Does children's dialect awareness support later reading and spelling in the standard language form?

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1. Introduction

Dialect users have considerable difficulty with learning literacy in the standard form of the language for a variety of reasons. One aspect of their difficulty relates to phonological differences between the standard and the vernacular form: for example, Arabic dialect users' performance in phonological awareness tasks is lower when the phonemes exist in the standard but do not exist in the vernacular form (Saiegh-Haddad, Levin, Hende, & Ziv, 2011). Sentence comprehension is also affected by dialect use, presumably with consequences for reading comprehension: by the age of five users of Standard American English (SAE) can rely on the final "s" for third person present to determine whether an event is generic or past whereas African American Dialect (AAD) users cannot do so by the age of seven (De Villiers & Johnson, 2007).

Education policies to address this linguistic issue have resulted in heated debates (see, for example, Rickford, 1999). Divergent approaches have included, at one extreme, the proposition that dialect users should be allowed to write as they speak, whereas at the other extreme there were suggestions of teaching children to speak, for example "good French", so that they could write correctly. Less radical approaches have involved the systematic exposure of pre-school children to story book reading (Feitelson, Goldstein, Iraqi, & Share, 1993), because vernacular forms are not written and story books are written in the standard form.

In this paper, we consider a novel alternative, which is to promote the development of dialect awareness in the learners. Dialect awareness is the appreciation of the systematic

differences between the standard and the vernacular form of a language (Wolfram, 1999). This term has been used in the literature in the discussion of preparing teachers for working in schools where a dialect rather than the standard form of the language is used, but it can readily be applied also to the learners who are users of a dialect. Our hypothesis is that, the more aware a dialect user is of the systematic differences between the standard language and the vernacular, the easier it will be for him/her to connect the vernacular form with the standard written form.

In this introduction, we provide specific examples of dialect users' difficulties in learning to read and spell. In the subsequent section of the paper, because our study focused on Greek Cypriot children, some differences between the Greek Cypriot Dialect (GCD) and Standard Modern Greek (SMG) are briefly described in order to explain why GCD users might find reading more difficult than SMG users. We then report a study in which we tested the hypothesis that dialect awareness is a positive predictor of word reading and writing among Greek Cypriot children. The final section discusses the implications for research and education.

1.1 The Difficulties of Reading and Spelling for Dialect Users

The most important property of orthographic systems "is the universal language constraint: All writing systems represent spoken languages" (Perfetti, 2003, p. 3). There is ample evidence that children profit from mastering letter-sound correspondences when learning literacy in alphabetic scripts (e.g. Aidinis & Nunes, 2001; Ehri, Nunes, Willows, Schuster, Yaghoub-Zadeh, & Shanahan, 2001; Olofsson & Lundberg, 1985). In many orthographies, such as French and English, morphology is also represented in spelling, even when it is silent, as is the case for plural nouns in French (e.g. *maison* and *maisons* are pronounced in the same way) and of nouns in Spanish in some cultural contexts (Defior,

Alegría, Titos, & Martos, 2008). There is a connection between children's spelling and reading performance with their awareness of morphology (e.g. Bryant, Deacon, & Nunes, 2006; Pacton & Fayol, 2003). Alongside evidence from studies of individual differences, differences across languages and orthographies also support the importance of the connection between oral and written language: reading skills develop faster when the relation between the oral and the written form of the language is more transparent - i.e. the correspondence between letters and sounds is more consistent (e.g. Cossu, Shankweiler, Liberman, Katz, & Tola, 1988). Thus, the nature of relation between spoken and written language and children's awareness of this relation provide a basis for literacy learning.

Writing practices represent the standard form of a language and when the learners speak a different form, it is reasonable to expect that intrusions from the vernacular will lead to variations in writing and reading at all levels: phonology, morphology, syntax and lexicon. Intrusions involve the use of the vernacular form in a context where the standard form is expected. Intrusions can be seen as errors: for example, in the AAD sentences with two negatives and no inflection for the third person present singular are common (e.g. But that don't make no sense; Pandey, 2000) and could be treated as grammatical errors in texts. However, they can also be seen as the children's attempt to respect the universal language constraint by representing the form of the language that they speak. Intrusions also appear in reading: Goodman and Buck (1973) observed that, when users of the AAD read text, they often transformed the wording to be consistent with their use of the language.

Correlational studies (Craig, Thompson, Washington, & Potter, 2004) have shown that reading accuracy and rate are negatively related to the frequency of dialect related intrusions in passage reading. Dialect intrusions also affect spelling. Treiman, Goswami, Tincoff, and Leevers (1997) found that native English speakers who tend not to pronounce the phoneme /r/

in certain phonological contexts produce more "r" related spelling errors than native speakers who do pronounce the /r/. In a more recent study, Kemp (2009) examined dialect related spelling errors in native speakers British and Australian children. She found that British children significantly outperformed Australian children when their pronunciation reflected the vowel represented in spelling whereas the opposite was true when the Australian pronunciation was closer to the spelling than the British one.

