

LINGUISTIC ICONICITY IN LIBRAS NARRATIVE TRANSLATIONS

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ABSTRACT: Independently of the modality of language, the paper shows how iconicity forms the translation of a Portuguese poem into LIBRAS. Taking into consideration its phonemic iconicity in both languages, certain patterns seem to appear under common specific meanings. Thus, icons of nature are preferably expressed by closed phonemes, whereas patterns of linearity and flatness are performed by open phonemes. It suggests the use of iconicity as a metalinguistic awareness tool and mnemonic device.

KEYWORDS: Iconicity; Translation; LIBRAS; Portuguese.

RESUMO: Independentemente da modalidade da linguagem, o artigo mostra como a iconicidade forma a tradução de um poema português para a LIBRAS. Considerando sua iconicidade fonêmica em ambas as línguas, certos padrões parecem aparecer sob significados específicos e comuns. Assim, os ícones da natureza são preferencialmente expressos por fonemas fechados, enquanto formas de linearidade e planicidade são realizadas por fonemas abertos. O artigo sugere o uso da iconicidade como meio de consciência metalinguística e dispositivo mnemônico.

PALAVRAS-CHAVE: Iconicidade; Tradução; LIBRAS; Português.

1. INTRODUCTION

A common practice in classes and schools of deaf pupils is the translation and/or transliteration of written texts into the target sign language (SL). Especially at the first grades of primary schools, and according to their signing level, teachers apply such practices so as to convey meaning from one language to the other (from Portuguese to Libras and vice versa) for the better understanding (in comprehension or production) of the relationship between the words and morphosyntactic forms of a text (with its broader meaning; oral, written, video-based). In this process, there is always the question of how best to present to deaf students printed material of a language that is never heard, which, in turn, can facilitate its learning and recall. Back

in the seventies, when the focus of language teaching shifted to communication approaches (including SL teaching), it was suggested that the teaching method must enable the student to “file” the material by using family mnemonic tags that is related to the linguistic concept of iconicity (Croft, 1978, p. 510-511).

The term *iconicity* or *language symbolism* refers here to any non-arbitrary relationship between a linguistic form and its real-world referent. The paper adopts the typology of symbolism by Hinton, Nichols and Ohala (1994, p. 4) as the direct linkage between form and meaning, where certain forms “are chosen to consistently represent visual, tactile, or proprioceptive properties of objects, such as size or shape.” This relationship is more transparent in SLs, as they make use of iconicity to a much greater extent than spoken languages (Taub, 2001). Their visual-manual modality provide “richer resources for creating structural similarities between phonological form and meaning,” since their visual three-dimensional modality “allows for iconic expression of a wide range of basic conceptual structures, such as object and human actions, movements, locations, and shapes” (Emmorey, 2014, p. 1574).

For spoken languages, an obvious example is *onomatopoeia*, in which there is resemblance between a word and the sound that it represents (e.g. boom, meow), common across languages, although in different languages the sound is captured by different sets of phonemes (e.g. a dog’s barking: woof woof, au au, gav gav) (cf. Svantesson, 2017). Other languages (e.g. Japanese, Greek) utilise *mimetics*, words that resemble their meanings and are often used in interactions with children and in poetry (e.g. Japanese: goro goro for “thunder” or “stomach rumbling”; Greek: plits-plats for “falling water”). Another example is the *phonesthemes*, particular sound sequences that are used across a range of words within a language to reflect semantically related meanings (e.g. the consonant cluster gl- for shining/light meanings: glisten, gleam, glitter, glow). These phenomena are common across natural languages, and a growing literature suggests more pervasive sound-to-meaning correspondences, although there may well be special cases.

In language teaching, the idea is to actively seek for examples of iconicity in material to be covered (e.g. literacy/narrative materials) so as to add the iconic tag to the students' repertoire of mnemonics. The iconic tag provides the student with a ready-made associative tie between the realms of sense and i.e., sound/vision, thus playing an important part in the recall of linguistic material (Croft, 1978, p. 511). When form and meaning are congruent, learning the link between them is easier (Lockwood, Dingemanse & Hagoort, 2016, p. 7), since iconicity provides a scaffolding mechanism during early language acquisition that fosters multi-sensory integration and semantic processing (Imai & Kita, 2016).

