distribution, the item level of difficulty, and the item reliability. The reliability analysis identified items whose removal had a positive impact on the task reliability and items that were either too easy or too difficult, therefore contributing little to the discrimination among the participants. Table 1 presents the mean accuracy and percentage scores, standard deviations, and Cronbach's α for the two measures.

**Table 1.** *Mean accuracy and percentage scores, standard deviations, and Cronbach's α for morphological awareness and historical understanding*

| Tasks | Mean (proportion) | SD | Cronbach's alpha |
|---|---|---|---|
| Judgment of pseudoword inflection (max: 6) | 4.06 (.406) | 1.2 | .321 |
| Content-area vocabulary knowledge/historical terms' understanding (max: 6) | 3.63 (.363) | 1.6 | .557 |

Some of the aspects of the results displayed in this table are worth noting. First, for both measures developed for this study, there is a similar level of discrimination as the distribution was close to normal. Second, the measures do

not show significant floor or ceiling effects. Third, the internal consistency of the measures was at a satisfactory level given that values below .7 were expected because of the limited number of items on the scale (Field, 2005). In summary, the measures showed a good level of discrimination and internal consistency. The section that follows examines the relation of morphological awareness with the content-area vocabulary knowledge/historical terms' understanding test.

This section analyzes whether the student's performance in morphological awareness is related to their performance in content-area vocabulary knowledge/historical terms' understanding, focusing on the concurrent relations between the predictor and outcome variables. Table 2 presents the correlations among the measures. The correlations between the morphological awareness measure and the historical terms' understanding test were positive and statistically significant, indicating that the relatively low reliability values did not prevent it from showing a significant connection between the measures. However, it is possible that a stronger correlation would have been observed if the measures produced better reliability.

**Table 2.** *Correlations between morphological awareness and historical understanding*

| Variable | 1 | 2 |
|---|---|---|
| 1. Judgment of pseudoword inflection | - | |
| 2. Content-area vocabulary knowledge/ historical terms' understanding | .405* | - |

*Note.* $*p < .05$

## Discussion and Conclusion

The aim of this study was to examine whether morphological awareness contributes to performance in content-area vocabulary knowledge/understanding of historical terms. This hypothesis was tested with university students with or without LDs. The findings support the hypothesis that morphological awareness is related to content-area vocabulary knowledge/historical terms' understanding in concurrent analyses. This study is the first, to our knowledge, to examine the connection of morphological awareness with historical terms' understanding for late adolescents with or without LDs.

### General Findings and Limitations

In summary, when taken together, the results of this study regarding the contribution of morphological awareness in content-area vocabulary knowledge are consistent with previous research focused on studies conducted with young people (with or without LDs). In the first section, we reviewed studies (e.g., De La Paz, 2005; Kent et al., 2015; Kinder & Bursuck, 1993; Mason et al., 2013; Monte-Sano & De La Paz, 2012; Reisman, 2012; Wissinger, 2018) showing that discipline-specific strategies (i.e., determining vocabulary meaning) contribute to discipline-specific learning and historical literacy/thinking skills such as reading for understanding historical texts. For example, as far as historical literacy skills are concerned, Kinder and Bursuck (1993)

showed that after the students practiced taking notes, constructing timelines, and determining vocabulary meaning, their performance in reading for understanding historical texts was significantly improved. With regard to writing argumentative history texts, De La Paz (2005) noted that the student outcomes showed significant progress after receiving historical reasoning and writing instruction. With respect to historical reading, Reisman (2012) demonstrated that explicit disciplinary strategies of historical reading contribute to the development of higher-order thinking skills in history learning. Similarly, Kent et al. (2015) showed that there is a strong link between discipline-specific practices and content-area vocabulary knowledge for struggling learners. Evidently, when enhancing disciplinary literacy in social studies, historical critical reading/writing and thinking are promoted.