Whereas the previous studies considered dialect related spellings without a specific measure of individual children's use of the dialect, Terry and Connor (2010) explored the dialect related intrusions in speech and in literacy measures among African American children. The Diagnostic Evaluation of Language Variation-Screening Test was used to measure dialect related intrusions in speech; word reading and spelling tests were used to assess the children's literacy. The Variation-Screening Test was significantly negatively correlated with word reading and spelling performance. They further showed the specific nature of these errors: children produced more dialect related spelling errors than dialect neutral errors (i.e. spelling errors for sounds that are not pronounced differently in the dialect). In brief, native speakers who use a variety of the language that differs considerably from the standard form represented in writing do face difficulty in literacy learning.

Dialects differ systematically from the standard form of the language in phonological and morphological features (Terry, 2006); this makes it possible for users to develop some awareness of these differences. Many users of a dialect live in contexts where both forms of the language are used: for example, African Americans hear SAE spoken in school and on television and British speakers hear BBC English on television. They live in contexts that Ferguson (1991) characterized as diglossic, because two closely related forms of a language are used for different purposes. Therefore it is quite plausible that, if children become aware

of the systematic nature of the differences between the two forms, this awareness could have a positive impact on their literacy learning. Much in the same way that phonological and morphological awareness impact literacy learning, dialect awareness might have a positive impact on the literacy skills of dialect users.

Theoretically, it is important to differentiate phonological and morphological awareness from dialect awareness: whereas the former two refer to children's awareness of phonemes and morphemes within one form of the language, dialect awareness refers to understanding the variations between the two forms of the language. Appreciation of the differences between the two forms of the language includes the realisation that these differences are not random, but systematic. It is possible that phonological and morphological awareness are necessary, but not sufficient, for dialect awareness to develop, as appreciation of the differences between the two forms of the language may require a certain level of awareness of phonemes and morphemes within the same form of the language. Empirically, it is possible to distinguish between phonological and morphological awareness on one hand, and dialectical awareness on the other hand, if it is demonstrated that dialect awareness makes an independent contribution to children's reading and spelling, after controlling for phonological and morphological awareness measured within the child's vernacular. Nunes, Bryant, and Barros (2012) have argued that this form of empirical distinction is of great importance for understanding progress in literacy, particularly when two measures are highly correlated: phonological and morphological awareness are highly correlated but make distinct contributions to the prediction of literacy outcomes. In this study, we expected both phonological and morphological awareness to be highly correlated with dialect awareness, but still distinguishable from it empirically.

There is some support for the idea that becoming aware of the systematic differences between the standard and the vernacular form of a language has a positive impact on literacy. Fogel and Ehri (2000) taught African American children to translate oral sentences presented in the vernacular into written SAE sentences. The teaching involved explanations about the morphosyntactic differences between the two forms of the language as well as guided practice during the translation exercise. This intervention had a positive effect on the children's ability to transform sentences from the vernacular into SAE as well as on their free writing, which contained more SAE features than the writing produced by the control group. Thus, the study demonstrated that improvements in awareness of the dialect result in better writing and reading comprehension.

In this paper, we report a study in which the hypothesis that dialect awareness is important for learning to read and spell in diglossic situations is tested in the context of literacy acquisition by Greek Cypriot children. The GCD is spoken in certain contexts, such as in the family, but SMG is also widely used in Cyprus, for example in the media and in formal settings such as at school. It is possible that, if children become aware of the systematic differences between the two varieties of Greek, they will develop better literacy skills.

1.2 A Brief Comparison of GCD with SMG

The phonetic and morphosyntactic differences between the GCD and SMG are diverse, but here we describe only those relevant to the present study. Regarding the phonetic differences: The GCD sounds /dʒ/ and /tS/ correspond to the SMG sound /k/ before front vowels (e.g. GCD [dʒe]: SMG [ke] ‘and’); this means that users of GCD pronounce an extra sound when saying, for example SMG ‘κερί’, [kerˈi]: GCD [dʒerˈi].

A second example can be found in the word ‘the’ which sounds like the SMG sound /ð/ at the beginning, for example SMG ‘δύο’, [ðˈio]: GCD [θkiˈo] ‘two’. The GCD sound /θκ/ corresponds to both SMG sounds /δ/ and /θj/ before front and final vowels (e.g. GCD [θkˈe]: SMG [θjˈe] ‘uncle’). The GCD sound /fk/ corresponds to the SMG sound /vγ/ before front vowels (e.g. GCD [afkˈi]: SMG [avγˈi] ‘dawn’) and the GCD sound /ʃ/ which can be found in the word ‘shadow’ corresponds to the SMG sound /x/ before back and front vowels (e.g. GCD [ˈʃonin]: SMG [xiˈoni] ‘snow’) (Newton, 1972). As far as morphological differences are concerned: first, there are different endings for the active and passive voice first conjugation singular and plural verbs in the past and present (Newton, 1972); second, the final [ν] /n/ is used in the first person in the plural form in all verb tenses, e.g., GCD [γrˈafumen]: SMG [γrˈafume] 'we write'); third the syllabic augment ε- which in SMG is added only when the verb stem and ending have one syllable, in the GCD is added to the stem of the verb with more than one syllable.

