Accentuation problems among primary school children acquiring literacy skills in Modern Greek

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ABSTRACT

It has been noted by school teachers and parents that some primary school children in their early years of learning how to write Modern Greek encounter difficulties in placing accent marks on stressed syllables. The present exploratory study examines whether accentuation, i.e. competence in placing correctly accent marks on stressed syllables, is related to such abilities as: (a) comprehension of connected written discourse, (b) semantic distinction of phonemically identical words on sentence level, (c) morphological distinction of phonemically identical words in isolation, (d) phonological awareness, (e) completion of written motifs and (f) imitation of rhythmic movements.

Sixty-five primary school children, aged 9 to 10 years old, attending fourth grade, participated in this study. These children were asked to complete an Accentuation Test (TA) appropriately designed for the purposes of this study. Also, teachers were requested to identify those children who had persistent problems with accentuation. Several statistical comparisons were carried out in an effort to examine which of the aforementioned factors contribute to this problem.

1. INTRODUCTION

Word accent, also called word stress or lexical stress, is the sound quality that gives more prominence to one syllable than to other syllables in a word. Word stress largely contributes to the way a language sounds. In many languages, the placement of stress is fixed or predictable but in other languages it is unpredictable. In French, for example, words are always stressed on the last syllable but in Finnish on the first syllable. Thus, the placement of accents in these two lan-

guages is predictable (Mackay 1987). In Greek, however, the placement of the accent is rather unpredictable but conforms to a Stress Well Formedness Condition (SWFC) (Malikouti-Drachman and Drachman 1980). This condition indicates that accentuation is restricted to the last three syllables of any word (i.e. the stress cannot be placed before the antepenultimate – α-νώ-νυ-μος /a'nonimos/). Indeed, when a suffix is added to a word which is accented on the antepenultimate, lexical stress must be moved one syllable to the right of this word (i.e. /'mathima/ [lesson], /ma'thimata/ [lessons]). Although the placement of lexical stress may depend on morphological factors, it cannot be predicted from a word's metrical structure for three reasons. First, the location of stress is not fixed (Ralli and Touradzidis 1992); second, the system gets more complicated due to morphologically conditioned stress shifts (e.g. nom.sg. /'anthropos/ gen.sg. /an'thropou/) (Revithiadou 1997); third, there are no distinctions of phonological weight among the five Greek vowels /i, e, a, o, u/; that is, in Greek all syllables are of equal phonological weight (Joseph and Philippaki-Warburton 1987). Consequently, it is not rare for phonemically identical words to be distinguished solely on the basis of stress placement (e.g. /'fili/ [female friend], /fi'li/ [kiss]). Van der Hulst (1995) argues that in a system like Greek, where the placement of stress affects the lexical meaning of a word, the accent has to be marked lexically in a way that the distinction would be made clear (for further discussions on theoretical issues concerning Greek phonology, stress and rhythm see Soteropoulos (1972), Theofanopoulou-Kontou (1978), Magoulas (1979), Dauer (1980), Fourakis (1986), Nespor and Vogel (1986, 1989), Botinis (1989) and Arvaniti (1991)).

Regarding language policy in Greece, as is well known, *demotic* was declared as the official language of Greece in 1976, replacing *katharevusa* as the language for education, newspapers and literature. In 1982 a few orthographic changes were introduced which resulted in the monotonic system. These orthographic changes dealt mainly with the elimination of the breathing marks (rough and smooth) and the simplification of stress marks. Due to these changes, the breathing marks were completely eliminated and the three stress marks (the acute, grave and circumflex), which indicate primary stress and are governed by strict rules, were reduced to one, that of the acute. The introduction of these orthographic simplifications may have brought some 'comfort' to the learner of Greek (for example, in selecting which of the three stress marks should be used), however, primary school children continue facing problems in placing the accent marks on the stressed syllable. This problem perplexes both teachers and parents who have expressed much concern about this issue. Currently, investigations on this topic are scarce.

