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## Abstract knowledge of emphatic reduplication in Turkish

**Background.** In Turkish, it is possible to create emphatic adjectives by prefixing a reduplicated (C)VC syllable to the word being made emphatic (Göksel & Kerslake, 2005; Kornfilt, 1997). When the adjective starts with a CV sequence, the reduplicated prefix manifests itself in a CVC form, illustrated in (1). On the other hand, when the adjective starts with a vowel, the reduplicated prefix takes the form of VC, illustrated in (2). The initial CV or V segments in such emphatic constructions are identical to the word initial CV or V. As illustrated in (1) and (2), the final C segment is selected from a set of {m, p, s}.[1]

1) **Words with an initial CV have a CVC prefix**
   a. jɛʃil       →   jɛmjɛʃil       (*green* → *completely green*)
   b. sɑrɯ       →   sapsɑrɯ       (*yellow* → *completely yellow*)
   c. kɑtɯ       →   kɑskɑtɯ       (*hard* → *extremely hard*)
2) **Words with an initial V have a VC prefix**
   a. ɛski       →   ɛpɛski         (*old* → *very old*)

Based on the examples, the emphatic reduplication has been formalized as follows (Kim, 2009).

3) Consonant-initial words: $C_1V_1C_2$…       →       $C_1V_1$+{m, p, r, s}  +  original form
4) Vowel-initial words:       $V_1C_1$…       →       $V_1$+{m, p, r, s}    +  original form

The main challenge in reduplicated adjectives is to determine the last consonant in the prefixed syllable since the first segments are always identical to the ones in the original word. The final consonant in the prefixed syllable, also referred to as the interpolated consonant (Yu, 1999; Wedel, 1999), can also show variation since more than one consonant can be used for most adjectives. Lewis (1967), Underhill (1976) and Dobrovolsky (1987) argue that the interpolated consonant is random and must be learned for each lexical item. Yet, native speakers use interpolated consonants for words they have never heard before with great ease, suggesting that this hypothesis is not plausible. On the other hand, Demircan (1987) states that the interpolated consonant is subject to various dissimilation constraints and that the underlying form for the interpolated consonant is *-p* and depending on context, it is replaced by {m, r, s,} in a prioritized order. Similarly, Wedel (1999) maintains that Turkish reduplication is a highly productive phenomenon. Wedel (1999, p. 2) argues that the following constraints interact with each other and give rise to the surface forms observed in the variation in interpolated consonants in Turkish.

5) a.  The interpolated consonant is taken from the set {p, m, s},
   b.  [p] is not selected if C1 is labial,
   c.  The interpolated consonant must be non-identical to both C1 and C2 of the base,
   d.  Except where contravened by (5b) and (5c), [p] is selected over [m] or [s].

**The study.** This study investigated whether native speakers of Turkish have abstract knowledge regarding the principles guiding the selection of appropriate reduplicative forms in emphatic reduplication in Turkish. Another goal was to test Wedel's hypotheses outlined in (5) above experimentally. 14 native speakers of Turkish completed the study through Qualtrics. The participants were simply asked to reduplicate 48 non-words in 4 different experimental conditions in which the word forms were manipulated based on the length and the features of individual segments. The 4 experimental conditions had VCV (e.g. /ukɑ/), CVC (e.g. /lɔt/), CVCV (e.g. /gɛʒi/), and VCCV (e.g. /ɔhfɑ/) sequences. Each condition included 12 items. In each of the CVC, CVCV, and VCCV conditions, the base forms for 6 items did not include any consonants used productively as interpolated consonants {p, m, s}. The next 6 conditions included {p, m, s} either as the first, or the second consonant in the base form of the non-word.

**Results.** The results indicated that, in line with the predictions of Wedel, native speakers of Turkish produced {p} more than {m}, and {s} in the VCV condition (percentage of production was 68, 20, and 12 for {p}, {m}, {s} respectively). The results from the other three conditions are shown in the figures below. Note that in each of the figures, whenever one of the {p, m, s} segments is in the base, that is