For example, cross-linguistic matching task studies suggest that some aspect of the sound properties of unfamiliar words systematically relates to meaning, and that language users/learners recognise these correspondences (Vinson, Thompson, Robin, Skinner & Vigliocco, 2015). It is also shown that listeners display a response-time advantage in processing sentences that contain nouns and verbs with category-typical phonological structure over sentences that contain nouns and verbs with atypical structure (Ibid.). In relation to SLs, research shows that iconic mappings help language processing. Specifically, it is demonstrated that tasks of an image-sign matching type, contain highly iconic signals that facilitate faster and more accurate responses; and automatically involve the retrieval of semantic representations, therefore, they undergo deeper (conceptual) processing than non-iconic signals. They also affect the metalinguistic judgments of the similarity of the signs (Ibid.).

In relation to translation (from ASL to English and vice versa), it is shown that for fluent signers iconicity interacts with other variables that slow translation, due to the fact that the iconic signs may have more translation equivalents than the non-iconic signs (Baus, Carreiras & Emmorey, 2013). In this case, iconicity slows translation performance by forcing conceptual mediation for iconic signs, which is slower than translating via direct lexical links. It is also likely that iconicity plays an important role in some aspects of linguistic behavior, such as metaphor creation (and interpretation), novel sign formation, and SL poetry (Ibid.).

Within this context, the paper aims at demonstrating how the iconicity of both languages (spoken and SL) can be used as a meta-linguistic awareness means, especially for the construction of signs and their motivational character.

2. ICONIC SIGNS AND MEANINGS

In such analysis, the work of a teacher is to break down the text and identify its iconic elements, accompanied by certain semantic explanations. In doing so, teachers must be aware of research indicating the meaning-phoneme relationships (e.g. for spoken languages, vowels and consonants; for SLs, hand configuration, movement). There is extensive empirical evidence that phonemes contain a relation to certain abstract concepts (e.g. brightness versus darkness, size, emotional tone). For example, in relation to vowels, research supports front vowels (/i/, /e/) to communicate smaller size and the diminutive, while back vowels (/o/, /u/, /a/) communicate larger size. Front vowels, by their nature, are of a higher frequency than back vowels. As such, front-high vowels are believed to convey smallness, while back-low vowels suggest largeness. Extant literature supports a front-back vowel distinction for a number of contrasts: light-dark, soft-hard, more-less mild, thin-thick, weak-strong, light-heavy, fast-slow, cold-warm, more-less pretty, bitter-sweet, and more-less friendly. A feminine-masculine meaning may also be communicated, thus front vowel sounds are more closely associated with femininity than back vowel sounds. Front-high vowels also appear to connote angularity/linearity, whereas back-low vowels round objects¹.

In relation to consonants, higher frequencies suggest more diminutive forms, which may also include softness, rapidity, sharpness, lighter weight, and femininity. Thus, following Klink (2000), fricatives (/f/, /s/, /v/, /z/), as opposed to stops (/p/, /t/, /b/, /d/, /g/, /k/), are perceived as: smaller, faster, lighter (relative to heavier), sharper, softer, and more feminine. In relation to emotional state, nasals (/m/, /n/) are perceived as expressing sad feelings, and plosives (/p/, /b/, /t/, /d/) as expressing happy feelings (Auracher, Albers, Zhai, Gareeva & Stavniychuk, 2011, p. 3). With respect to the level of frequency, there is a higher frequency associated with: fricatives relative to stops;

voiceless stops relative to voiced stops; and voiceless fricatives relative to voiced fricatives.

Köhler (1947) demonstrated a geometric relationship between sound and meaning, mapping pseudowords like *takete* - *kiki* to spiky and angled forms, and *maluma-bouba* to round shapes and soft-looking forms. Since then, the *maluma-takete* phenomenon has been repetitively tested, showing its occurrence in many languages, and an overall connection of sonorant consonants (/l/, /m/, /n/), and the vowels /a/, /o/, /u/ with roundness; and of plosives (/k/, /p/, /t/) with angularity/linearity. Katz (1986) suggested that monosyllabic words tend to differ as a function of their embedded vowels. Hence, certain dimensions of their meaning (e.g. potency, activity, roundness) are possibly conveyed, in part, by the nature of the embedded vowel.