Yiakoumetti (2006) showed that the difficulties that Greek Cypriot children have when writing are analogous to those exhibited by AA children. In a language and geography essay, sixth grade Greek Cypriot children (N=182) produced approximately seven dialect related intrusions per 100 words. Thus, there is evidence that the use of GCD influences children’s writing. However, there is no systematic documentation that individual differences in dialect awareness can be related to differences in literacy learning and so in this study, with the development of tasks to measure dialect awareness we expect to provide direct evidence on the positive effect of dialect awareness to literacy learning.

1.3 Purpose of the Study

The aim of the study was to test the hypothesis that children's dialect awareness is a longitudinal predictor of their word reading and spelling, even after controlling for other

measures that are expected to relate both to dialect awareness and to word reading and spelling. In order to assess children's dialect awareness, the features of GCD were systematically used in the development of assessments. Three dialect awareness measures were created; the children were assessed in these measures at the first sweep of data collection and eight months later they were assessed in measures of word reading and spelling.

It was considered necessary to control for other measures that are also predictors of literacy skills and could be related to dialect awareness. First, general verbal ability is a predictor of literacy and could explain a correlation between dialect awareness and literacy. Second, phonological and morphological awareness are predictors of literacy skills in Greek (Aidinis & Nunes, 2001; Chliounaki & Bryant, 2002; Pittas & Nunes, 2014); their relation to dialect awareness could explain a correlation between dialect awareness and literacy. Thus, the study included measures of verbal ability and of phonological and morphological awareness to be used as controls in the analysis.

2. Method

2.1 Participants

The children (N = 404) were in Grade 1 (99 boys; 91 girls) or Grade 3 (102 boys; 112 girls). Children from two grade levels were chosen in order to increase the variability in performance on all tasks. Their age range was 6 years 6 months to 9 years 6 months at the time the study started. Children’s mean age in months in Grade 1 was 82.0 (SD=3.91) and in Grade 3 was 100.0 (SD=3.94). The first graders were assessed during their last school term to maximize the likelihood that they would be able to meet the demands of the reading and spelling tests. The third graders were assessed early in the school year, so they had received slightly more than one extra year of instruction than those in Grade 1. The centralized

educational system in Cyprus follows the guidelines and curriculum of the educational system in Greece and the textbooks are provided by the Greek government.

The sample was drawn from 15 state supported primary schools situated in rural and urban areas. Children who had learning or hearing difficulties were excluded from the sample. The sampling strategy (cluster sampling) involved random procedures from all the state supported primary schools situated in rural and urban areas around the capital city of Cyprus. Children were assessed in their schools; none refused to cooperate, and those who missed some of the tests did so due to illness.

2.2 Design

The longitudinal study adopted a simple panel design (Figure 1) with two phases of data collection. At Time 1 the children were in Grade 1 or Grade 3 and were assessed in all the predictor measures (three dialect awareness measures) and five control measures (the similarities sub-test from the WISC-III, as an estimate of verbal IQ, one measure of phonological awareness and three measures morphological awareness). They were also assessed in the outcome measures in order to be included in the longitudinal analysis as auto-regressive controls. After an 8-month interval, at Time 2, the children first seen in Grade 1 were in Grade 2 and those assessed at the start of Grade 3 were completing this grade. At this time, the measures from Time 1 were repeated, with the exception of the WISC similarities subtest. The aim of repeating the predictors and control measures was to obtain some indication of their validity, as it was reasonable to expect that children's skills would have improved, and thus it could be tested whether these novel measures were sensitive to this progress.

Figure 1 about here

2.3 Measures and Procedure

The tasks were adapted for group presentation. The first author, a native Greek Cypriot, gave the instructions in SMG in the children's classroom, except for the presentation of items that were in GCD as part of the requirements of the assessment. Instructions were given orally for all the tasks. The children's responses were in writing; some were open responses and some multiple choice questions. The tasks were administered within 2-3 days; testing for the whole sample took approximately two months for each sweep of data collection.

2.3.1 Predictors: Dialect Awareness Measures

2.3.1.1 Sentence Translation Task

This task was developed on the basis of work by Fogel and Ehri (2000), who adapted a method originally tested by Baratz (1969). The experimenter said 11 sentences, one at a time, in GCD. The children were asked to write each one in SMG. Eight sentences contained both phonological and morphosyntactic transformations; three sentences contained phonological transformations only. All sentences were short with a minimum of three and a maximum of nine words; the number of transformations per sentence varied from one to three, producing a total of 17 transformations to be performed in the translation. Each correct transformation was given one point; incorrect or missed transformations were given no points. The maximum possible score was 17.

2.3.1.2 Pseudoword Translation Task

This task was based on the pseudoword interpretation task (Nunes & Bryant, 2006) but required the children to translate the pseudowords across the linguistic forms. This may seem at first glance an impossible task, but due to the fact that dialect variations are systematic and predictable, it is possible to translate a pseudoword created in GCD to a pseudoword in SMG. The pseudoword in GCD contained sequences of sounds that are

plausible in GCD but do not have meaning; some of the sounds are not used in SMG, so the interpretation into SMG required the children to replace the GCD sound with its equivalent sound in SMG (e.g. the pseudoword 'αλινεύκω', [alinéfko] in GCD has the variant pronunciation variation from [v] in SMG to [fk]). The children were asked to write this pseudoword as if it were a word in SMG. Eight pseudowords were used and all required phonological transformations. Correct representations of the pseudowords in SMG were given one point; unexpected spellings or representing the pseudowords in GCD (intrusions) were given no points.

