Priming Maltese Plural Patterns: Effects of frequency and structure

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Maltese Plurals

Maltese distinguishes two types of plurals, sound and broken, and we find a great amount of variation within both:

(1a) sound plural = *fjura* - *fjuri* 'flower(s)'
(1b) sound plural = *nannu* - *nanniet* 'grandfather(s)'
(2a) broken plural = *ktieb* - *kotba* 'book(s)'
(2b) broken plural = *denfil* - *dniefel* 'dolphin(s)'

9 sound plural suffixes, 11 broken plural patterns

Theoretical Framework

Single-Mechanism Approach: all morphology is based on analogies, differences in processing morphological patterns reflect differences in their frequency (e.g. [4], [6], [6])

Dual-Mechanism Approach: regular morphology is derived by rule, irregular morphology is based on analogy (e.g. [1], [2], [3])

Predictions

Single-Mechanism Approach:
similar processing: frequency effect for both plural types, similar priming for both plurals

Dual-Mechanism Approach:
differences in processing: frequency effect only for broken plurals, different priming effect for both plurals

Materials & Method

- cross-modal priming experiment (auditory primes, visual targets)
- lexcial decision task
- 59 adult native speakers of Maltese

	PrimeType			
Target	Related Pl	Control Pl	Frequency	Plural Type
kappella	*kappelli*	*politiki*	high	sound
patri	*patrijiet*	*universitajiet*	high	sound
alla	*allat*	*triqat*	low	sound
qattiel	*qattiela*	*halliema*	low	sound
farfett	*friefet*	*xwabel*	high	broken
tifel	*tfal*	*swieq*	high	broken
storja	*stejjer*	*ktajjen*	low	broken
banda	*bnadi*	*ċrieki*	low	broken
vilnu	*vilel*	-	(filler item)	(filler item)

Table 1: Example set of items

Results: Statistical Model

	Estimate	Std. Err	t-value	p-value
Intercept	6.489808	0.024523	264.645	<2e-16 ***
PRIMEFREQUENCY	-0.031785	0.004920	-6.460	2.97e-10 ***
PLURALTYPE	0.027899	0.022605	1.234	0.218
PRIMEFREQUENCY:PLURALTYPE	0.001253	0.009460	0.132	0.895

Table 2: Lmer model results

Summary

- frequency of plural primes does not elicit different reaction times for sound and broken singulars (p = 0.9)
- similar processing = **Single-Mechanism**

Results: Structure of Single-Mechanism

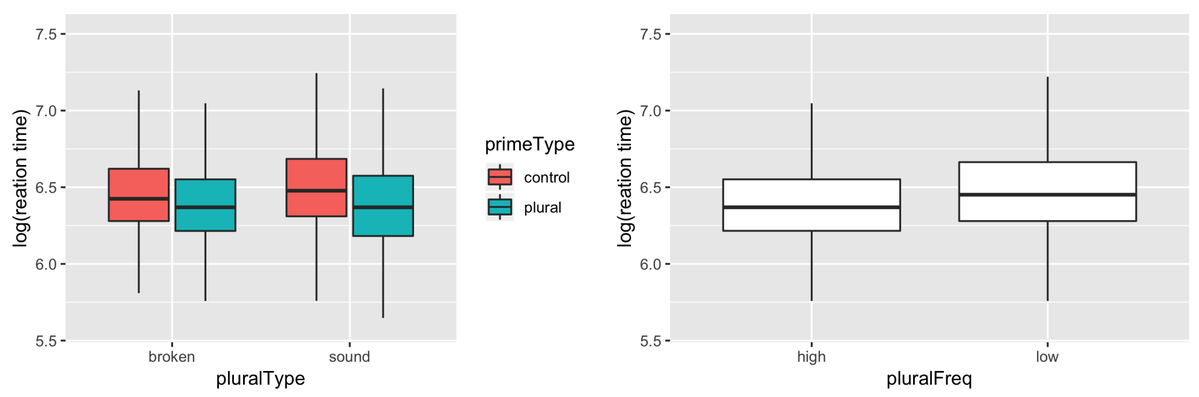

Figure 1: Effect of prime and plural type on rt (left); Effect of frequency of patterns on rt (right)

- the reaction times for sound and broken plurals did not differ significantly (p =.16), but greater difference in priming effect for sound than for broken (p<.001)
- frequent patterns elicit shorter reaction times (p<.01) (see also [7],[8])

Discussion

- no significant plural frequency effect for sound and broken (Table 2)
- phonological overlap of target and prime may trigger priming effect for sound plurals (Figure 1)
- results support Single-Mechanism Approach that takes **frequency of patterns** and other factors like phonological similarity into account

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