Koreat and Levy (1977, p. 101) demonstrated that the symbolic connotations of vowel phonemes are reflected in their orthographic representations in the writing systems of natural languages, suggesting “a metaphorical mode of thinking” underlying “the invention and/or evolution of orthographic signs” (p. 100). They also suggested the figural parallel of sound symbolism to be sought in physiognomic or *Gestalt*-type attributes of the orthographic signs, since there are spelling rules that map the visual form of letters to sounds, and in reading the two are confounded. This relationship is demonstrated by Doyle and Bottomley (2011), who argued that the physical characteristics of typefaces may conflict with or reinforce the message conveyed by sound symbolism. Thus, “kozy” as an angular typeface (e.g. projected with angular letters: k, z, or w), may not seem as warm and welcoming as “cosy” which is a rounded one (e.g. s, c, o).

Since the deaf child “sees” the words rather than hears them, the visual characteristics of the letters may be manipulated to convey messages and connotations, and hence unmask the real message communicated by sound symbolism.

3. LINGUISTIC FORM AND ICONIC ANALYSIS IN SL TRANSLATION

The paper presents an iconic analysis of the Portuguese poem *As abelhas* (The bees) by Vinícius de Moraes, and its translation in LIBRAS (Appendix A). It has been chosen randomly from the school textbook: *Os caminhos da língua Portuguesa 1*, authored by Maria do Rosário Gregolin (2001). For the identification of its iconic elements, a word frequency count was conducted (Appendix B), using an online word counter. It also took into consideration only the initial syllables of the words, for they show a psycho-linguistic prominence in word recognition, and influence patterns of linguistic symbolism (Kawahara, Shinohara & Uchimoto, 2008).

It is demonstrated that, in terms of vowels, the most frequent words (n=18) start with the central-back /a/ (the definite article “a - as: the”, and the noun “abelha: bee” in singular and plural). This phonological centralityⁱⁱ appears to be semantically oriented to the central theme of the poem: the bees flying in a garden. Overall, including /o/, the poem clearly uses central-to-back vowels and hence, closed phonemes, which indicate a location, the garden, where its scenes take place, and a central topic.

In LIBRAS, these two main concepts - the bee and garden - are expressed by the use of closed and/or semi-closed phonological structuresⁱⁱⁱ. For example, the sign ABELHA (BEE) is represented by the F-handshape with a cyclical and spiral movement that imitates bees’ natural, roundish flight paths i.e., in the sky and/or over the flowers. Moreover, it’s diminutive form (abelhinha: little bee) is performed by the closed classifier bee handshape, an eye-closure, and a stretched, linear mouth gesturing, which agrees with the linearity of /i/, stressed in the word “abelhinha”. The plural of “as abelhinhas” is indicated in two ways. Firstly, by using both hands for the sign VOAR_(a abelha) (TO-FLY_[the bee]), and secondly, through the cyclical movement of the classifier bee for the representation of the sign TODO_(todas as abelhinhas) (ALL_[the bees]), meaning a group of bees (a swarm). Furthermore, for the depiction of the “garden”, flower classifiers are adopted having simultaneously a closed and hollow hand-configurations that denote their blooming and blossoms.

With regards the consonants, the majority of words starts with the letter <c>, corresponding to velar phonemes (e.g. /k/) and to meanings of flowers such as the carnation (cravo, cravina). The second most frequent consonant is the alveolar <d>, expressing action and movement from one place to the other (e.g. *dão mel, da rosa pro cravo*), which, overall, agree with the two main scenes of the poem; the flowery garden and the bees navigating over them, and their activity inside a beehive for honey production. In the first case, the <c> letter is categorised as a back, closed phoneme, and in the second, the <d> belongs in front phonemes. Therefore, middle-to-closed phonemes seem to correspond to meanings of flowers (*rosa*: rose, *cravo*: carnation, *mel*: honey), and front phonemes to meanings of activity (*dão*: give). This latter is enhanced with the repetition of the preposition “para” (cf. *pro, pra*; equivalent to “to”), which is also articulated with a front phoneme, the labial plosive /p/.

