CHAPTER NINE

DO SYLLABLES EXIST?
PSYCHOLINGUISTIC EVIDENCE FOR THE RETRIEVAL OF
SYLLABIC UNITS IN SPEECH PRODUCTION

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1 Introduction

Do syllables exist? Do syllables represent functionally relevant units in
the course of speech production planning? Are syllables parts of the
word forms that are stored in long term memory? Do syllables exist
independently of the word forms, as separately stored units that are
accessed during late stages in word form encoding? At what levels do
syllables come into play, i.e. what is the psycholinguistic evidence for
syllables as phonological and/or as phonetic units? Do syllables con-
stitute applicable articulation units? How can we envision the inter-
play and coordination of syllabic units on different encoding levels?

This chapter aims to find answers to these questions by a) reviewing
theories of word production and their different assumptions regard-
ing the involvement of syllables at different encoding levels during
speech planning and b) by contrasting psycholinguistic evidence for
and against these different assumptions.

The focus within the presentation of psycholinguistic evidence will
lie on the presentation of syllable-frequency effects in different lan-
guages. Because only stored units are expected to exhibit frequency
effects, effects of syllable frequency provide strong evidence for the
assumption that syllables are (separately) stored units. In particular, a
series of experiments will be presented that investigates the effects of
syllable frequency in mono- and disyllabic Dutch and English pseudo-
words. The comparison of the results for disyllabic pseudo-words in
Dutch (a language with relatively clear syllable boundaries) and Eng-
lis h (a language with less clear syllable boundaries) will give insight
into the temporal coordination of adjacent syllables.
1.1 Theories of Word Production and the Involvement of Syllables

Theories of word production generally agree that syllabic units are involved in speech production planning (e.g. Dell 1986, 1988, Levelt, Roelofs and Meyer 1999, Shattuck-Hufnagel 1979, 1983 but see Shattuck-Hufnagel, chapter 8, this volume), however, there are contrasting assumptions regarding at what level(s) syllables come into play. While some researchers (Dell 1986, 1988, Shattuck-Hufnagel 1979, 1983) assume that syllables are an inherent part of the lexicalized word forms, others (e.g. Cholin, Schiller and Levelt 2004, Levelt, Roelofs and Meyer 1999, Schiller and Costa 2006) argue that syllables (as abstract phonological units) emerge during context-dependent online syllabification processes and are separately stored and retrieved as phonetic syllable programs (Cholin, Levelt and Schiller 2006, Cholin and Levelt 2009, Crompton 1981, Laganaro and Alario 2006, Levelt and Wheel- don 1994).

Current theories of word production start with the activation (Dell 1986) or the selection (Levelt, Roelofs and Meyer 1999) of a semantic-syntactic representation, the so-called lemma which, in turn, activates its corresponding word form. The different theories make different assumptions with respect to the quality of the word form, or rather with respect to the kinds of information that are released upon retrieval of the word form. Dell (1986, 1988) assumes that the word’s phonological code is syllabified. In his theory, word form retrieval makes two kinds of information accessible: a) phonological syllabic units (bundles of segments) and b) syllabic frames or word-shape headers, that specify the consonant-vowel (hereafter CV-) structure of the syllable and syllable-internal positions such as onset, nucleus, and coda (for similar assumptions see MacNeilage 1998, Shattuck-Hufnagel 1979, 1983). The frames or word-shape headers serve as placeholders in which the segmental content will be filled in during the process of segment-to-frame-association.

On the other hand, Levelt, Roelofs and Meyer (1999) assume that the phonological code of a word form merely consists of an ordered set of phonological segments. Crucially, at the stage of phonological encoding, phonological segments are not yet assigned to syllabic positions. Unlike the Dell model, which assumes that the metrical structure is an inherent feature of the retrieved word-shapes, the Levelt, Roelofs and Meyer theory assumes that the stress pattern for a given word is only stored in case of a non-default stress pattern. For monosyllabic