2.3.1.3 Dialect Identification Task

This task was adapted from Baratz's (1969) task. The pictures of two children – a boy and a girl – were shown on the screen while the participants listened to a recording of a boy and a girl reading a story. The boy and the girl alternated in reading the different paragraphs in the story. This exposed the children to the different forms of the language. After the story reading, it was explained to the children that the girl used SMG and the boy used GCD. The children then heard the tester saying words either in GCD or in SMG which did not relate to the story. They were asked to decide who would have said those words and mark on the answer sheet whether it would have been the girl or the boy. The ten trials involved phonological transformations; four words were pronounced in SMG and six words in GCD. The items included the most marked phonological differences between the two varieties of Greek. The children were given one point for each correct choice.

2.3.2 Outcome Measures

2.3.2.1 The standardized spelling test

The spelling test used in this study was developed by Mouzaki, Protopapas, Sideridis, and Simos (2007). It consists of 60 words presented orally in the context of a sentence. The

procedure is typical of spelling tests: first the target word is read aloud, then the sentence including the target word, and then again the target word. The children write the target word after it has been said three times. When the test is administered individually, the session is interrupted when the child makes six consecutive errors. In the present study, the procedure was adapted for classroom administration. In Mouzaki et al. (2007; N=587), the maximum score obtained by second graders was 38 and by third graders 48. It was decided to present 40 words to the younger group and 50 words to the older group, allowing for extra words to be spelled correctly in order to avoid a ceiling effect. The stopping rule was adopted *a posteriori*: the children's scores considered only the number of correct spellings up to the point before they made six consecutive errors.

2.3.2.2 The morphological spelling test

Words with prefixes and suffixes whose spelling is determined by morphology were selected for this test; in all cases, the affixes have phonemes that could be spelled in different ways, but only one is correct for morphological reasons. The test (see Appendix A of SM) consisted of 14 words with 27 different prefixes and suffixes (the words contained one to three affixes); ten out of 14 words were formed with prefixes and suffixes and the remaining four words formed with suffixes only. The 13 prefixes were used in three verbs, five nouns and two adjectives. The 11 suffixes were part of nine nouns (five masculine, two feminine, two neuter) and two adjectives (masculine and neuter). The three verbs' inflections were scored independently. Each affix was scored independently of the spelling of the remaining portion of the word; the maximum score was 27. For example, in the spelling of the verb 'συμφωνώ', [simfonˈo], 'I agree', the children could score one point for the suffix '-ωνω'.

The procedure for the presentation of the test was the same as in the Mouzaki et al. (2007) spelling test. The internal consistency was good: Cronbach's $\alpha = .87$

2.3.2.3 The reading test

The standardized reading test (Tafa, 1995) is timed and uses a close procedure. The children read sentences with missing words; for each missing word, four alternative words are presented. The children's task is to underline the word which would complete the sentence correctly. It is suitable for children in the age range of the participants in the present study. Items left blank are considered incorrect and each correct choice scores one point. The test consists of 42 sentences; four examples are presented prior to conducting the test.

2.3.3 The controls

2.3.3.1 The phonological awareness task

This task measures awareness of sound categorization and was inspired by Bradley and Bryant's (1983) oddity task. The children heard three words, one at a time, accompanied by pictures presented on a screen in front of the class. The three pictures then appeared together; the children had the same pictures on their answer sheets and were asked to mark the pictures that corresponded to two words beginning with the same sound. The items chosen for each trial had the same initial consonantal sound: in one word, the initial consonant was part of a cluster whereas in the other it was not, i.e. in English: brake / ball / rat; in Greek: 'τροχός', 'wheel'; 'τηλέφωνο', 'telephone'; 'ρολόι', 'clock'. Eight trials were used for this task; the children were given one point for each correct answer.

2.3.3.2 Judgment of pseudo-word inflection (morphological awareness measure)

This task measures awareness of noun inflection and was inspired in Berko's (1958) task. The children heard two sentences that contained pseudo-words and saw pictures that illustrated the sentences. An example in English could be: (a) This is a tox; (b) these are two tox. In this example, the plural has not followed the rule, which would result in the plural toxes. The answer sheets had two boxes for each trial, the first with the capital letter 'Σ'

signifying ‘correct’ (in Greek: ‘Σωστό’, [sostó]) and the second with the letter ‘Λ’ signifying ‘wrong’ (in Greek: ‘Λάθος’, [láθos]). The children were instructed to circle right or wrong on their answer sheets, depending on whether the morphological transformation was right or wrong, respectively. An example of an item in Greek: (a) ‘Αυτή είναι μια τάρα’, [aftʲi ˈine mʲia tʲara], ‘this is a tara’; (b) ‘Αυτές είναι δυο τάρες’, [aftʲes ˈine δʲio tʲares], ‘these are two tares’. The pronoun "this" in Greek is marked for gender and number; the child would need to judge whether the pseudo-word in the plural had the correct gender, case and number inflections. Correct choices scored one point. Ten trials were used (four masculine, three feminine and three neutral nouns); the transformations were from the nominative singular to the plural form and vice versa; four right and six wrong transformations were presented. Six items were transformations from singular to plural and four from plural to singular.

