found that the location of the boundary depended on the metrical context in which the sequence was perceived, providing another example of the influence of meter on perception; cf. section 3.2.2.)

In speech, the duration of basic linguistic elements (such as phonemes and syllables) is influenced by a number of factors. For example, there are articulatory constraints on how fast different sounds can be produced, which creates different minimum durations for different sounds (Klatt, 1979). There are also systematic phonological factors that make some sounds longer than others. For example, in English, the same vowel tends to be longer if it occurs before a final stop consonant that is voiced rather than unvoiced (e.g., the /Æ/ in “bead” vs. “beet”), and this difference influences the perception of the final stop as voiced or voiceless (Klatt, 1976). A simple phonological factor that influences syllable duration is the number of phonemes in the syllable: Syllables with more phonemes tend to be longer than those with fewer phonemes (e.g., “splash” vs. “sash”; Williams & Hiller, 1994). Atop these sources of variation are other sources including variations in speaking style (casual vs. clear), and variations in speech rate related to discourse factors, such as speeding up near the end of a sentence to “hold the floor” in a conversation (Scheffelin, 1982; Smiljanic & Bradlow, 2005). Given all these factors, it is not surprising that the durations of speech elements do not tend to cluster around discrete values. Instead, measurements of syllable or phoneme duration typically reveal a continuous distribution with one main peak. For example, Figure 3.6a shows a histogram of syllable durations for a sample of spoken English.

Figure 3.6a Histogram of syllable durations in a corpus of spontaneous speech in American English. Data are from approximately 16,000 syllables. Mean syllable duration = 191 ms, SD = 125 ms. Syllables with duration >750 ms are not shown (<1% of total). Histogram bin size = 10 ms. Analysis based on data from Greenberg, 1996.