

The Frequency Code Revisited: Are the Universalist Claims Substantiated?

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The Frequency Code (FC) proposed by Ohala (1984, 1996) tries to provide a unified explanation for, among other things, the following cross-linguistic patterns:

1. Declaratives tend to end with falling pitch; yes/no-questions with rising pitch
2. Dominance is associated with low pitch; polite deference with high pitch
3. /i/ is associated with “smallness” and /a/ with “largeness” (sound symbolism)

According to the FC, these patterns are grounded in body size-related frequency differences and the sexual dimorphism of the human voice. However, we show that the FC suffers from certain conceptual flaws and a lack of empirical support in some critical domains.

With regard to the linguistic functions of f_0 , there is growing evidence for the language-specificity of sentence type marking and universalist claims about the intonational patterns of yes/no-questions have been confronted with a large body of counterevidence. Hawaiian Creole English, a number of Polynesian languages such as Hawaiian and a number of West-Atlantic languages (Rialland, 2007) show the opposite pitch pattern for yes/no questions. Similarly, the claim that falling pitch in declaratives is universal has been contradicted by work on Australian English (cf. Fletcher & Loakes, 2010) and Murshidabad Bengali (Lahiri & Fitzpatrick-Cole, 1999).

Regarding the affective and social meanings of f_0 , there is a large number of studies that emphasize the need to consider additional cues such as voice quality (e.g. creakiness, breathiness) and formant structure (e.g. due to lip protrusion, pharyngealization or nasality). These cues have been shown to be relevant for the perception of dominance, masculinity, politeness and other vocal phenomena previously solely attributed to f_0 . In addition, recent findings on the phonetic expression of politeness in Korean (Grawunder & Winter, 2010) support doubts which had previously been expressed towards the universality of high pitch use in polite speech (cf. Shin, 2005).

Furthermore, we point out that experiments which attempted to demonstrate the allegedly universal nature of phonetic symbolism suffer from confounds such as small sample sizes, small stimulus sets, biases in stimulus selection and a lack of cross-linguistic validation. The cross-linguistic universality of sound symbolism is – at least in experimental terms – far from well established. Furthermore, the FC’s linking hypothesis which links /i/ to smallness and /a/ to largeness is questionable: is the association due to a difference in intrinsic pitch, a difference in formant frequencies, a difference in sonority or a difference in the articulatory constriction? These questions show that phonetic symbolism need not necessarily be connected to the FC.

Despite these concerns, the FC is often discussed as a well-established biological code (e.g. Nuckolls, 1999; Gussenhoven, 2005, ch. 4). We show that the FC should not be taken for granted and any strong conclusions based on it should be subjected to scrutiny.