2.3.3.3 The sentence analogy task (morphological awareness measure)

This task measures awareness of verb inflection and was adapted from Nunes, Bryant, and Bindman (1997). It is based on analogies between sentences – sentence a is to sentence b as sentence c is to sentence d; it was presented as a judgment task. An item in English with an incorrect transformation would be: (a) ‘I swim’: (b) ‘I swam’:: (c) ‘I walk’: (d) ‘I was walking’. This transformation is incorrect because (b) is the past perfect and (d) is the past continuous. An item in Greek was: (a) Το πλοίο βουλιάζει ‘The ship sinks’, (b) Το πλοίο βούλιαξε ‘The ship sank’:: (c) Το λουλούδι μεγαλώνει ‘The flower grows’, (d), Το λουλούδι μεγάλωνε ‘The flower was growing’ [(d) is incorrect for the same reason].

The children saw three characters on the screen: the teacher, the owl and the bear, and heard the recordings of three different voices: the voices of two children (representing the voices of the bear and the owl) and of an adult (representing the voice of the teacher). For each trial two pairs of sentences were presented: the teacher always presented the first

sentence of each pair, the owl presented the second sentence of the first pair and the bear presented the second sentence of the second pair. For example: Teacher: I swim; Owl: I swam; Teacher: I walk; Bear: I was walking. The researcher explained to the children that the owl always says the right sentences but the bear sometimes says the sentence in the right way and sometimes in the wrong way. The children were asked to decide whether bear had said a correct sentence, similar to the one that the owl had said.

On the answer sheets, for each trial there were two boxes, the first with the capital 'Σ' signifying 'right' and the other with the capital 'Λ' signifying 'wrong'. The children were required to circle on their answer sheets 'right' if the bear was right and 'wrong' if the bear was wrong. For this task 10 trials were used. The children were given one point for each correct choice.

2.3.3.4 The morphological relatedness task (morphological awareness measure)

This task measures awareness of derivation and was adapted from Mahony, Singson, and Mann (2000). The children saw two pictures on the screen, heard two words and were asked to recognize whether one word was related to the other (e.g. in English: 'select'or' or 'selection'; in Greek: 'δακτυλίδι', 'ring' from 'δάκτυλο', 'finger'). Ten pairs were used for the current task and none of the words was formed with prefixes: six pairs were related and four pairs were unrelated. Each correct choice scored one point. The answer sheets had two boxes for each trial, the first with 'Σ' for 'right' and the second with 'Λ' for 'wrong'. After the children heard the two words, they were instructed to circle the answer 'right' if the two words were related or 'wrong' if the two words were unrelated.

2.3.3.5 WISC-III similarities subtest

The WISC-III similarities subtest standardized in Greek (Georgas, Paraskevopoulos, Mpezevegkis, & Giannitsas, 1997) was administered to obtain an estimate of general verbal

ability. In this task, the children are asked what is the similarity between two items (e.g. what is the similarity between an apple and a banana? what is the similarity between water and milk?) The subtest has 19 items and all items were presented. It was administered only at Time 1 because IQ was not expected to change significantly over the 18 months interval. This subtest correlates highly with the total scale (factor loadings: 74 for the ages 6 – 7 and 77 for the ages 8 -10; Wechsler, 1992). The children's scores ignored any spelling errors. As in the individual administration, after four consecutive wrong explanations, no further points were given.

The criteria presented in the WISC-III manual were used to score the answers. The manual provides examples of answers that score zero, one or two points: for the pair 'apple – banana' acceptable answers include words or phrases such as 'fruits', 'eatable' and among the wrong answers are words or phrases such as 'round' or 'make juice'. Following the instructions for the test, the children were given one point for each correct answer for questions 1-5 and one or two points for questions 6-19, in accordance with the instructions in the manual.

3. Results

3.1 Preliminary analyses

The preliminary analyses examined whether the tasks differentiate well between the participants and whether these are reliable and valid. Progress comparisons between the results from Time 1 and Time 2 were also made. Table 1 displays the mean accuracy and percentage scores, standard deviations, and Cronbach's α for the different measures at Time 1 and Time 2 by grade level.

Table 1 about here

Most of the measures did not show ceiling or floor effects; the exceptions were the phonological awareness task, which was easy for children in Grade 1, and the sentence translation and the dialect identification tasks, which were relatively easy for children in Grade 3. These measures were included in Grade 3 only to assess whether the tasks measured progress between the grades, as this would provide information about their discriminant validity; the negative skewness in Grade 3 is therefore not a problem, as the prediction is based on performance in Grade 1. These tasks might still be useful for identifying children in Grade 1 who would need additional support in developing phonological or dialect awareness. The majority of measures showed satisfactory internal consistency (Cronbach's close to α = .7). Only dialect identification did not reach an acceptable level of internal consistency but it will be included in Principal Component Analysis in order to consider its convergent validity.