This mapping is more evident in the translation of these lexemes in LIBRAS, in their dynamic polymorphemic forms. For example, since the “garden” scene is already set above, the phrase “da rosa pro cravo” introduces the two signs, ROSA and CRAVO/CRAVINA, using initially, closed handshapes that are reminiscent of the flowers’ buds; and secondly, open and hollow handshapes to represent their blossomed flower. Then, the bees’ linear movement from one flower to another is oriented over the signed location (Figure 21), denoting the small distance among the flowers and the bees’ activity as a whole. Hence, there is some degree of isomorphism between the imagic phonemes of the two languages and the meanings they express. In this case, the linearity (of movement) is equivalent to the frontness of the Portuguese words i.e., “da” and “pro”.

Other front consonants as the front fricatives /f/ and /v/ (e.g. in the words: *festa, volta, valsar, vão, venham*), clearly indicate motion, and, as above, their translation in LIBRAS depends on the context. For example, in the phrase “lá vão pro jardim” (there they go to the garden), the locative “lá” (there) refers to the word “festa” (feast), which is exactly this active motion of the bees over the flowers (see Figures 12, 13). Hence, the visual features (e.g. the path movement of the hands) of i.e., *volta* (return), *valsar*

(to dance a waltz), vão (they go), especially the handshapes, relate to the referent “bee(-s)” and their different ways of flying, and/or standing on the flowers (see Figures 15, 16, 21).

The poem also makes use of the fricative consonants /z/, /j/ and /s/ so as to render the bees’ buzzing noise. This is done by using the onomatopoeic word “zune”, next to the words “jardim” and “jasmim” as well as by using the <s> as /z/ in the word “rosa”, and the /cr-/ consonantal combination in the words “cravo” and “cravina”, which imitates a cracking-like sound. For such sound and movement effects front consonants are again preferred (except the back /cr-/). Due to their acoustic nature, such imitative scenes are not generated in LIBRAS but rather are replaced by the bees’ visual mobility (as explained above for Figures 15, 16, 21), which is performed by the same almost handshape and movement.

In general, the open B-handshape is used to translate the verb “Venham” (they come), calling directly (as “you”) the interlocutor to “see” (“Venham ver como dão mel”), and hence to visualise a beehive inside which the queen bee is fed and the worker bees produce honey. In this scene, the beehive is introduced first (Figure 22, 23, 24), and with a role-shift, the signer invites the interlocutor to “see” the queen bee and its workers. The closed handshape of the classifier bees (see “as abelhinhas” above) is preferred to indicate the action of the verb “to make honey” (“dão mel”) (Figure 30). The B-handshape is used with a cyclical movement in front of the mouth for the sign MEL (HONEY), thus partially matching^{iv} to the closeness of the Portuguese word “mel”. This latter though matches to a more descriptive representation of the bees filling the cells with honey (Figure 31). Thus, closed hand configurations accompanied by puffy facial expressions map to the cells full of honey, and hence to the closed phonemes of “mel”.

Round and thus closed phonemes (see section 2) are also used for the representation of the words “mestra” (master) and “rainha” (queen), which denote hierarchy. As Figures 3 and 34 show, the sign matches to a crown that encompasses roundness as a real-world cylinder object. Closed phonology is also used for the signed

phrase “engorda a pancinha”, which imitates the act of eating and belly’s growth (Figure 37). In this case, although the words start with front phonemes (en-, pa-), their iconicity is explained by syllable stress and compounding. Firstly, the compound word “engorda” (fattens) is stressed on /o/ of the velar word “gorda” (fat); and secondly, the word “pancinha” (especially its first syllable pa-) refers to the physiological opening of the mouth while eating. In LIBRAS, the representation of the two is reversed. That is, the word “engorda” is signed by the verb ENGORDAR, and the word “pancinha: little belly” by the semi-circular movement of the B-handshape, imitating one’s plump, round stomach excess (Figure 37). The handshape is open but curved, and its movement outlines the round figure of a belly. Moreover, the word “cansada: tired” that starts with a closed phoneme (ca-), in LIBRAS is performed partially with a closed handshape (the first handshape is open) (Figure 36).

4. DISCUSSION

This analysis shows that some structures of the specific poem, independently of the modality of language (spoken and signed), share certain common iconicity patterns by adopting phonological closeness/openness for the representation of the same meanings. For example, for meanings expressing nature (e.g. flowers, bees), Portuguese and LIBRAS prefer closed and hence round phonemes (such as hollow and/or curved hand configurations), whereas front and open/linear phonemes for meanings of activity. Such correspondences call for more detailed focus on both languages, especially because successful language learning is influenced by the development of analysed linguistic knowledge (a linguistic understanding of the devices in one’s languages) and control. When it comes to narratives and literacy, such analysis is more demanding, since iconicity permits the selection of the correct linguistic items for particular functions, and the coordination of these items in a signed narrative.