The present paper examines the issue of accentuation and attempts to investigate experimentally the possible causes of this problem. Specifically, this *exploratory* study addresses several questions: Is the placement of accents related to segmental of suprasegmental factors? Is it related to semantic relations, comprehension, phonological awareness, attentiveness or rhythm? Are these factors of equal weight in contributing to this problem? Is the problem of accentuation different from the general problems of orthography? In what ways can teachers help children facing accentuation problems? Do these accentuation problems persist throughout primary schooling or are they corrected in due time?

2. METHOD

2.1. Subjects

Subjects were sixty-five pupils, 37 male and 28 female, between the ages of 9 to 10. All children were in grade four, in three separate classes, attending the Makarios III elementary school in Larnaca. The school was randomly selected from other similar state schools.

2.2. Material

An appropriately designed Accentuation Test (AT) was constructed for this study and its purpose was to assess pupils' ability to place accent marks on the stressed syllable. The AT included multiple choice questions and exercises and was divided in three parts; the first part elicited information regarding the children's family background and their involvement in extra curricular activities. The second part measured pupils' accentuation capabilities, by requiring them to place accents on words in sentences of connected discourse that appeared unaccented on the text. The third part examined several variables that may affect accentuation. These were: (1) comprehension of connected written discourse, (2) semantic distinction of phonemically identical words on sentence level, (3) morphological distinction of phonemically identical minimal pairs of words in isolation, (4) phonological awareness, (5) attentiveness in completing written motifs, i.e. the sequencing of letters, symbols and numbers and (6) ability to carry out specific rhythmic movements and recognition and distinction of recorded music sounds (piano) and clapping. For the recognition and distinction of music sounds, pupils listened to two different recorded piano sounds and were asked to identify which sound was repeated again for a second time (i.e. was identical with the first or second sound). For clapping, pupils listened to a sequence of recorded clapping and had to repeat the exact sequence. For the last part of the AT, rhythmic movements were carried out by one of the researchers; pupils were asked to imitate them as accurately as possible and the researcher kept a record of their performance. Finally, teachers, who had pupils in their classes

taking part in this study, were asked to provide the names of those pupils who repeatedly exhibited problems with accentuation (due to space considerations, the actual AT will not be presented in the paper).

2.3. Procedure

Having received permission from the school principal, the AT was administered on school premises. The pupils of the fourth grade were given the AT in the presence of one of the principal investigators in case they had difficulties in understanding and following instructions.

3. RESULTS

The 65 responses to the Accentuation Tests (AT) were tabulated and analysed by using the SPSS package. The first statistical analysis, which measured the accentuation capabilities of the pupils (dependent variable), has shown that 13 out of 65 pupils misplaced the accents. A comparison between the AT findings and the reports given by teachers revealed that the pupils who had problems with accentuation (as indicated by the AT), were the same pupils as those pointed out by teachers.

One-by-one analysis of the six independent measures revealed the following findings. The first independent variable (i.e. comprehension of connected written discourse) consisted of four multiple choice exercises where pupils had to choose the appropriate answer based on the overall meaning of the passage. The graph in figure 1 shows the obtained percentages between those students who misplaced the accent (Yes Group; n=13) and those who did not (No Group; n=52). This graph, as well as all subsequent graphs, show the group performance on the y axis and the number of mistakes on the x axis (0 represents zero mistakes, 1 represents one mistake etc.). Thus, figure 1 indicates that the children who did poorly in comprehension questions were those who had accentuation problems.

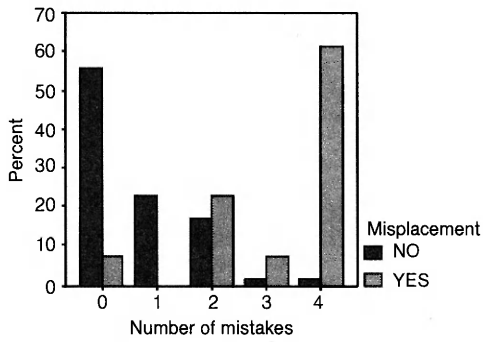

Figure 1. *Comprehension of connected written discourse between the two groups.*

The results of the second variable (i.e. semantic distinction of phonemically identical words on sentence level), where pupils were asked to place the accent on five unaccented sentences, are shown in figure 2. The graph shows that students who did poorly on the semantic differentiation of phonemically identical words were those with accentuation problems.

