

Online Processing of Derived and Inflected Words in L1 Turkish: A Masked Priming Experiment

Refika Cimen, Filiz Cele (Istanbul Aydın University)

In recent decades, a considerable amount of psycholinguistic research has been driven by the question of whether morphologically-complex word forms are decomposed or stored as full-forms in the mental lexicon. In general, earlier studies investigated complex morphological processes, especially inflection, in verbal forms and suggested a decompositional pattern for processing these forms in L1. Yet, the results of a limited number of studies which examined inflectional processing in nominal forms raises the question of whether word category can be a determining factor for the preferred morphological processing route [1-2] since they show that L1 speakers may make less use of rule-based decomposition on the processing of inflected nouns. Due to a lack of studies focusing on the role of word category in the investigation of morphological processing, the present study aimed to provide a broader picture of L1 morphological processing by investigating the inflectional and derivational paradigms in both nominal and verbal forms via a masked priming experiment with 24 adult L1 speakers of Turkish, an agglutinative language with rich morphology. The experimental stimuli consisted of a nominal list (Fig. 1) and a verbal list (Fig.2), both of which were designed to form six different conditions (i.e., Identity, Derivation, Inflection, Semantic, Orthography, and Unrelated) with the same targets to achieve a direct comparison between different types of primes. The orthographically- and semantically-related primes were included in order to determine whether any priming effects had a morphological nature or not. Each list involved 36 experimental items and 180 fillers. The experiment started with the presentation of a forward mask (#####) on the screen as a fixation point for 500 ms., which was immediately followed by the prime word, which was presented in lowercase letters on the screen for 50 ms. The target word appeared on the screen right after the prime word in uppercase letters, which was meant to prevent visual priming by minimizing any orthographic overlap. The target word remained on the screen for 5000 ms, during which the participants pressed 'yes' or 'no' buttons on the keyboard to indicate whether the target word was a word or a non-word. A repeated-measures ANOVA was conducted on the participants' responses to experimental stimuli and a significant interaction was found between prime type and response time (RT) ($p < .05$). Pairwise comparisons on the verbal stimuli revealed repetition priming effects in Identity, while the absence of a statistically significant difference in the mean RT between Identity and the two morphological conditions, i.e., Derivation and Inflection, ($p = 1.000$) was indicative of a full-priming pattern (Fig. 3). Yet, the mean RTs in Inflection and Derivation differed significantly from the mean RTs in Semantic and Orthography ($p < .05$), indicating that the full-priming effects were not due to an orthographic overlap or a semantic relationship between the prime-target pairs. The nominal stimuli, on the other hand, yielded a different result with respect to Inflection (Fig. 4). While pairwise comparisons revealed repetition priming in Identity and full-priming in Derivation, no priming effects were obtained in Inflection, suggesting that the participants showed lower sensitivity to the morphological structure of inflected nouns. On the other hand, the mean RTs in Semantic and Orthography differed from the mean RT in Derivation significantly ($p < .05$), indicating that the full-priming effects yielded by the derived primes were purely morphological in nature. Our findings show that morphologically-complex verbs, whether derived or inflected, are decomposed in L1 Turkish, whereas morphologically-complex nouns are only decomposed when they are derivational. This suggests that rule-based processing for accusative nominal marker could be a time-costly process, which could be attributed to the frequency of this marker as a nominal ending. Therefore, we conclude that word category can be a determining factor in the processing route of morphology for L1 Turkish speakers.

Keywords: morphological processing, masked priming, Turkish, inflection, derivation, decomposition, full-listing, L1 speakers

Figure 1. A sample set of noun stimuli

Target	Prime Type					
	Identity	Inflection -(y)l	Derivation (-CI)	Orthography	Semantic	Unrelated
BÜYÜ 'spell'	büyü 'spell'	büyüyü 'spell-ACC'	büyücü 'wizard'	büyük 'big'	sihir 'magic'	şeker 'sugar'
KİRA 'rent'	kira 'rent'	kirayı 'rent-ACC'	kiracı 'tenant'	kiraz 'cherry'	ev 'home'	duygu 'emotion'

Figure 2. A sample set of verb stimuli

Target	Prime Type					
	Identity	Inflection (-SA)	Derivation (-IM)	Orthography	Semantic	Unrelated
BAKMAK 'to look'	bakmak 'to look'	baksa 'if he/she looked'	bakım 'care'	bakkal 'grocery store'	gör 'see'	tüket 'consume'
SATMAK 'to sell'	satmak 'to sell'	satsa 'if he/she sold'	satım 'sale'	satın 'satin'	ödemek 'to pay'	çevir 'turn'

Figure 3. Results of the verbal stimuli

	Identity	Inflection	Derivation	Orthography	Semantic	Unrelated
RTs	631.96	658.29	650.29	727.90	709.26	710.37
(SDs)	(113.41)	(110.88)	(124.89)	(95.61)	(106.07)	(114.94)
Error Rate (%)	2.08	0.69	1.39	0.69	5.56	4.86
Priming Effect	78.41	52.08	60.08		1.11	

Figure 4. Results of the nominal stimuli

	Identity	Inflection	Derivation	Orthography	Semantic	Unrelated
RTs	605.70	684.65	621.70	716.54	703.48	692.36
(SDs)	(105.99)	(102.42)	(106.28)	(97.78)	(98.50)	(96.56)
Error Rate (%)	0.69	0	2.78	0.69	3.47	2.78
Priming Effect	86.66	17.71	60.66			

References:

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