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[1] In restricted contexts, {r} is used as an interpolated consonant (e.g. tɛmiz →tɛrtɛmiz; *clean* →*spotless*).
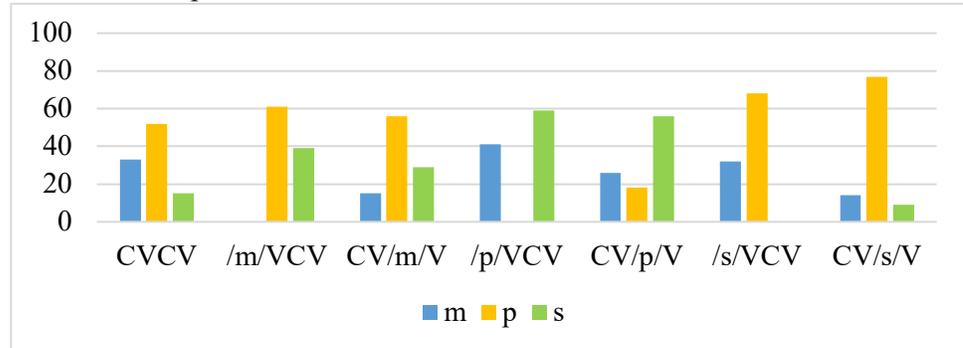
indicated. In the CVC condition, {p} was selected most frequently, followed by {s} and {m}. As hypothesized by Wedel, the interpolated consonant was never identical to C1 or C2 of the base.

*Figure 1.* The percentage of interpolated consonants produced in non-word CVC sequences in Turkish.
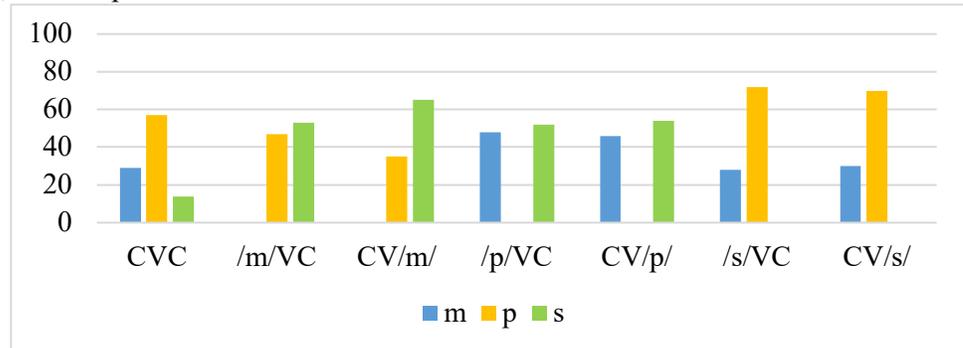


The CVCV condition demonstrated that {p} was selected most frequently, followed by {s} and {m}. The interpolated consonant was sometimes identical to C2 of the base. This provides counter argument against Wedel (1999), who argues that the interpolated consonant can never be identical to C1 or C2 of the base.

*Figure 2.* The percentage of interpolated consonants produced in non-word CVCV sequences in Turkish.



The VCCV condition indicated that {p} was selected most frequently, followed by {m} and {s}. The interpolated consonant was sometimes identical to C2 of the base, but never to C1.

*Figure 3.* The percentage of interpolated consonants produced in non-word VCCV sequences in Turkish.
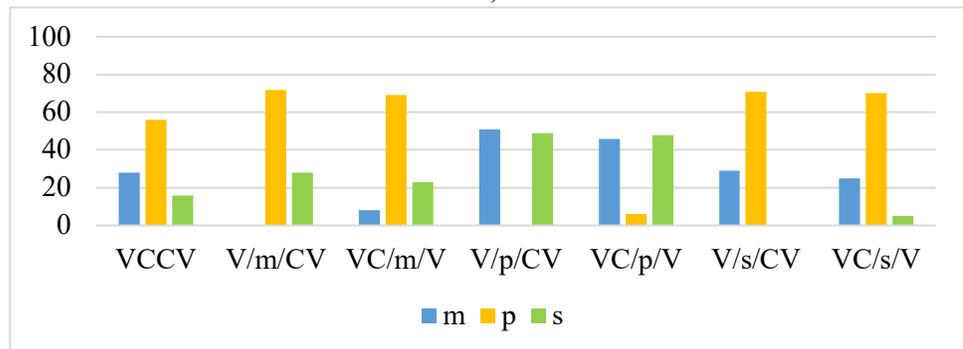


The results indicated that the interpolated consonant in Turkish is indeed taken from the set {p, m, s}. However, unlike Wedel's postulations {p} was sometimes selected even when C1 was labial (e.g. mɔk → mɔpmɔk). Moreover, the interpolated consonant was sometimes identical to C2 of the base, but never to C1. Finally, the most frequently produced interpolated consonant was {p}. In the VCV, and VCCV conditions, {m} was preferred over {s}. In the CVC, and CVCV conditions, {s} was preferred over {m}.
**Implications.** Turkish native speakers do have abstract knowledge of emphatic reduplication. The Turkish facts could be accounted for by Yip's (1993) identity avoidance principle, according to which sequences of homophonous phonemes or morphemes are avoided across worlds' languages. Such avoidance has been attested for many languages in the literature (e.g. Korean reduplication by An, 2012).