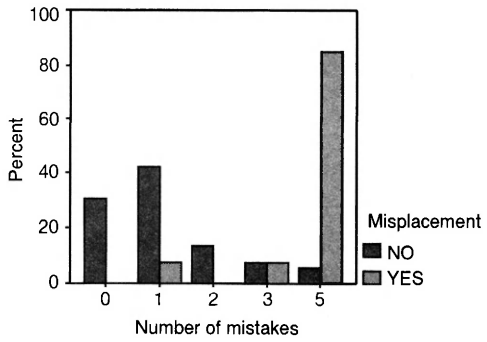

Figure 2. *Semantic distinction of phonemically identical words on sentence level between the two groups.*

The findings of the third variable (i.e. morphological differentiation of phonemically identical words), where pupils were asked to place the accent on words grouped in six pairs, are shown in figure 3. The graph shows that those students with accentuation problems did much worse in the morphological differentiation of phonemically identical words than those who did not face this problem.

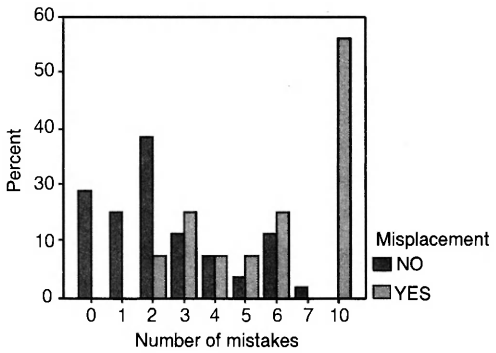

Figure 3. *Morphological distinction of phonemically identical words in isolation between the two groups*

The findings of the fourth variable (i.e. phonological awareness), where pupils were required to place the missing letter and accent mark on eight single words, are shown in figure 4. The graph indicates that pupils who have low phonological awareness (i.e., who performed poorly on the test) were those with accentuation problems.

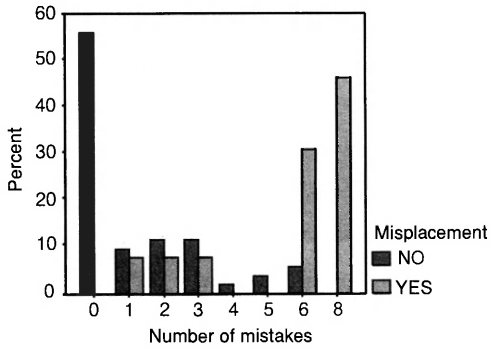

Figure 4. *Phonological awareness between the two groups.*

The results of the fifth variable (i.e. completion of written motifs), where students had to complete a sequence of letters, symbols and numbers, are shown in figure 5. The graph shows that pupils who had problems in completing the written motifs were those with accentuation problems.

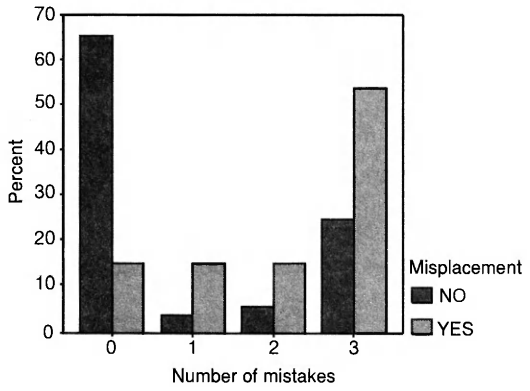

Figure 5. *Completion of written motifs between the two groups.*

Finally, the findings of the sixth variable (i.e. imitation of rhythmic movements), where students were required to (a) repeat hand clapping, (b) recognise and distinguish sounds, and (c) carry out rhythmic movements, are shown in

figure 6. The graph shows that students who performed poorly in the rhythmic exercises were again those with accentuation problems.

