



The role of the morpho-phonological word-pattern unit in single-word production in Hebrew

Avital Deutsch*, Tamar Malinovitch

The School of Education, The Hebrew University of Jerusalem, Mount-Scopus, Jerusalem 91905, Israel



ARTICLE INFO

Article history:

Received 8 September 2014
revision received 7 October 2015
Available online 6 November 2015

Keywords:

Morphological word-patterns in Hebrew
Word production
Picture–word-interference paradigm
Morphology

ABSTRACT

Complex words in Hebrew are composed of two non-concatenated interwoven units: (1) a consonantal *root* morpheme usually comprising three consonants, embedded within (2) a *word-pattern* morpho-phonological unit made up of vowels or vowels + consonants. The word-pattern unit provides segmental, vocalic and metrical structure information about the word. Using the picture–word interference paradigm with auditorily presented distractors, we investigated the role of the word-patterns within the nominal system, i.e. the *nominal*-patterns, during word production, using 4 different SOAs (ranging from –200 ms to 300 ms). Compared to an unrelated distractor, the results revealed a facilitatory nominal-pattern effect in the time window of SOAs from –200 ms to 300 ms. This effect (1) had a different time-course than a pure phonological effect, and (2) was not conditioned by semantic similarity. The effect of the nominal-pattern is ascribed to the form, lexical, word-form level, where the patterns, together with the roots, mediate the mapping of the lemma into phonological words. It is suggested that Hebrew speakers attain a word's phonological form by identifying these patterns, which combine rich phonological information from the segmental and the supra-segmental structure.

© 2015 Elsevier Inc. All rights reserved.

Introduction

Various theories of lexical representation and access postulate decomposed representations of morphologically derived complex words. This architecture is posited in models of written-word recognition (e.g., Rastle, Davis, & New, 2004; Taft, 1979, 1994), as well as major models of word production (e.g., Dell & O'Seaghdha, 1992; Levelt, Roelofs, & Meyer, 1999; Roelofs, 1997). A great deal of research on written-word recognition in Hebrew supports the model of decomposed representation of derived complex words, and converges with the theoretical postulation that the Hebrew mental lexicon is organized according to morphological principles that govern lexical access (e.g., Frost, 2012; Frost, Kugler, Deutsch, & Forster, 2005).

However, although the decomposed representation of morphologically complex words, and the notion of a morphologically based mental lexical organization governed by processes of de-composition, are fairly well-established for descriptions of lexical access in written-word perception, they are not so well-established empirically for production. Moreover, it still remains an open issue to discover how this architecture captures the various morphological components that constitute the complex derivational structure of words in both perception and production. The present study focuses on one of the fundamental derivational morphological units in Hebrew – the *nominal word-pattern* – in production. As detailed below, the existing findings for the nominal word-pattern morpheme in Hebrew, in both perception and production, are not unequivocal. However, illuminating this morpheme's role is a crucial step in delineating a comprehensive detailed account of the architecture of the Hebrew

* Corresponding author. Fax: +972 2 6730756.

E-mail address: avital.deutsch1@mail.huji.ac.il (A. Deutsch).

Table 1

Example of one set of stimuli used in Experiments 1a to 1d. The mean frequencies of the distractors are in parenthesis. Pattern segments are in bold.

Picture name	Morph. related	Phon. related	Unrelated
[tavjil] “a stew”	[taksjɪʁ] “an abstract” (11.8)	[tatsjum] “a photograph” (13.6)	[nijak] “paper” (10.7)

mental lexicon, which has the typical organization of Semitic languages, that of non-concatenated morphological structures. Studying the nominal-pattern morpheme in production should enrich our sparse knowledge of word production and shed light on the more general issue of the lexical organization of a typical non-concatenated Semitic structure across the domains of perception and production.

We begin with a brief description of the basic structure of Hebrew derivational morphology, highlighting the specific characteristics of immediate relevance to the present research.

