Morphological Processing in Patients with Obsessive-Compulsive Disorder

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Background: A substantial body of psycholinguistic research has shown that skilled adult readers automatically decompose morphologically complex words during visual word recognition, as evidenced by masked morphological priming effects [1–3]. This pattern has also been robustly attested for Turkish, a morphologically rich language, for both inflectional and derivational morphology [4–7]. Within Ullman's Declarative/Procedural (D/P) Model, language is supported by two partially distinct memory systems: declarative memory, which underlies the storage of lexical knowledge, and procedural memory, which supports rule-governed, combinatorial operations in grammar and morphology [8–10]. In this framework, inflectional morphology is assumed to rely primarily on procedural memory and frontostriatal circuits, whereas derivational morphology is more closely associated with declarative memory and lexical storage. Obsessive-Compulsive Disorder (OCD) has been linked to frontostriatal abnormalities and procedural learning impairments [11], making it a theoretically motivated test case for examining the neurocognitive bases of morphological decomposition. The present study investigates whether morphological processing in Turkish-speaking individuals with OCD differs from healthy controls, and whether potential differences are more pronounced for inflectional than derivational morphology.

Method: Thirty-six Turkish-speaking individuals with OCD (M_age = 32.4, range = 18–45) and thirty-six matched participants in the control group (age-, gender-, and education-matched; screened for absence of psychiatric conditions) completed a masked priming lexical decision task [2, 12], with 50 ms forward-masked primes. The experiment included 100 experimental items, 300 fillers, and 10 practice items. The critical set consisted of 28 items across four conditions (Identity, Inflected, Derived, Unrelated), with inflected primes formed using -mIş and derived primes using -(y)IcI; targets were infinitive verb stems. Three additional control sets (orthographic, semantic, morpho-orthographic) were included. All prime–target pairs were matched for frequency and length. Reaction times and accuracy were analyzed using linear mixed-effects models [13, 14]. Declarative memory was assessed using the RAVLT, and procedural learning with a Serial Reaction Time Paradigm indexing accuracy and reaction time acceleration.

Results: The control group showed facilitation for both inflected and derived forms, replicating previous findings in Turkish [4, 6]. In contrast, the OCD group showed facilitation for derived and identity conditions but a significant inhibitory (anti-priming) effect for inflected forms. Mixed-effects analyses revealed a significant Group × Morphological Type interaction, driven by slower responses to inflected primes in the OCD group. Procedural learning showed a marginal interaction with this condition, with greater deficits associated with slower responses, while declarative memory showed no comparable effect.

Discussion: These findings are consistent with the D/P Model [8–10] in suggesting a selective vulnerability of inflectional morphology in OCD, reflecting difficulties in engaging procedural mechanisms alongside relatively preserved declarative processing. At the same time, a single-mechanism account remains plausible: altered inhibitory control may increase competition among closely related inflected forms, leading to anti-priming, while derived forms, involving less competition, continue to facilitate processing. Overall, the results highlight how differences in memory systems can shape morphological processing in clinical populations, while also underscoring the need for converging evidence from complementary methods.

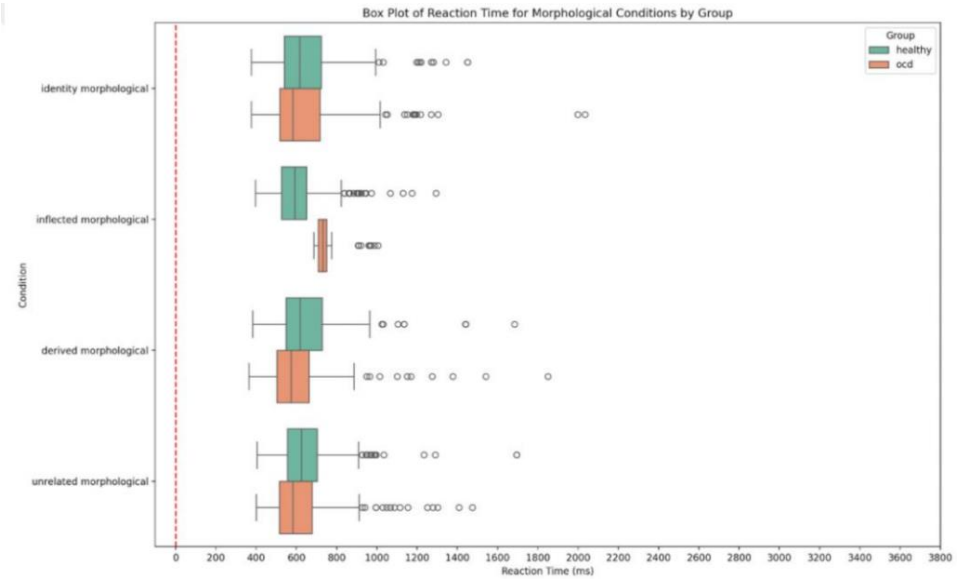

Figure 1: Boxplot of RTs for Morphological Condition by Group.

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