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Computerized Analysis of Phonological Structure of 10,400 Brazilian Sign Language Signs

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Abstract : Capovilla and Raphael's Libras Dictionary documents a corpus of 4,200 Brazilian Sign Language (Libras) signs. Duduchi and Capovilla's software SignTracking permits users to retrieve signs even when ignoring the gloss corresponding to it and to discover the meaning of all 4,200 signs sign simply by clicking on graphic menus of the sign characteristics (phonemes). Duduchi and Capovilla have discovered that the ease with which any given sign can be retrieved is an inverse function of the average popularity of its component phonemes. Thus, signs composed of rare (distinct) phonemes are easier to retrieve than are those composed of common phonemes. SignTracking offers a means of computing the average popularity of the phonemes that make up each one of 4,200 signs. It provides a precise measure of the degree of ease with which signs can be retrieved, and sign meanings can be discovered. Duduchi and Capovilla's logarithmic model proved valid: The degree with which any given sign can be retrieved is an inverse function of the arithmetic mean of the logarithm of the popularity of each component phoneme. Capovilla, Raphael and Mauricio's New Libras Dictionary documents a corpus of 10,400 Libras signs. The present analysis revealed Libras DNA structure by mapping the incidence of 501 sign phonemes resulting from the layered distribution of five parameters: 163 handshape phonemes (CherEmes-ManusIculi); 34 finger shape phonemes (DactilEmes-DigitumIculi); 55 hand placement phonemes (ArtrotoToposEmes-ArticulatiLocusIculi); 173 movement dimension phonemes (CinesEmes-MotusIculi) pertaining to direction, frequency, and type; and 76 Facial Expression phonemes (MascarEmes-PersonalIculi).

Keywords : Brazilian sign language, lexical retrieval, libras sign, sign phonology
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