Paired samples *t*-tests, presented in Table 2, showed that the progress between Time 1 and Time 2 in the dialect awareness measures was significant. The observation of significant improvement in these measures provides a positive indication of discriminant validity.

Table 2 about here

To examine whether the tasks measure the same concept - i.e. the children's awareness of their dialect - construct validity was analyzed through a Principal Component Analysis. The proportion of total variance explained by the principal component after extraction was 59.8% for the dialect awareness (factor loadings greater than .7) and 64.5% for the morphological awareness tasks (factor loadings greater than .6). Only one component was extracted in each analysis. As the proportion of variance in the different tasks that is common with the latent variable is above 50% and the factor loadings are high, this indicates that the tasks produce a uni-dimensional scale, which allows for a more concise and powerful analysis.

The conclusion from the preliminary analyses is that the measures showed good levels of reliability and of discriminant and construct validity, and thus they can be used in the longitudinal study.

3.2 The contribution of dialect awareness to the longitudinal prediction of reading and spelling

Table 3 shows that the correlations among measures are all significant. The factor scores in Dialect Awareness measured at Time 1 correlated significantly with each of the reading and spelling measures at Time 2, as well as with all the control measures. This justifies the subsequent hierarchical regression analyses, in which the controls are entered before the factor scores in dialect awareness, in order to examine whether dialect awareness contributes unique variance to the prediction of later success in reading and spelling in Greek, after stringent controls.

Table 3 about here

In order to test whether dialect awareness can be distinguished empirically from phonological and morphological awareness, three multiple regression analyses were carried out, one for each of the outcome variables - reading, standardised spelling, morphological spelling. If dialect awareness is distinct from phonological and morphological awareness, it is expected to make a contribution to the prediction of the outcome measures even after controlling for the latter. In the hierarchical regression analyses, grade level was entered as the first step because the children were clustered in grade levels and their performance in the measures was not independent of their grade level. In the next steps, the variables to be controlled for were entered before dialect awareness in order to test whether dialect awareness makes a contribution to predicting the outcomes above and beyond the contribution made by the controls. Thus the second, third and fourth steps were the estimate of verbal IQ,

phonological awareness and morphological awareness. The fifth step was always the initial reading or spelling level (auto-regressive control): this stringent control was introduced because initial reading or spelling scores are related both to the predictor variables and the reading and spelling scores at Time 2. The sixth step was the dialect awareness component score.

The model fit was good for all three analyses (outcome variables: reading, standardised spelling, morphological spelling). Table 4 shows that dialect awareness was a significant predictor of the children's performance in all literacy tests after an interval of eight months and even controlling for grade level, the estimation of general verbal intelligence, phonological and morphological awareness and the children's initial level of reading or spelling. Dialect awareness was the strongest predictor of reading ($\beta = .226$, $p<.001$) and of morphological spelling ($\beta = .199$, $p<.001$), when compared to the other predictors, apart from the same measure administered at Time 1, which is expected to have the highest correlation with the measure repeated at Time 2.

Table 4 about here

4. Conclusions and discussion

This study examined the contribution of dialect awareness to children's reading and spelling in a sample of children who use a vernacular form (GCD) that systematically differs from the standard form of the language (SMG) in which they learn to read and write. Previous research on the relation between the use of a dialect and literacy learning suggested that dialect users often have difficulties in literacy (e.g., Desberg, Elliott, & Marsh, 1980; Labov, 1995; 2001). In most of the studies, the connection between using a dialect and learning literacy was negative; the more numerous the dialect related intrusions in children's speech, the worse their performance in reading and spelling tests.

Some researchers, such as Terry (2010) and Fogel and Ehri (2000), have argued that language awareness may be an important factor for literacy learning for dialect users. Terry (2006; 2010) observed that the number of dialect related intrusions in speech was negatively correlated with both reading and spelling; the higher the number of dialect related intrusions in children's speech the lower their scores in reading and spelling. She concluded that children who produce dialect related intrusions in speech, reading and writing underachieve in standardized reading and spelling tests because of low language awareness. Unfortunately, this negative view of the use of dialects does not solve the educational debates mentioned in the introduction: should children be allowed to write as they speak or should they be taught to "speak correctly"? This study provides an alternative: dialect awareness is positively correlated with literacy outcomes; thus one can expect that improving children's dialect awareness improves their literacy outcomes. Wolfram (1999) argued that dialect awareness improved teacher's ability to teach in environments where students use a dialect; we argue analogously that dialect awareness improves children's literacy learning. Thus, instead of looking for negative connections between the use of dialect and literacy outcomes, the current study looked for positive connections between dialect awareness and literacy.

The present study sets the scene for further research using an intervention method, which would be rather costly if there were no evidence for a specific connection between dialect awareness and literacy outcomes. According to Bradley and Bryant (1983), a program of research that demonstrates a causal relation between two variables comprises both longitudinal and intervention studies. Thus, an intervention study is still required for establishing a causal link between dialect awareness and literacy.

