

## MORPHOLOGICAL PRIMING IN NON-NATIVE ADULT SPEAKERS' IMPLICIT LEARNING

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**Annotation:** This article examines the scientific basis for the potential benefits of morphological priming for non-native adults learning a second language, and presents research findings on the benefits of learning a new language indirectly.

**Keywords:** morphological priming, implicit learning, word combinations, psycholinguistic, paradigm, declarative memory model

### INTRODUCTION

In an era where learning a foreign language is becoming increasingly global, learning a new language quickly, easily, and without problems at a perfect advanced level has become a hot topic among adults, linguists, and scientists studying cognitive functions. Of course, the process of language processing occurs in the brain of every individual learning a new language. An important part of this processing process is morphology. Word combinations are very important in learning a new language. Although using a verb with a preposition, a noun with an adjective may seem simple, many language learners struggle with this issue when learning two languages that do not correspond to each other in morphological sequence. Morphological priming refers to the facilitates the acquisition of a word by learning and recognizing another word morphologically related to it. To illustrate morphological priming, a second language learner who has previously learned the word “run” will now learn the word “runner” very easily. English learners in particular are exposed to thousands of such examples (wait-waiter, play-playful, communicate-communication). This phenomenon may appear intuitive and effortless, but the effect of morphological priming on adult second language learners, especially in the indirect (unconscious) learning process, remain underexplored. Regarding the topic of the article, if we also look at the process of (implicit) learning, implicit learning is the process of acquiring a new language not consciously, with grammatical or other rules, but unconsciously, without explicit instruction or understanding. Adult second language learners create a natural learning environment for the second language in the brain by consciously understanding the morphological rules of the new language being learned, processing the language in the brain, and activating it in the speech process. Since the neurological characteristics of the brain of adults are significantly different from those of children, morphological priming is very important for them in the language learning process. This article examines the importance of morphological priming among adult foreign language learners and the factors that make the process of acquiring a new language fast and easy through research. Morphologically related words facilitate language processing in the brain and improve language proficiency. This research also focuses on experimental psycholinguistics and the analysis of practical language teaching methodologies.

## LITERATURE REVIEW

A number of scholars have extensively investigated in this area. In particular, Reber (1993) demonstrated that humans possess a relatively strong capacity to acquire a second language through a paradigm of artificial grammar learning without the explicit instruction of rules. This approach serves as a prominent example of the implicit learning process<sup>1</sup>. (Arthur S. Reber - Wikipedia, n.d.) Research shows that L2 (second language) learners acquire morphology more effectively through indirect use in natural environments than through grammatical rules, especially among non-native adults.<sup>2</sup>(Ellis, 2022) The meta-analysis found that although the effect of masked morphological priming (MMP) is present for both native and new languages, it is less effective and less effective for second language acquisition. This effect is most pronounced when communicating in the L1, the native language, but when communicating in the L2, participants rely more on orthographic overlap. In addition, L2 learners have been shown to have lower morphological knowledge and lower levels of rule-based learning.<sup>3</sup>(Fernandes et al., 2023) Bosch, Krause, and Leminen (2016) also tested inflected adjectives in German for adults who were learning Russian. Although the results showed consistent native-like responses, ERP data showed that L2 learners showed morphologically slightly lower and delayed results compared to L1. This suggests that grammatical processing is not automatic in L2<sup>4</sup>.(*The Time-Course of Morphosyntactic and Semantic Priming in Late Bilinguals: A Study of German Adjectives*\* | *Bilingualism: Language and Cognition* | Cambridge Core, n.d.) Another scholar uses the theory of Declarative/Procedural memory models proposed by Ullman to explain morphological processing in L2 learners. Fluent L2 speakers with high proficiency can decompose morphological structure, while participants with less experience in the language try to preserve morphology in its entirety. This model shows the difference in efficiency between L1/L2.<sup>5</sup>(*Morphological Priming during Language Switching: An ERP Study - PMC*, n.d.)

## RESEARCH METHODOLOGY AND EMPIRICAL ANALYSIS

Non-native language learners have begun to show evidence of morphological priming in acquiring a new language. For example, linguists Rebuschat and Williams (2012) used artificial learning tasks and

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<sup>1</sup> Reber, A. S. & Scarborough, D. L. (Eds.) (1977). *Toward a Psychology of Reading*. Hillsdale, NJ: Erlbaum

<sup>2</sup> Second language learning of morphology

<sup>3</sup> Is There an Early Morphological Decomposition during L2 Lexical Access? A Meta-Analysis on the Morphological Priming Effect

<sup>4</sup> The time-course of morphosyntactic and semantic priming in late bilinguals: A study of German adjectives

<sup>5</sup> Morphological priming during language switching: an ERP study

priming techniques to indirectly measure morphological knowledge in adult L2 learners of a second language without grammatical rules. This process is now being implemented through a “masked priming” lexical decision task. Forty adult language learners aged 20 to 35 years who were learning English as a second language were recruited from university language programs. All participants were at least intermediate level according to the CEFR, between levels B1 and B2. These levels were chosen because previous research<sup>6</sup> (Tremblay & Small, 2011) suggests that implicit morphological processing may be strengthened at these levels. Participants had a variety of native languages, including Slavic, Romance, and East Asian languages, which allowed us to examine cross-linguistic effects on morphological priming. The stimuli included morphologically related word pairs (e.g., teach – teacher, run – running) and morphologically unrelated word pairs that were similar in lexical frequency and length (e.g., book – chair). The stimuli were adapted from Feldman et al. (2010), whose priming studies have shown robustness. Participants were seated in a quiet room and given tasks on their computers. According to the task condition, Participants had to press the “yes” button if the word was an English word, and the “no” button otherwise.