A brief description of Hebrew morphological structure

In Hebrew, as in other Semitic languages, all verbs and the vast majority of nouns and adjectives are composed of two derivational morphemes, roots and word-patterns. Roots usually consist of three consonants and are embedded in phonological word-patterns to form words. A word-pattern can be either a sequence of vowels or a sequence with both vowels and consonants. For example, the root “k.d.x” can be interwoven with the nominal-pattern “maCCeCa” (where the letter C represents the position of a root consonant) to form the word /makdexa/ (*a drill*), or with the verbal-pattern niCCaC to form the verb /nikdax/ (*was drilled*). This complex structure constitutes the basic form (i.e., the stem) to which additional inflectional and/or derivational morphemes – prefixes and or suffixes – can be attached. The affixation of consonants includes prefixes and suffixes, which are always one of a very few consonants – /m/, /h/, /t/, /n/ or /ʔ/ – in combination with any of the five distinguished vowels in modern Hebrew.¹ In Hebrew the vowels are marked by “diacritical marks” inserted above, below or within the consonants. Some vowels can also be denoted by specific letters which also represent consonants. The common written form of Hebrew (called unpointed script), however, omits the diacritical marks, so that the written form fails to convey a major part of the vocalic information. For example, the orthographic unpointed script of the word /makdexa/ is mkdxh, where only the last vowel, /a/ (in the third syllable), is denoted in print by the letter h.

The root usually carries the core meaning of the word, whereas the word-pattern carries morpho-syntactic

information (part of speech and verb sub-categorization) and determines the word’s prosodic and vocalic structure. For example, the word-pattern “maCCeCa”, in the above example, indicates that words derived from the pattern are nominal forms composed of 3 syllables – closed, open, and stressed open – with a vocal structure composed of the vowels /a/, /e/ and /a/, as in the word /mak-de-’xa/. Thus, a word’s metrical structure is determined by a fixed, pre-existing number of phonological constructions constituting the word-pattern morphemes, so that grammatical features such as part of speech have an explicit morphological representation via these phonological constructions.

The word-patterns have only very global semantic characteristics that shape the core meaning of the root, such as tool, instrument or profession for nouns, and reflexive or causation for verbs. However, a word’s specific meaning cannot necessarily be predicted by analyzing the two morphemes independently. This is because the semantic characteristics, particularly of the nominal patterns, are not only very general, but often ambiguous: a given word-pattern can usually denote more than one semantic category, and specific semantic categories can be denoted by more than one pattern. In the above example of “maCCeCa”, this nominal word-pattern can indeed denote a tool such as /makdexa/ (*a drill*), or instruments such as /mavxena/ (*a test tube*) and /matslema/ (*a camera*), but may also denote words which are not tools or instruments, such as /madrega/ (*a stair*) or /maxpela/ (*a product of multiplication*). At the same time, the meaning of tool can be conveyed by other word-patterns, such as “CaCCiC”, which forms the basis of /patiʃ/ (*a hammer*), and “miCCeCet”, which forms the basis of /mivrefet/ (*a brush*). Furthermore, there are many word-patterns that can hardly be semantically characterized at all and may denote various nouns (concrete or abstract), such as “taCCiC”, which gives us /tafrit/ (*a menu*) and /taksjɪr/ (*an abstract*), or “tiCCoCet”, which provides /tizmoret/ (*an orchestra*), and /tismonet/ (*a syndrome*).

Although the general principle of embedding a root in a word-pattern is shared by the Hebrew nominal and verbal systems, the two systems differ in some important linguistic and thus also statistical characteristics. There are only seven active verbal-patterns in Hebrew, but many more nominal patterns (over 100). Furthermore, each conjugated verbal form must be derived from one of the seven patterns. Consequently the seven verbal-patterns are used again and again, making each pattern very frequent. This feature does not hold for the nominal system. This is because, in addition to the fact that there are many more nominal-patterns than verbal-patterns, the nominal system also contains words which do not have the complex morphological structure of a root + a word-pattern, such as /barzel/ (*iron*) and /telephone/, which cannot be decomposed into a root and a nominal-pattern. However, to construct a verbal form like /tilpen/ (*made a phone call*),

¹ In fact there are more than five vowels in Hebrew. However, the phonetic distinctions between some pairs have been lost in Modern Hebrew, so that the naive native Hebrew speaker hears the different words as having only five vowels. (See Footnote 2 for an example.)

² The double CC between the two vowels represents the gemination of the second root consonant in this pattern. In this case the vowel /a/ is in fact a short vowel, and has a special mark in pointed Hebrew, in contrast to a long /a/. However, this phonetic distinction has not been kept in spoken Hebrew.

Download English Version:

<https://daneshyari.com/en/article/7296955>

Download Persian Version:

<https://daneshyari.com/article/7296955>

[Daneshyari.com](https://daneshyari.com)