In the next section, we reviewed studies (e.g., Collins et al., 2020; Goodwin, 2015; Lesaux et al., 2014; Nunes et al., 2012; Pittas & Nunes, 2014) showing that morphological awareness contributes to students' discipline-specific strategies. For example, Nunes et al. (2012) demonstrated that morphological knowledge significantly contributes to comprehension over a period of four years. With regard to writing, Pittas and Nunes (2014) showed that morphological awareness made a unique contribution to the prediction of spelling. Similarly, Collins et al. (2020) showed that morphological instruction helps struggling adolescents enhance their literacy skills. Goodwin (2015) demonstrated that there is a strong link between morphological instruction and the understanding of discipline-specific texts. With regard to content-area vocabulary, Lesaux et al. (2014) showed that training in academic vocabulary significantly improved the students' written language skills, academic vocabulary knowledge, comprehension of discipline-specific texts, and morphological awareness skills.

With respect to academic performance, given that educational settings are more varied than ever, discipline teachers need to apply rigorous pedagogical approaches to meet all the students' needs irrespective of student achievement status. Research (e.g., Fenty & Brydon, 2017; Ferretti et al., 2001; Goodwin, 2015; Kent et al., 2015) shows that students with LDs can reach their full potential when appropriate instruction, materials, and support are provided. For example, Goodwin (2015) showed that although morphological instruction helped all the students understand discipline-specific texts, it was most beneficial for the lowest-proficiency readers. Therefore, in making history and social studies classrooms inclusive and in effectively using discipline-specific strategies for enhancing specialized language and vocabulary, reading for understanding, and writing for history purposes (Havekes et al., 2017), morphological awareness that enhances literacy skills can be ideally used for both students with LDs or without LDs to facilitate content-area vocabulary knowledge and reading/writing to learn (Hendrix & Griffin, 2017).

The main limitation of this study is that it must be complemented by longitudinal and intervention studies to reach conclusions about long-lasting and causal relations. Another limitation of this study is that it did not include a separate control for verbal ability, which is highly correlated with morphological awareness and comprehension, and controlling for vocabulary could have weakened the connection between morphological awareness and historical understanding.

### *Contributions and Implications for Future Research*

The contributions of this study are threefold. First, the study makes a significant methodological contribution. An essential step in carrying out this study was to develop measures of student awareness of morphology appropriate for the age range of the participants. After scrutinizing the measures used in the literature, those used in this paper were meticulously designed to attain good reliability and face validity. With these measures, the students had the opportunity to demonstrate their ability to manipulate language intentionally so as to complete the tasks. The cross-sectional study established a good level of discrimination and internal consistency. The second contribution is both empirical and theoretical. The contribution of morphological awareness to historical understanding is demonstrated in a cross-sectional study in Greek for the first time, to our knowledge. We suggested in the introduction that morphological awareness might make a significant contribution to scores in the content-area vocabulary knowledge/historical terms' understanding test used in this study because the test assesses reading comprehension. It was therefore not surprising to find a positive result in this study.

Finally, the study has implications for further research and practical applications to teaching in history and social studies classrooms. This study prepares the way for examining the long-lasting and causal link between morphological awareness and content-area vocabulary/historical understanding. The longitudinal study will show whether the connection found in this study persists over time, and an intervention study will show whether there is a causal connection between the variables. Thus, this study sets the scene for further research proposing the use of longitudinal studies and interventions, which would be rather costly if there were no evidence for a connection between morphological awareness and historical understanding outcomes. Special education research should expand work to include more subject-specific interventions to examine the enhancement of discipline literacy skills such as historical reasoning and understanding.

Overall, this study supports previous research that links morphological awareness and disciplinary literacy. We showed that young people's performance in morphological awareness skills is related to their performance in content-area vocabulary knowledge/understanding of historical terms irrespective of student achievement status. This result is particularly alarming if we consider that students with LDs or at risk for LDs often struggle to develop a deeper understanding of historical texts because of the difficulties associated with basic literacy skills. Therefore, as mastering disciplinary literacy poses challenges for students with LDs or at risk for LDs, instead of allowing diverse learners to struggle by themselves to deepen their discipline-specific practices and go beyond a superficial understanding, morphological instruction can be integrated into teaching to make the connection between morphemes and different content areas explicit. Morphological awareness emerges as a pathway to enhance students' discipline-specific strategies, and as such, we need to put emphasis on developing these skills as a way of thinking about language. Subject matter educators need to take the lead in developing morphological awareness skills as tools that can be adopted for the goals and activities of a specific discipline.

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