In relation to this latter, this analysis demonstrates how iconicity affects translation performance by forcing the selection and decision making on iconic signs.

For instance, since the focus of this poem is the bee (in singular and/or plural) and on its classifier handshapes (e.g. the F-handshape), the choice of certain signs is motivated by articulation similarity/proximity. Characteristic examples are the signed versions of the phrases/words “dão mel” (Figure 30), “todas” (Figure 6), in which the signs were selected to resemble to the signing of the “bee”. Of course, more adaptations can be made, such as replacing the sign PRONTO (READY) (Figure 7), with the sign PREPARAR (PREPARE), which handshape approximates that one of the “bee”.

The articulation of the signs FAVO (HONEYCOMB), JASMIM (JASMINE), and CRAVO/CRAVINA was a clear mimetic representation and hence descriptive in nature, adopting international signing by consulting the online database Spread The Sign, and/or signs used in Portuguese Sign Language. For “favo”, the poem adopted the description of a natural round beehive, although an artificial one (e.g. with a square shape) can be integrated. For the flower “jasmim”, an international classifier (see Figure 17) is preferred to be performed close to nose to indicate the vivid scent of the specific flower, and for “cravo/cravina”, the signing of LIBRAS in Portugal. This latter choice was made so as to achieve meaning differentiation during the narrative, since the articulation of the sign CRAVO resembles strongly to the classifier “flower” (which this poem uses; cf. Figure 10) and the sign ABELHA.

The translation of the poem should be taken as an example of how iconicity functions on a macro and micro level of linguistic analysis. The starting point is a macro analysis of a narrative, where its images are broken down to their compositional forms. These latter constitute its micro analysis, in which high linguistic knowledge is required for understanding the relations - especially the iconic ones - between the features of a narrative (e.g. scene setting, chronological order of events/images). Iconicity is then subtracted with its accompanied linguistic details in a narrative scene, such as the details of the movement of an entity (the bee); the use of appropriate classifiers coupled with specific movement and location; and the continuity of motion, shape, and appearance.

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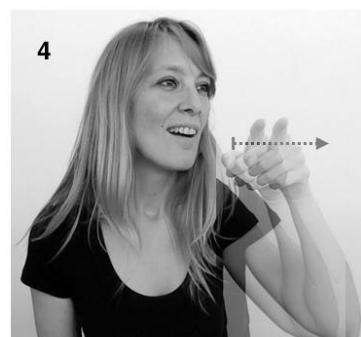
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Appendix A

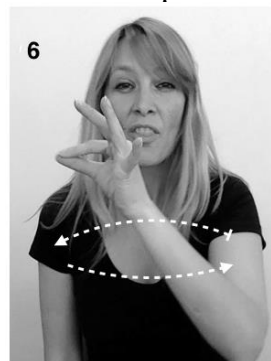
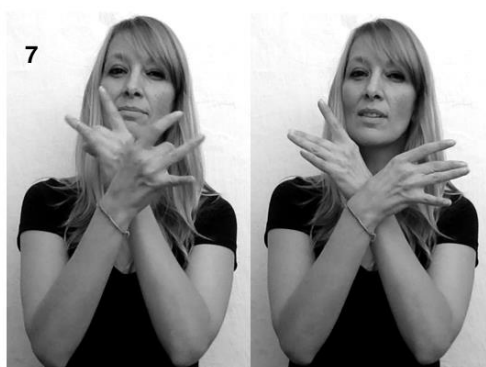
A abelha-mestra

