# Predicting iconicity — coding scheme version 02

### Definitions: basic forms of lexical iconicity (based on [1–3])

*Iconicity*. The resemblance-based mapping between aspects of form and aspects of meaning. Such mappings can be seen as perceptual or motor analogies linking form and meaning.

*Imagic iconicity*. Imagic iconicity involves within-modality perceptual analogies, as when a spoken word mimics a sound in the world. Form and meaning can be said to share substance.

*Diagrammatic iconicity*. Diagrammatic iconicity involves cross-modal perceptual analogies, as when repeated syllables express the idea of repetition, or a vowel contrast maps onto a size contrast. Form and meaning can be said to share structure.

(Within diagrammatic iconicity, we can distinguish two subtypes. *Gestalt iconicity* is when word structure maps onto event structure: for instance, when a closed monosyllable refers to a single event with aspectual closure. *Relative iconicity* is when related forms map onto related meanings: for instance, when in a set of words, a vowel contrast like /i:o/ serves as a perceptual analogy for a size contrast /small:big/.)

### Overall goal

Words differ in the degree to which they present transparent associations between form and meaning. Even within word classes traditionally seen as iconic (e.g., ideophones), there are large differences in 'guessability', with a word like Japanese *hisohiso* 'whispering' guessed correctly often but some other ideophones performing at chance level or even below. Prior work has been content to conclude that, on average, people can guess learn the meaning of ideophones at levels (just) above chance [4–6]. Here, the goal is to get a grip on the internal variance in such tasks. Which ideophones are easier to guess and why?

The hypothesis to be pursued here is that ideophones that are more transparently iconic are easier to guess and learn. The key question is how to operationalise the notion of iconicity. Here, we do this by focussing on a number of fairly general form-meaning associations independently attested in the literature. We code ideophones for aspects of their form (F) and meaning (M). When form is congruent with meaning (for instance, when a reduplicated ideophone form is paired with a meaning that involves repetition), this means that aspect of the form-meaning association is iconic in that respect.

Because form-meaning associations are largely independent, they yield several separate measures of perceptuomotor analogies, and they can be combined into a cumulative measure of form-meaning congruency. Both the separate features and the cumulative measure can be inspected for the degree to which they predict the experimental guessability of ideophones (as established in prior studies).

### Design considerations and coding conventions

The coding scheme is divided into features of form (F) and meaning (M). These two poles are combined into measures of congruency (C) that grounded in published work.

Any coding scheme schematizes and abstracts away from diversity and multidimensionality. Some of the form and meaning characteristics can be fairly straightforwardly coded in binary terms (e.g., reduplication: present or absent). Others make more sense as scales (e.g., magnitude: from small to neutral to large). If such scales are reduced to binary measures (as may be necessary in some cases), it should be kept in mind this may represent an oversimplification. While many form features might be

automatically coded, this is much harder for most meaning features, so the overall level of grain of this coding scheme is aimed at being used by human coders for moderately sized collections of words.

Coding should follow the following general conventions:

1. Coding should be done as conservatively as possible. When in doubt, follow the conference talk principle: for any coding decision, you should be able to defend your choice in a public conference talk.
2. Coding of meaning should try to capture percepts as directly as possible, and should try to avoid indirect associations that cannot be directly characterised as part of the meaning of the word.