This study makes theoretical, empirical and practical educational contributions. The study offers theoretical contributions to the understanding of children's learning of literacy in

bi-dialectal settings. The fact that dialect awareness was the strongest predictor in reading and in morphological spelling indicates this is a concept that must be distinguished from other forms of language awareness. Empirically this study established the plausibility of a causal connection between dialect awareness and literacy which must still be tested in further research using intervention methods. The original methodological contribution is the development and validation of measures to assess children's awareness of their dialect in the school setting.

Although it is necessary to investigate further if there is a causal link between dialect awareness and literacy when the learners use a dialect, the longitudinal evidence suggests that, instead of letting dialect users struggle by themselves to discover how their dialect differs from the language represented in writing, an intervention study at the early stage of literacy can be designed especially for this group of children.

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Figure 1: Study Design

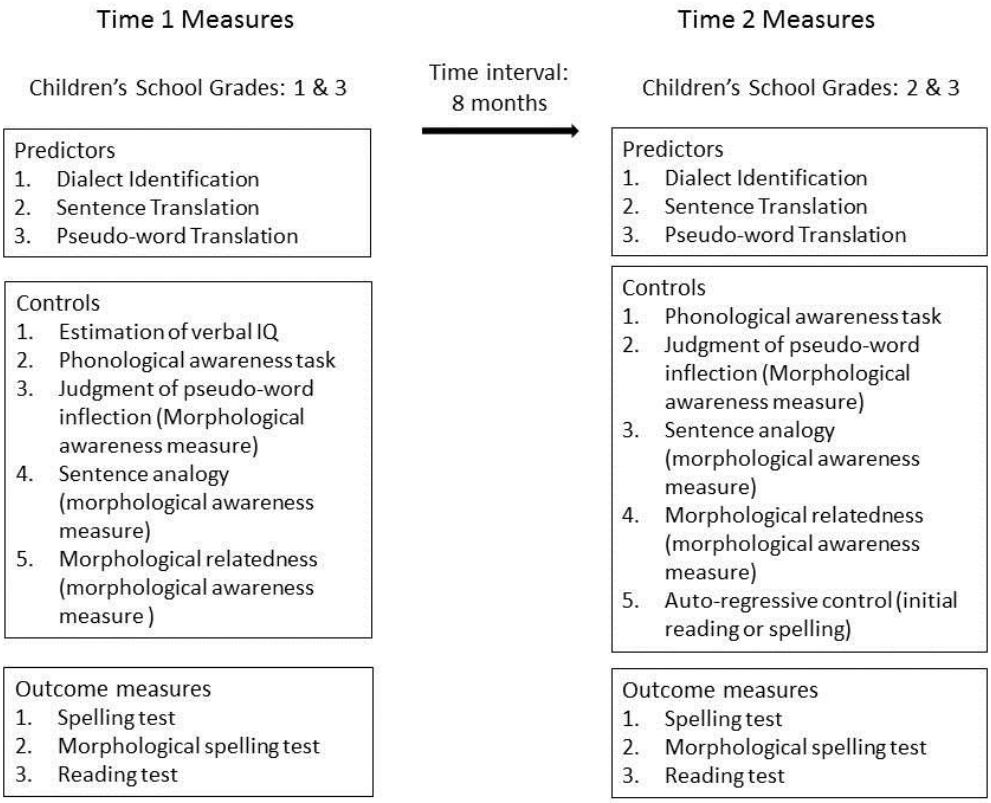

Table 1. Mean accuracy (proportion in brackets), standard deviations (SD), and Cronbach's α for the phonological, morphological and dialect awareness measures, WISC-III similarities and literacy tests by grade level

	Time 1					
	Grade 1 (N=187)			Grade 3 (N=209)		
Tasks	Mean (proportion in brackets)	SD	Cronbach's alpha	Mean (proportion in brackets)	SD	Cronbach's alpha
Sentence translation (max:10)	6.34 (.63)	2.6	.77	8.26 (.83)	1.8	.72
Pseudoword translation (max:8)	2.06 (.26)	1.8	.65	3.04 (.38)	1.9	.63
Dialect identification (max:8)	5.61 (.74)	1.5	.64	6.53 (.82)	1.0	.45
Phonological awareness task (max:8)	5.91 (.74)	2.3	.84	6.99 (.87)	1.9	.86
Judgment of pseudo-word inflection (max:10)	5.74 (.57)	2.9	.79	8.10 (.81)	1.8	.62
Sentence analogy (max:10)	4.56 (.46)	2.0	.46	6.53 (.65)	2.0	.48
Morphological relatedness (max:10)	6.43 (.64)	2.7	.76	7.91 (.79)	1.5	.43
[1]WISC-III Sim. (max:19)	8.70 (.46)	2.7		9.72 (51)	2.2	
Reading (max:42)	10.22 (.24)	5.5	.82	21.08 (.50)	8.0	.8
Standardized spelling (Gr.1: max:40; Gr. 3: max:50)	14.35 (.36)	4.5	.82	22.76 (.45)	7.8	.91
Morphological spelling (max:27)	12.87 (.48)	4.3	.80	19.80 (.73)	4.4	.79

[1] Cronbach's alpha was not calculated because a stopping rule was adopted.

