SYLLABLE STRUCTURE EXPERIMENTS
IN KOREAN, TAIWANESE AND ARABIC

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1. BACKGROUND

The experimental investigation of syllable structure began with the work of Treiman [1,2, etc.], who used a variety of string manipulation tasks (notably word-blending) to determine whether such hypothesized units as the onset, rime or coda were viable for English. Dow [3,4,etc.] continued this work, using primarily a unit-substitution (and deletion) task. Taken together, this research lent support to the idea that English syllables have an onset+rime or right-branching structure.² Treiman & Danis [6], using an oral string-inversion and a written slash-insertion task, have recently extended this investigation to the question of syllable boundaries in English, putting such notions as the Maximal Onset Principle to experimental test. A chief purpose of the present study was to extend or adapt the methodologies developed in these English language investigations to other languages of diverse types, in order to explore the question of the universal generality of the findings.

For a variety of both practical and theoretical reasons, the first languages selected for the cross-

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²More recent work has suggested an alternative interpretation that is less hard and fast (see [5]).
linguistic extension of these investigations were (1) Taiwanese, a language spoken widely throughout the island of Taiwan,\(^3\) which is one of the few variants of Chinese that has a substantial number of postvocalic or coda consonants;\(^4\) (2) colloquial Arabic, as spoken in Cairo, Egypt; (3) Blackfoot, an Algonquian language spoken on and around the Blood Reserve in southern Alberta, Canada; and (4) Korean, as spoken in and around the area of Seoul. The original focus of the investigation was to seek counterparts in these languages of some of the same structural units that had emerged from the English investigations (such as the onset, rime, nucleus and coda), as well as to clarify the question of syllable boundaries in these languages.

The initial data collection attempts were subsequently made in I-lan, Taiwan (for Taiwanese) in February of 1990; in Cairo, Egypt (for Arabic) in May and June of that year; and in Lethbridge, Alberta, Canada (for Blackfoot) in July and August. In each case the attempt was made to adapt directly the same unit-substitution (US) and string-inversion (SI)\(^5\) tasks that had worked particularly well for English. Our initial attempts were extremely disappointing, however, as our pilot subjects in each of the first three languages listed above had great difficulties with both techniques, failing either to understand the tasks at all, even after multiple promptings, or yielding data that were chaotic and

\(^3\)This language is a variant of South Min, which originated in the southern part of Fukien Province. 

\(^4\)Specifically, these consonants are the stop series /p,t,k/ and the corresponding nasal series /m,n,ŋ/, as well as the glottal stop in some dialects (but not in the one tested here). To allow for the testing of subjects from different dialect areas, words were avoided that exhibited dialectal features (such as initial /z/) that were known to vary throughout Taiwan. 

\(^5\)No string-inversion or other syllable-boundary task was envisaged for Taiwanese, as the problem of syllable division is a trivial one in that language.
uninterpretable. Before we even attempted to explore the Korean case, therefore, it had already become clear that some new or at least greatly modified techniques were going to have to be developed if the project was to progress any further.

2. THE CROSS-LINGUISTIC EXPERIMENTAL ASSESSMENT OF SYLLABLE CONSTITUENTS

The purpose of the US task, as noted above, was to yield information about the full range of hypothesized intra- or sub-syllabic units (see [4] for a convenient summary). However, among the various hypothesized constituent elements of syllables, the onset and the rime have a particularly important status, both from the standpoint of empirical support and theoretical prominence. (Some claims have been advanced, in fact, that these two categories might even be universal.) If it was impractical at this stage to collect good information about all of the various subcomponents of syllables, therefore, an alternative that might clarify the primary break point was the next most appealing prospect.

From this perspective, Treiman's word-blending task was an attractive possibility, since it had already been successfully employed in English for this purpose.\(^6\) From a purely practical standpoint, however, this task also shared a common handicap with the more ambitious US technique, in that both were production tasks that required the eliciting of individual responses from individual subjects, at enormous cost in time and effort for subjects and experimenters alike. Restricting the main question of interest in all these languages to the direction of the primary bonding between the vowel and adjacent consonants, therefore, we decided to try a forced-choice version of this task that could be group administered.

2.1. The Forced-Choice Word-Blending Task. Two

\(^6\)As the authors note, the results using this technique were rather less successful in assessing the status of 'lower' units, such as the nucleus (peak) and the coda.
versions of this task were developed and were validated for English, as illustrated below. In both cases, a series of monosyllabic real words are presented as input and the four possible first-order blends are offered for selection as output, two based on a primary break occurring before the vowels (the "On + Ri" blends) and two based on a primary break after it (the "He + Co" blends).\footnote{Abbreviations: On(set), Co(da), Ri(me) [= Nucleus/Peak + Coda], He(ad) [= Onset + Nucleus/Peak].}

2.1.1. Four-Choice version (Written Choices Only)

In this version of the test, the subjects hear a pair of input words and are asked to choose which of the four blends they prefer, selecting from a set of written responses. Four examples from an English form of this test are indicated below. For convenience, the two On + Ri blends are underlined, with the He + Co blends left unmarked.

1. PACK + DOG -> (a) POG (b) DACK (c) PAG (d) DAWK

2. GOOSE + SHADE -> (a) GADE (b) GUDE (c) SHOOSE (d) SHACE

3. BOOT + COVE -> (a) BOOVE (b) BOVE (c) COOT (d) COAT

4. POUND + JOIST -> (a) JOIND (b) POUST (c) JOUND (d) POIST

One advantage of this version of the test is that it permits the very rapid collection of a large body of data, since the test cannot only be group administered, but all four possibilities are handled at once for each input word-pair, yielding a relatively large amount of data from a relatively short test - a particularly valuable feature for pilot work. However, this form of the test also suffers from some potentially serious defects related to problems of control: (1) it places a relatively high burden on short-term memory, possibly biasing the results in favor of early responses; (2) it introduces a possible bias in favor of the linear or left-to-right ordering of parts; and (3) it rather