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| *Form characteristics* | |
| F_redup | does the form feature some form of reduplication? (1/0) |
| F_redupmod | does the form feature partial and/or modified reduplication? (1/0)<br>*This question aims at capturing less than fully reduplicated forms like* fara-bara *or* fara-foro *(modified) or* fa~fara *(partial)* |
| F_monosyllabic | is the form a monosyllable? (1/0) |
| F_closedsyllable | does the form end in a closed syllable? (1/0) |
| F_vowelquality | are the vowels in the form mostly light (0), even (1), or mostly dark (2)?<br>*Light vowels are /e ɛ i/, and dark vowels are /o ɔ u/. This includes the vowels' nasal variants. If an item has, for example, one light and one dark vowel, it is coded as even (1). If an item has one light vowel and two dark vowels, it is coded as mostly dark (2). Vowels /a ɑ ə ɨ/ are considered neutral and do not influence the score: if an item has one light vowel and one neutral vowel, it is still coded as light (0).* |
| F_voice | are the consonants in the form mostly voiceless (0), even (1), or mostly voiced (2)?<br>*Here, voiceless consonants are the voiceless plosives and fricatives. Voiced consonants are the voiced plosives, fricatives as well as nasal consonants. Other (semi-)consonants, such as trills, laterals or glides, are considered neutral and do not influence the score. The score is built up the same way as in F_vowelquality.* |
| F_finallength | Is there word final lengthening, i.e. is the final sound of the form noticeably drawn out? ? (1/0) |
| F_intonation | is the form spoken with relatively low (0), neutral (1), or relatively high (2) intonation compared to other items spoken by the same person? *If a form is falling or rising, code based on the beginning.* |
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| *Meaning measures* | |
| M_sound | is the meaning in the domain of sound? (1/0) |
| M_distribution | is there a sense of repetition, iterativity and/or distribution in space or time? (1/0) |
| M_irregular | is there a sense of irregularity, imbalance, chaos? (1/0) |
| M_weight | where is the meaning on the following scale: small/light/light (0), neutral/NA (1), big/heavy/dark (2)? |

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| | *Err on the side of caution: only code 0 or 2 when the meaning clearly denotes something in the domain of size, weight or brightness.* |
| M_punctual | is there dynamic, atelic, and punctual aspect? (1/0)<br>*This is about events that are semelfactive, i.e. happen instantaneously, only once, and with a clear end.* |
| M_long | is there a sense of length in space or time? (1/0)<br>*For temporal aspect, this applies to events that unfold over time, not states (so having a colour does not qualify). Something can be repeated without being ongoing (e.g., flickering), but repetition and durativity do not exclude each other (e.g., swinging). For the spatial aspect, this is about percepts that involve spatial extension, like long or stretched out.* |
| M_abrupt | does the meaning involve an abrupt ending? (1/0) |

*Derived measures*

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| C_modality | M_sound = 1 |
| C_iterative | F_redup = 1 && M_distribution = 1 |
| C_punct | F_monosyllabic = 1 && M_punctual = 1 |
| C_irregular | F_redupmod = 1 && M_irregular = 1 |
| C_closure | F_closedsyllable = 1 && M_abrupt = 1 |
| C_long | F_finallength = 1 && M_long = 1 |
| C_weight_voice | F_voice = 0 && M_weight = 0 OR F_voice = 2 && M_weight = 2 |
| C_weight_vowel | F_vowelquality = 0 && M_weight = 0 OR F_vowelquality = 2 && M_weight = 2 |
| C_weight_tone | F_intonation = 0 && M_weight = 2 OR F_intonation = 2 && M_weight = 0 |

**Evolution of the coding scheme**

Following a calibration and consistency check, the following changes were made to the first version of the coding scheme:

1. F_redupmod was renamed (originally F_partialredup) and the coding instructions were sharpened to reflect the fact that we want to capture both partial and modified forms of reduplication.
2. F_voice: coding instructions were clarified to note that this question privileges consonants that crosslinguistically often enter into voicing oppositions (plosives and fricatives) as well as nasals, documented for their iconic uses across languages. This is close to Westermann's use of this feature. We also considered a more continuous version of this feature that would weigh or classify consonants based on their place on the sonority scale, but decided against it because the coding was already too fine-grained.
3. F_finallength was renamed (originally F_finalvowel) to capture word final lengthening of any final sound, whether final vowel or nasal, glide or trill.
4. F_intonation: coding instructions were clarified to include a decision procedure for forms with falling or rising intonation.
5. M_irregular: coding instructions were modified to indicate that the primary semantic property here is one of irregularity in the sense of imbalance (a highly regular ridged pattern would not qualify)

6. M_weight: coding instructions were sharpened to focus on binary oppositions of size, weight and brightness and to exclude Westermann's hard/soft distinction, which we found orthogonal and conflicting in some cases. This also means that the middle value essentially means neutral or "not applicable". It may be advisable to further break this up this feature, as there is no guarantee that size, weight and brightness pattern similarly across languages.
7. M_long was renamed (originally M_durative) to reflect a focus on extent in time and/or space; for temporal aspect, this this targets events, not states.