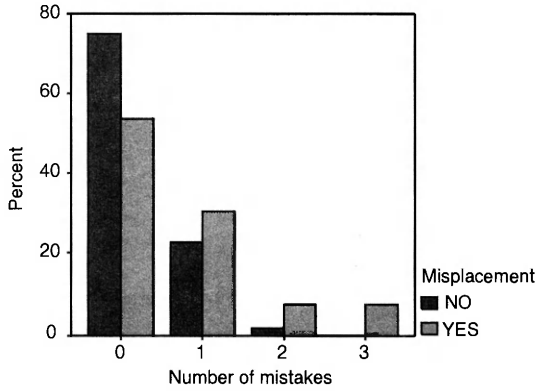

Figure 6. *Imitation of rhythmic movements between the two groups.*

3.1. Further Statistical Analyses

In addition to comparisons of percentages, further statistical analyses were undertaken in order to examine whether there were any significant differences or similarities between the students who have problems in placing stress marks and those who do not. Six T-tests were carried out for the six independent variables. The obtained results show that the difference between the average performance of the two groups for *all six* variables is statistically significant.

4. DISCUSSION

In this study an attempt was made to examine several issues concerning the problem of accentuation in Standard Modern Greek. A close examination of the obtained results revealed the following significant findings:

4.1. Misplacement of accent in relation to comprehension of connected written discourse

A statistical comparison showed that the mean of comprehension questions of the students who place correctly the accents was 0.71 (i.e. one mistake out of four). These results show that pupils who correctly place the stress did very well on this task. Concerning the group with accentuation problems, the mean of incorrect answers was 3.15 (i.e. three mistakes out of four choices). Moreover, the t-test showed that the difference between the average performance of the two groups is statistically significant ($t(63)=7.6$, $p < .0001$). On the basis of this

comparison, it appears that accentuation is related to comprehension of connected written discourse.

4.2. Misplacement of accent in relation to the semantic distinction of phonemically identical words on sentence level

Students who did not have major problems with accentuation had an average of 1.21 mistakes (out of 5), whereas the mean of the performance of those with problems was 4.54. Moreover, the t-test showed that the difference between the average performance of the two groups is statistically significant ($t(63)=6.3$, $p<.0001$). From these results it appears that the semantic distinction of the phonemically identical words on sentence level may be related to accentuation.

4.3. Misplacement of accent in relation to the morphological distinction of phonemically identical words in isolation

The average number of answers provided by the students who correctly place the accent was 2.40, whereas the average of the answers given by the other students was 6.85. Moreover, the t-test showed that the difference between the average performance of the two groups is statistically significant ($t(63)=6.3$, $p<.0001$). Again, it can be argued that the problem in placing accents on phonemically identical words is related to the problem of accentuation.

4.4. Misplacement of accent in relation to the level of phonological awareness

The exercise concerning phonological awareness required that students should place the letter (symbol) which was missing from words, along with the stress, when necessary. In completing this exercise, students had to pronounce the word aloud in order to find the correct missing sound. Thus, their phonological awareness was measured. The results show that the average of incorrect answers provided by students who do not face any problems in accentuation was 1.29 and the average of incorrect answers given by the other students was 6.00. Moreover, the t-test showed that the difference between the average performance of the two groups was statistically significant ($t(63)=7.7$, $p < .0001$). These findings reveal that phonological awareness is very much related to accentuation.

4.5. Misplacement of accent in relation to the completion of written motifs

In this exercise, students were required to complete motifs; to write letters, symbols and numbers in sequence. In this way, their level of attentiveness was measured. The mean of answers of those who do not face any problems in accentuation was 0.90 and of the other students was 2.08. Moreover, the t-test showed that the difference between the average performance of the two groups is statistically significant ($t (63)=2.9$, $p < .0005$). This finding shows that children who make more completion mistakes are those with problems in accentuation.