	Time 2					
	Grade 1 (N=173)			Grade 3 (N=207)		
	Mean (proportion)	SD	Cronbach's alpha	Mean (proportion)	SD	Cronbach's alpha
Sentence translation (max:10)	6.89 (.689)	1.8	.72	8.76 (.88)	1.8	.78
Pseudoword translation (max:8)	2.95 (.37)	2	.71	3.89 (.49)	1.9	.63
Dialect identification (max:8)	6.31 (.79)	1.1	.51	6.82 (.85)	1.0	.54
Judgment of pseudo-word inflection (max:10)	7.20 (.72)	2.5	.75	8.91 (.89)	1.4	.57
Sentence analogy (max:10)	6.06 (.61)	2.3	.61	8.08 (.81)	1.8	.61
Morph. relatedness (max:10)	7.80 (.78)	1.8	.654	8.34 (.83)	1.4	.61
Reading (max:42)	17.69 (.42)	7.8	.88	26.91 (.64)	8.1	.89
Standardized spelling (Gr.1: max:40; Gr.3: max: 50)	17.13 (.43)	6.2	.88	28.19 (.56)	9.1	.93
Morphological spelling (max:27)	16.53 (.61)	4.5	.82	21.60 (.80)	4.1	.83

Table 2 Means (standard deviations), mean difference (standard deviations of the differences) and paired samples *t*-tests of literacy tests, morphological and dialect awareness measures

	Time 1	Time 2	Mean difference	t
Judgment of pseudo-word inflection (max:10)	6.9	8.1	1.2	7.9***
	(2.7)	(2.1)	(2.8)	(*df 369*)
Sentence analogy (max:10)	5.6	7.1	1.6	11.6***
	(2.3)	(2.3)	(2.6)	(*df 371*)
Morphological relatedness (max:10)	7.2	8.1	.9	7.3***
	(2.3)	(1.7)	(2.4)	(*df* 371)
Sentence translation (max:17)	7.47	8.27	.8	7.4***
	(2.4)	(2)	(2)	(*df 364*)
Pseudoword translation	2.64	3.48	.8	7.8***
(max:10)	(1.9)	(2)	(1.9)	(*df 340*)
Dialect identification	6.13	6.60	.5	5.9***
(max:8)	(1.4)	(1.1)	(1.5)	(*df 362*)
Reading (max:42)	15.9	22.6	6.7	19.5***
	(8.6)	(9.2)	(6.5)	(*df 363*)
Standardized spelling (max:50)	18.6	23.1	4.5	14.9***
	(7.4)	(9.6)	(5.8)	(*df 361*)
Morphological spelling (max:27)	16.8	19.4	2.6	13.5***
	(5.5)	(4.9)	(3.7)	(*df 361*)

***p <.001

Table 3 Pearson correlations between dialect awareness component score at Time 1, the control measures and literacy tests at Time 2 (N=404)

Variable	1	2	3	4	5	6	7
1. Dialect Awareness Factor score	-----						
2.Morphological Awareness Factor score	.413**	-----					
3.Phonological awareness	.329**	.429**	-----				
4.Estimate of verbal IQ	.562**	.425**	.287**	-----			
5.Morphological spelling	.479**	.419**	.210**	.445**	-----		
6.Standardised spelling	.509**	.449**	.244**	.364**	.815**	-----	
7.Reading	.546**	.480**	.301**	.490**	.646**	.683**	-----

**p<.01

Table 4 Regression analyses of the longitudinal relations between dialect awareness measures at Time 1 and reading, morphological spelling and standardized spelling measured at Time 2 (N=404)

	r^2 change	B	SE B	beta
Outcome: Reading – $R^2 = .608$				
1.Grade level	.235***	.505	.838	.027
2. Estimation of Verbal IQ	.104***	.212	.155	.061
3. Phonological awareness	.024***	.132	.160	.032
4. Morphological awareness	.028***	.821	.409	.091
5. Initial reading level	.186***	.542	.054	.512
6. Dialect awareness	.031***	2.088	.408	.226
Outcome: Morphological spelling – $R^2 = .602$				
1.Grade level	.238***	.453	.453	.046
2.Estimation of Verbal IQ	.065***	.057	.081	.031
3.Phonological awareness	.005	.002	.086	.001
4. Morphological awareness	.015**	.136	.218	.028
5. Initial reading level	.256***	.526	.045	.586
6. Dialect awareness	.023***	.995	.228	.199
Outcome: Standardized spelling – $R^2 = .663$				
1.Grade level	.289***	2.857	.788	.149
2.Estimation of Verbal IQ	.028***	-.171	.149	-.048
3.Phonological awareness	.012*	.019	.156	.004
4. Morphological awareness	.019**	.483	.395	.051
5. Initial reading level	.305***	.832	.055	.647
6. Dialect awareness	.010**	1.215	.400	.126

*p <.05, **p <.01, ***p <.001