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The Spelling of Function Letters in Hebrew among Hebrew-Speaking Students

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Abstract

Acquisition of the spelling of function letters, which is at the core of this study, is influenced by the unique traits of this group of letters: function letters are fewer in number compared to root letters; they are repeated frequently in written texts due to their grammatical functions and exposure to them is thus extensive; each letter has defined grammatical functions and mapping of the grammatical morphemes to their spelling is transparent and very regular, since every grammatical morpheme has only one spelling. Phonologically, only 7 of the 11 function letters have a homophonic alternative (alef, yod, he, kaf, vav, tav, bet). Morphologically, the function letters represent a relatively limited set of morphemes (compared to the set of root morphemes in the language), such that these 11 function letters serve to represent a large number of affixes. Certain function letters therefore symbolize a large range of morphemes. This organization of the function letters indicates the extent to which the writing system, the orthography, is a linguistic system: a small number of orthographic elements that symbolize a large number of linguistic categories, which are grouped together systematically.

The goal of the present study was to systematically examine the acquisition of the spelling of function letters in Hebrew at different ages, including their different linguistic traits (their morphological functions, their orthographic position and their phonological representation) together with their frequency in the language, which changes between the different function letters in the different functions. The study is based on the psycholinguistic perception which views language as a cognitive representation system and tests the manner of acquisition and representation of linguistic knowledge. According to this perception, the effectiveness of learning and the quality of the representation of the spelling system are derived from reciprocal relations between a series of psycholinguistic factors, including the frequency of the items, the consistency and regularity of their appearance and the relations between them. The uniqueness of this research is in defining criteria which on the one hand represent the psycholinguistic factors that influence the quality of the written representation (transparency, regularity and frequency) as a function of the phonological, morphological and orthographic components of the function letters and on the other hand defining the criteria that enable classification of the function letters into groups with a uniform psycholinguistic profile based on their linguistic traits and their psycholinguistic behavior.

In this study we first created profiles of all the words in the spelling test, out of the 57 linguistic categories of words that were used in the spelling test. Creation of the profiles comprised the basis for testing differences in spelling achievements between students of different ages. The profiles could then be used to test differences in achievements in a function letter spelling test between students of different ages according to all five above-defined criteria, and thus to determine the significance of each of the criteria at different ages according to the gaps obtained in

the achievements of students of different ages. The word categories (57 linguistic categories according to the letter and its function in the language) were classified into profiles with identical traits according to psycholinguistic aspects of the behavior of the function letters, as expressed in the five defined criteria. This procedure yielded ten profiles that included all 57 categories of words which contain function letters which were classified as having identical traits in the different poles of the five criteria that in this research defined the psycholinguistic aspects.

The research tested differences in achievements in a function letters spelling test according to different ages and according to the factors of the frequency, the transparency and the regularity of the function letters: frequency of the word in the language (frequent, infrequent) in each of the five transparency and regularity criteria that were defined in the study. The goals of the study were: (1) To test differences in achievements in a function letters spelling test among students of different ages (second, fourth, seventh and tenth grades) according to the word's frequency level (frequent, infrequent) and the orthographic position of the function letter in the word; (2) To test differences in achievements in a function letters spelling test among students of different ages (second, fourth, seventh and tenth grades) according to the word's frequency level (frequent, infrequent) and the frequency of the morphological function of the function letter; (3) To test differences in achievements in a function letters spelling test among students of different ages (second, fourth, seventh and tenth grades) according to the word's frequency level (frequent, infrequent) and the existence of enemies (phonological, morphological or orthographic competitors); (4) To test differences in achievements in a function letters spelling test among students of different ages (second, fourth, seventh and tenth grades) according to the word's frequency level (frequent, infrequent) and the function letter's phonological representation (hidden or non-hidden phonology); (5) To test differences in achievements in a function letters spelling test among students of different ages (second, fourth, seventh and tenth grades) according to the word's frequency level (frequent, infrequent) and reliance on a powerful orthographic generalization (reliance or breach of the generalization) for spelling the function letter. The research also tested differences in achievements in a function letters spelling test between students of different ages in words with different levels of frequency, according to all five criteria together, in order to determine differences in the importance of the criteria at different ages according to the gaps in the students' achievements at different ages, for each criterion.

The research results indicate the importance of the criteria that were defined for transparency and regularity, as follows: (1) When the function letter is positioned in distinct margins of the word, achievements were higher in all grades compared to a situation where the function letter is embedded in the word. These differences in achievements decreased with the increase in age. This was true for both frequent and infrequent words, with greater differences for infrequent words; (2) Higher achievements were found in all grades, except for tenth grade, when the function letter is common in a morphological function versus a situation where it is

not common in a morphological function, for both frequent and infrequent words in the language; (3) Higher achievements were found in all grades when the function letter does not have enemies, i.e. when the function letter does not have a phonological or morphological alternative that may compete for its standard spelling. These differences in achievements decreased with the increase in age, until their disappearance in tenth grade. This was true for both frequent and infrequent words, with greater differences for infrequent words (except for tenth grade, where no difference was found between frequent and infrequent words); (4) Higher achievements were found in all grades when the function letter has full phonological representation (phonology that is not hidden), i.e. when a grapho-phonemic relation exists between the written function letter and its sound representation, such that it is not partial or vague, and does not rely solely on morphology. These differences in achievements decreased with the increase in age for both frequent and infrequent words; (5) Higher achievements were found in all grades when the orthographic generalizations in the language, which are characterized by regularity and consistency, exist and guide the spelling of the function letter (contrary to a situation where the spelling of the function letter breaches an orthographic rule in the language). These differences decreased with the increase in age, and disappeared in seventh and tenth grades for both frequent and infrequent words.

Furthermore, the varying degrees of importance of the criteria in the different grades according to the gaps in the students' achievements in the different ages, in each criterion, indicated that each of the five criteria was significant for the students when spelling the function letter, and leads to differences in achievements on the spelling test. These differences in achievements decrease with the increase in age, and were more significant for infrequent words in the language compared to frequent words. It was further found that the distinct marginal criteria, the frequency of the letter in the morphological and hidden phonological function lead to greater gaps in achievements than the criteria of the existence of enemies for the function letter and powerful orthographic generalization.

Testing the significance of the different defined criteria during the spelling acquisition process at different ages enables a unique perspective on the nature and rate of acquisition of the spelling of function letters, which contributes to knowledge on teaching spelling to Hebrew-speaking students. The findings that illuminate certain criteria as more significant for the acquisition of the spelling of function letters over the course of the school years point to the importance of explicit teaching of morphological knowledge – the morphological and functional aspects of the language and the tight connection between them; the importance of explicit teaching for aspiring to understand regularity and generalizations in spelling; the importance of the extent of exposure to the variety of words in the language, which increases familiarity with the words and as such may compensate for irregularity or low transparency in the relations between phonology-orthography-morphology in the function letters. Teaching spelling in general, and teaching the spelling of function letters in particular, will not only improve the standard spelling, but will also

strengthen and consolidate the emergent linguistic knowledge among the students about their language. The innovative research findings lay the foundations for constructing an intervention program for spelling that focuses on the group of function letters and enables hierarchical and systematic observation of the nature and rate of their acquisition.