4.6. Misplacement of accent in relation to the ability to carry out specific rhythmic movements, recognise and distinguish music sounds, and imitate hand clapping

Rhythmic exercises were intended to reveal whether rhythm and misplacement of accent are related. The findings of the rhythmic exercises revealed that the mean of the answers of those students who do not face any problems in accentuation was 0.27 and of the other students was 0.69. Moreover, the t-test showed that the difference between the average performance of the two groups is statistically significant ($t(63)=2.258$, $p<.05$). That is, the children who did not follow rhythmic instructions are the ones who had problems with the placement of accent marks.

4.7. Concluding remarks

In conclusion, the comparison between the children with accentuation problems and the children who do not have problems in accentuation shows that indeed *all* six factors, that were selected for investigation, seem to be related to children's level of difficulty in placing stress marks. On the basis of these findings, primary school teachers may assist their students in overcoming problems of accentuation by developing various appropriate exercises (related to the factors tested in this paper).

It would be of interest to know whether the problem of accentuation is found in children who are learning the writing systems of other languages. For example, one may not expect problems of accentuation in French since the stress in this language is always placed on the last syllable of words. Also, it would be of interest to know whether the problem of accentuation is more prevalent in phonetic languages or in languages that follow strict historical spelling. The literature on this subject is very limited.

It must be noted at this point, that factors other than those identified and tested in the present study may also affect accentuation. The absence of any other relevant empirical studies in the literature does not allow us, at this time, to make any definitive statements. The results, however, of this *exploratory* study are challenging and may encourage further experimentation in this area.

REFERENCES

Arvaniti, A. (1991). *The Phonetics of Modern Greek Rhythm and its Phonological Implications*. Unpublished Ph.D. dissertation, Clare Hall, Cambridge.

Botinis, A. (1989). *Stress and Prosodic Structure in Greek: A Phonological, Acoustic, Physiological and Perceptual Study*. Lund University Press.

Dauer, R. M. (1980). *Stress and Rhythm in Modern Greek*. Unpublished Ph.D. dissertation, University of Edinburgh.

Fourakis, M. (1986). An acoustic study of the effects of tempo and stress on segmental intervals in Modern Greek. *Phonetica* **43**. 172-188.

Hulst, van der H. (1995). *Word accent: Word Prosodic Systems in the Languages of Europe*. New York.

Joseph, B. D. and Philippaki-Warburton, I. (1987). *Modern Greek*. London: Croom Helm.

MacKay, D. G. (1987). *The Organization of Perception and Action: A Theory for Language and Other Cognitive Skills*. New York: Springer-Verlag.

Magoulas, G. (1979). *Eisagogi sti Phonologia tis Neas Ellinikis*. (Introduction to Modern Greek Phonology). Athens.

Malikouti-Drachman, A. and Drachman, G. (1980). Slogan chanting and speech rhythm in Greek. In Dressler, W., Pfeiffer, O. and Rennison, J. (eds.) *Phonologica* 1980. Innsbruck. 283-292.

Nespor, M. and Vogel, I. (1986). *Prosodic Phonology*. Dordrecht: Foris.

Nespor, M. and Vogel, I. (1989). On clashes and lapses. *Phonology* **6**. 69-116.

Ralli, A. and Touradzidis, L. (1992). Ipologistiki epeksergasia tu tonismu tis Ellinikis (Computational analysis of stress in Modern Greek). *Studies in Greek Linguistics* **12**. 27-34.

Revithiadou, A. (1996). Modern Greek Accentuation. In *Proceedings of the 10th International Symposium on Theoretical and Applied Linguistics*. Thessaloniki. 249-256.

Sotiropoulos, D. (1972). *Noun Morphology of Modern Demotic Greek: A Descriptive Analysis*. The Hague: Mouton.

Theophanopoulou-Kontou, D. (1978). *Stoichia Phonitikis-Phonologias*. (Elements of Phonetics and Phonology). Athens.