**INDEX**_(a abelha)**ABELHA****MESTRA**

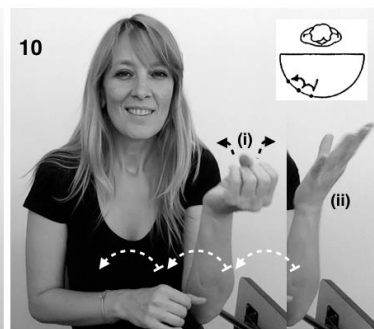
E as abelhinhas

**INDEX**_(as abelhas)**CL-ABELHA**_(abelhinha)

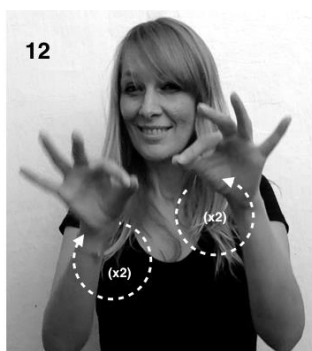
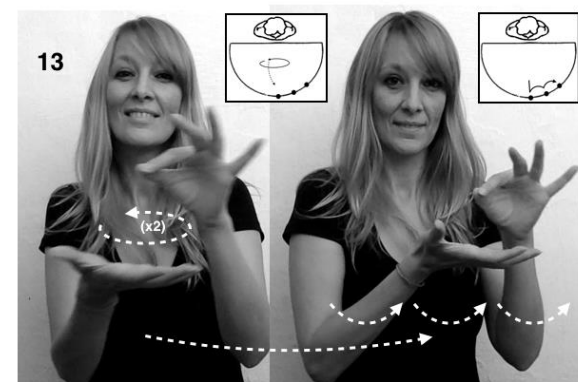
Estão todas prontinhas

**TODO**_(as abelhas)**PRONTO**

Para ir para a festa

**O-QUE****FLOR**^t**CL-FLOR**_(flores)

Num zune que zune
Lá vão pro jardim

**CL-FLOR**_(flores)**CL-ABELHA**_(bees flying over the flowers)**CL-FLOR**_(left hand)**ABELHA**_(bee flying over a flower)

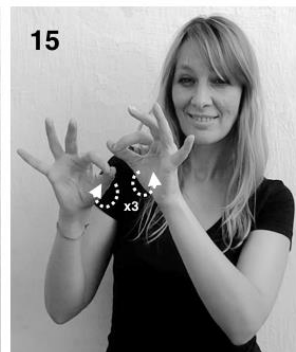
Brincar com a cravina



13

ÍNDEx(lá)

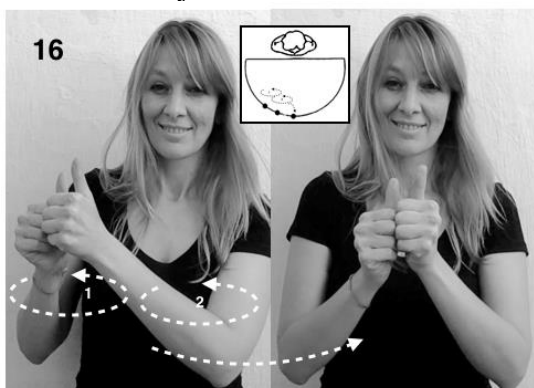
14

CRAVO/CRAVINA

15

CL-ABELHAS(brincam)

Valsar com o jasmim



16

JUNTO(as abelhas valsam)

17

CL-FLOR(jasmim; flor com perfume)

Da rosa pro cravo
Do cravo pra rosa



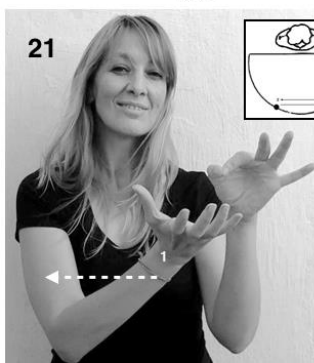
ÍNDIX(lá)



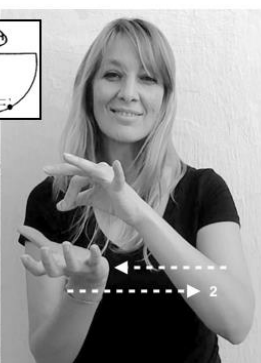
ROSA



CL-ROSA(a flor da rosa)

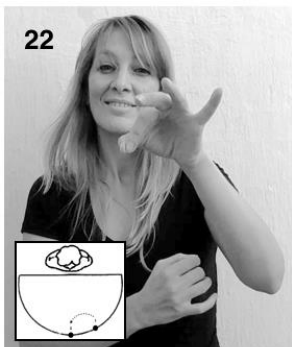


CL-FLOR(left hand)



ABELHA(bee over a flower)

