

Nonce word evidence for paradigm structure in Egyptian Arabic verbs

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Overview. Recent works on sound wazn I verbs in Egyptian Arabic uncovered probabilistic trends that help predict idiosyncratic vowel choices in the perfect (past-tense; CaCaC / CiCiC) and imperfect (tenseless; -CCaC / -CCiC / -CCuC) forms (Xu 2021a,b). This paper reports an ongoing nonce word experiment which tests Egyptian Arabic speakers’ knowledge of these statistical patterns. Preliminary data suggest that speakers generalize specific types of effects and not others. These results have implications for theories of paradigm organization.

Methods. In the experiment, subjects hear nonce verbs in either perfect or imperfect form and are asked to supply the other. For both forms, two types of effects on vowel choices are tested: (1) effects of root consonants and (2) effects of vowel correspondence between forms.

50 nonce roots are constructed obeying phonotactic OCP restrictions (McCarthy 1994). Half of these contain a pharyngeal {ħ,ʕ} as the final consonant, while the other half contain only labials and non-emphatic alveolars. Each root combines with the two perfect vowels {a,i} and the three imperfect vowels {a,i,u}, yielding 5 distinct forms. Each subject hears one form for each root.

Results. I report preliminary data from 12 participants (50 words each). The tables below compare their responses to lexicon data from Xu (2021a,b) for each type of effects. A multinomial logistic regression was fitted to test the effects of consonant, vowel, and their interactions with form (perfective vs. imperfective).

One important result is that Egyptian Arabic speakers reliably generalize consonant effects on vowels in the imperfect (preference for [a] with pharyngeals (1), $\beta = -4.8, p = <0.001$). This preference is phonetically motivated, as it reflects the lowering effects of pharyngeals on neighboring vowels (Watson 2002). Interestingly, this effect is not found for the perfect verbs in either the lexicon or experimental data (compare the two rows in (2), $\beta = -0.24, p = 0.64$), despite the near-identical phonological environments.

With regards to the effect of vowel correspondences, subjects fail to generalize a very salient pattern in the lexicon, namely that the odds of imperfect [u] are much higher with perfect [a] (see (3), $\beta = 1.2, p = 0.13$). On the other hand, the preference for perfect [a] given an imperfect [u] is displayed by the speakers (see (4), $\beta = -0.86, p = 0.04$). Current results don’t find imperfect [i] and [a] to have difference preferences ($\beta = 0.48, p = 0.30$). Similar results for the types of effects in (1) and (3) have also been found for Hijazi Arabic (Ahyad 2019).

(1)	Lexicon			Nonce words		
	Imp-a	Imp-i	Imp-u	Imp-a	Imp-i	Imp-u
Lab/Alv	45%	40%	15%	15%	74%	11%
Pharyn	70%	22%	8%	94%	4%	2%

(2)	Lexicon		Nonce words	
	Perf-a	Perf-i	Perf-a	Perf-i
Lab/Alv	47%	53%	83%	17%
Pharyn	47%	53%	83%	17%

(3)	Lexicon			Nonce words		
	Imp-a	Imp-i	Imp-u	Imp-a	Imp-i	Imp-u
Perf-a	42%	18%	40%	54%	38%	8%
Perf-i	55%	41%	4%	57%	38%	5%

(4)	Lexicon		Nonce words	
	Perf-a	Perf-i	Perf-a	Perf-i
Imp-a	44%	56%	83%	17%
Imp-i	31%	69%	74%	26%
Imp-u	90%	10%	91%	9%

Discussion. While additional data are needed, the preliminary results support the serial derivation analysis of Egyptian Arabic verbal paradigms proposed by Xu (2021a,b). In this analysis, the imperfect is derived from the consonantal root and the perfect is derived from the imperfect. Vowel correspondences are more reliably generalized in the imperfect-to-perfect

direction (4), which is consistent with the proposed derivational relationship between the two forms. Additionally, speakers' behavior with nonce words mirrors the lexicon in that consonants only influence vowel choices in the imperfect (1) but not the perfect (2). Importantly, this analysis adopts lexical representations that separate the consonants and the vowels, which has received independent support from phonological analysis (e.g., McCarthy 1979) and psycholinguistic data (e.g., Boudelaa & Marslen-Wilson 2001). As a result, the absence of consonant effects on the perfect vowels can be explained by syntactic locality constraints (Embick 2010); the consonantal root is embedded and thus inaccessible during the formation of the perfect, which has been argued to occur at higher syntactic nodes than the imperfect (Benmamoun 1999). Contrary to surface-based theories of paradigm organization (e.g., Albright 2002), the Egyptian Arabic data can only be accounted for by adopting abstract representations like the consonantal root.

References

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