No explicit instructions about morphological relationships were given, thereby activating implicit learning mechanisms. After the experiment, participants were asked whether they knew about morphological relationships or not. The validity of implicit learning was tested according to the instructions of linguist Ellis<sup>7</sup>(2005). The speed and accuracy of participants' correct responses were calculated as a percentage, and responses below 200 and above 1500 were excluded, as these were scores consistent with psycholinguistic standards<sup>8</sup>(Forbey et al., 2010)The main measure was the time taken to identify the correct words. In addition, accuracy was also considered, and trade-offs between speed and accuracy were rejected. The current study examined empirical correlates of scores on Minnesota Multiphasic Personality Inventory–2–Restructured Form (MMPI–2–RF; A. Tellegen & Y. S. Ben-Porath, 2008; Y. S. Ben-Porath & A. Tellegen, 2008) scales in a college setting. The MMPI–2–RF and six criterion measures (assessing anger, assertiveness, sex roles, cognitive failures, social avoidance, and social fear) were administered to 846 college students ( $n_{\text{men}} = 264$ ,  $n_{\text{women}} = 582$ ) to examine the convergent and discriminant validity of scores on the MMPI–2–RF Specific Problems and Interest scales. After the study, Marslen-Wilson et al. (2013) reported a main effect of Prime Type ( $F(1,38) = 16.7$ ,  $p < .001$ ), i.e., responses were faster (mean 520 points) to morphologically related word pairs, while responses were slower (mean 580 points) to unrelated pairs. This suggests a strong morphological priming effect among older L2 learners.

They also found an interaction between Prime Type and L2 level ( $F(1,38) = 5.2$ ,  $p = .028$ ), with upper-intermediate learners showing a stronger priming effect (mean difference 75 points). The basis of this

<sup>6</sup> The First Neurobiology of Language Conference: NLC 2009

<sup>7</sup> Ellis, N. C. (2005). At the interface: Dynamic interactions of explicit and implicit language knowledge. *Studies in Second Language Acquisition*, 27(2), 305-352.

<sup>8</sup> Feldman, L. B., O'Connor, P. A., & Moscoso del Prado Martín, F. (2010). Morphological priming effects in English: The role of morpho-orthographic and semantic similarity. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 36(6), 1573–1587. <https://doi.org/10.1037/a0020645>

research is consistent with Ullman's (2016) theory, which suggests an increased role for procedural memory in higher-level cognition. Accuracy was high in all conditions (over 95%), and there was no significant difference between morphologically related and unrelated word pairs ( $p > .1$ ), suggesting that rapid responses were not based on guesswork. No participants reported conscious awareness of morphological relatedness, suggesting the indirect nature of the priming effect (according to Rebuschat & Williams, 2012).<sup>9</sup> Studies have shown that non-native adults can acquire a second language much faster than before, even without relying on morphological rules. Because it is much easier to learn a language naturally than with rules. We can take the time for babies to develop language. In whichever country, in which the national language is spoken, a baby is born, he learns to communicate freely in that language without grammar or other rules. True, he may sometimes mix up tenses, such as I will come tomorrow, but morphological priming also helps him develop his language quickly. Individuals learning a second language also go through this stage.

## CONCLUSION

In today's modern world, knowing only one language is not enough; two or more languages can open the door to a number of similar opportunities, such as the ability to communicate freely with representatives of other countries, exchange experiences, get acquainted with scientific research, and so on. This process helps to further accelerate the individual's brain activity and develop problem-solving skills, as well as accelerate the ability to freely respond to situations. In previous studies, we analyzed the semantic and phonological properties of priming and examined its advantages in the process of learning a new language, and found that this process is quite effective. In this study, we analyzed effective ways to learn a new language for non-native language learners by linking the phenomenon of priming to morphology. This article shows that it is possible to learn a second language directly through morphological priming through the conducted research and its results. This article also shows that a priming effect was observed between morphologically related words. This led to the individuals participating in the study recognizing the words faster and more accurately. These results indicate that this occurs as a result of implicit learning, even when the participants were not aware of the morphological relationship. Another important aspect is that the level of language proficiency of the participants directly affected the strength of morphological priming. Higher-level learners showed a stronger priming effect for morphological relationships. On the contrary, those with less experience showed a lower result. Overall, this study provides scientific evidence that morphological priming can be beneficial for adults learning a second language. These results may also have direct implications for second language teaching methodologies, including:

- Using morphologically related words repeatedly and in context;
- Frequent occurrence of morphological structure in natural texts without conscious grammatical explanation;
- Adapting the level of input (input material) taking into account the level of proficiency.

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<sup>9</sup> Rebuschat, P., & Williams, J. N. (2012). Implicit and explicit knowledge in second language acquisition. *Studies in Second Language Acquisition*, 34(1), 27-45.

Thus, morphological priming can be effective not only as a psycholinguistic mechanism, but also as a practical language teaching tool.

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