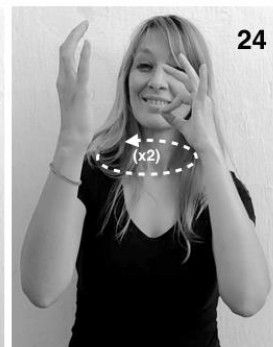
Da rosa pro favo



CL-ABELHA



FAVO

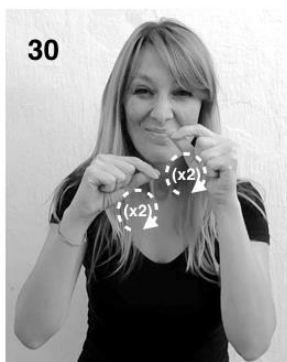


CL-FAVO
CL-ABELHA

E de volta pra rosa

**CL-ABELHA****CL-ABELHA**(volta na rosa)

Venham ver como dão mel
As abelhas do céu
Venham ver como dão mel
As abelhas do céu

**IR**(tu)**VER****ÍNDEx**(ca, no favo)**CL-ABELHA****CL-CÉLULA** (de colméia cheia)**MEL**

A abelha-rainha

**ABELHA****MESTRA****SÓ**

Está sempre cansada
Engorda a pancinha
E não faz mais nada

**CANSADO****ENGORDAR**

(The remaining of the poem is a repetition of the lines presented above)

Num zune que zune
Lá vão pro jardim
Brincar com a cravina
Valsar com o jasmim
Da rosa pro cravo
Do cravo pra rosa
Da rosa pro favo
E de volta pra rosa

Venham ver como dão mel
As abelhas do céu
Venham ver como dão mel
As abelhas do céu

Appendix B

Words starting with /a/	Words starting with /o/	Words starting with /e/	Words starting with /i/
11 a / as 2 abelha 4 abelhas 1 abelhinhas	4 o	4 e 2 estão/está 1 engorda	1 ir
Words starting with /p/, /b/ 6 pro 4 pra 2 para 1 prontinhas 1 pancinha 2 brincar	Words starting with /r/ 8 rosa 1 rainha	Words starting with /c/, /q/ 4 cravo 2 cravina 4 com 4 como 1 cansada 4 céu* 2 que	Words starting with /v/ 2 volta 2 valsar 2 vao 4 ver 4 venham
Words starting with /f/ 1 festa 2 favo 1 faz	Words starting with /d/, /t/ 4 da 6 do 2 de 4 dão 1 todas	Words starting with /j/, /z/ 2 jasmim 2 jardim 4 zune	Words starting with /m/, /n/ 1 mestra 4 mel 1 mais 2 num 1 não 1 nada
Words starting with /l/	Words starting with /s/		
2 lá	1 sempre		

Note: * The sound is /s/.

Notes

ⁱ Due to this relationship, literature names the back vowels “round” and the front “linear” (cf. D’Onofrio, 2013). Overall, for the “backness” and “frontness” of the vowels and consonants, the reader can consult Nobile’s (2011, p. 109) phonosemantic diagrammer, which represents them within the oral cavity. For example, closed consonants are those articulated in the middle (e.g. laterals) and at the back (e.g. velars, nasals) of the cavity, and open (e.g. labials, dentals) those articulated at the front.

ⁱⁱ The centrality of /a/ as a structured spatiality to be contained is argued by Nobile (2011, p. 115): “Not only because the concept of centre (centre of a figure, of a town, of a problem...) implies the idea of a space contained in another space. But also because the opening of the mouth connects the internal cavities allowing us to contain (lungs, stomach, intestine, bladder...) with the external cavities allowing us to be contained (holes, homes, houses, habitations, hotels, halls, hangars...). The mouth is the anatomical junction between inner space and outer space, the combination of which give rise to our physiological experience of spatiality as structured. The pure exhibition of the oral cavity containing the tongue (/a/) can thus operate as the original figure of that concept (ha: a ‘has: at’)”.

ⁱⁱⁱ In the case of SLs, closed phonology refers to, for example, a complete closed fist handshape; or to a semi-closed handshape imitating i.e., the holding of a glass (C-classifier). The meaningful unit expressed by the handshape (in signs expressing motion, location, handling and visual-geometric description) is a classifier. In this case, the handshape varies according to the salient characteristics of the referent (cf. Schembri, 2003, p. 3).

^{iv} The cyclical movement of the handshape corresponds to the closeness of /m/ and /l/.