DIFFERENCES BETWEEN GRAMMATICAL AND LEXICAL PROCESSING IN THE LATE LEARNED LANGUAGE

Відмінності між граматичною і лексичною обробкою у мові, котра вивчається пізніше

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Abstract
The process of language learning has long attracted scholarly interest. Foreign language teaching has extensively focused on teaching methods and learner profiles. Also, there has been growing interest in psychological and neurological bases of this process. Differences regarding the processing of different language components was a key early focus of research. Later, the focus shifted to the emotional load of the different languages spoken by bilinguals/multilinguals languages. It has been shown that a late-learned language differs from the native language in its progress and ultimate level. A notable difference can be seen between grammatical and lexical processing. Considering psycholinguistic parameters, this paper aims to reveal how late learners deal with grammatical and lexical processing in their second / late-learned language.

Key words: Grammatical processing, lexical processing, bilinguals, psycholinguistics.

Introduction

The language acquisition process has attracted scholars from a variety of disciplines. It has been maintained that the ease and effortlessness of the process at a young age is in sharp contrast to learning later in life. More importantly,
regarding learning grammar and vocabulary, this difference becomes more noticeable as the age of learning increases. The views attempting to explain this phenomena has focused on a variety of reasons, but most importantly, on age. The aim of this paper is to evaluate these differences from a psycholinguistic viewpoint.

**Grammatical versus Lexical Processing in Bilinguals**

Infants acquire their first language in the environment they are born into, with enriched linguistic input and they have a considerable opportunities for practice for communicative purposes. In addition, a great amount of cognitive resources are available for commitment to language acquisition. When compared against this background, language learning later in life, which proceeds at various settings and is influenced by various parameters, is strikingly different. The brain-based approach explains this difference via early maturing neural network (Guo et al., 2009; Paradis, 2004: 59; Saur et al., 2009; Wartenburger et al., 2003; Weber-Fox & Neville, 1996). This view maintains that the language system matures simultaneously with the sensory system, leading to integrated and automatic processing of linguistic and sensory information in the the brain. At a later age, these systems need the support of a wider range of brain areas to operate. Frontal parts of the brain, which are responsible for attention and higher cognitive functions, are reported to be active during second language processing. The imaging literature has given considerable support to this view; for example, Branzi, Della Rosa, Canini, Costa and Abutalebi (2016) reported an extensive network in the frontal areas, while Hertrich, Dietrich, Blum and Ackermann (2021) argued that these areas are involved in language control, i.e. inhibiting the unused language and facilitating the one in use.

It is known that inevitably, learners will face a struggle with morphosyntax at some stage in the learning process. Although formal teaching methods allocate more time and effort to teaching students grammar in the classroom and more time is spent on this than on any other language skill, persistent grammar mistakes are hard to eliminate. This difficulty can be due to a number of factors.

To start with, relatively lesser success in grammatical processing has been associated with the critical time window in which language acquisition is effortless, and ultimate attainment is possible. According to Lenneberg (1967), who first suggested the idea, this time window covers a period from infancy to puberty. Later research, however, cast some doubts over the extent of this period. In fact, it was seen that there was no universally applicable time period for the acquisition of different language skills, and there are different degrees to which each skill is affected by age. Particularly for some skills, i.e. phonology and morphosyntax, this time window is more restricted than was first thought (Johnson
& Newport, 1989; Paradis, 2004). This view is supported by advance of brain-based techniques; For example, Cargnelutti, Tomasino and Fabbro (2019) maintain that the infant brain reaches more or less adult-like maturity at age 7. According to these authors, infancy is a crucially important time for language processing, due to the development of processing strategies similar to those used by adults.

Clahsen and Felser (2006) attribute this difficulty in later years to processing strategies that learners employ for analyzing grammatical structures. Known as Shallow Structure Hypothesis, this view attributes learners’ failure in grammatical analysis to being more dependent on lexical cues as opposed to the native speakers’ ability to focus on grammatical structures. In other words, late learners focus more on lexical cues in sentence processing to compensate for less developed grammatical competence in the late-learned language. In fact, it is thought that these differences in processing strategies account for the noticeable differences between native speakers and late-learners. As shown by experimental studies, late learners need more time to process complex grammar structures (Hasegawa et al., 2002; Suh et al., 2007). For example, Guo et al. (2008) compared ERP signals from native speakers and late learners, and reported different signals from the two groups, which they attributed to the difference in processing strategies. Weber-Fox and Neville (1996) selected five groups of participants, each of which were exposed to their L2 at different ages: between 1-3, 4-6, 7-10, 11-13, and after 16 years of age. Chinese/English bilinguals in their study were instructed to read sentences with syntactic and semantic anomalies, while event-related brain potentials (ERPs) and behavioral responses were recorded. The authors reported that delays in reading sentences with syntactic anomalies appeared as early as 1-3 years, and both qualitative and quantitative differences were seen if the second language was learned after this time window. The accuracy rates also confirmed this result. However, for the semantically anomalous sentences, ERP responses and the judgment accuracies were seen to be altered only in those who were exposed to L2 after 11-13, and after 16 years of age. This result was taken as evidence for differences in performances of grammatical and semantic processing in the late-learned language. Similarly, a pioneering study (Johnson & Newport, 1989) in the field, examined Korean-English bilingual speakers who were exposed to their second language at ages varying between 3 and 39 years. Results showed that early learners had comparable performance to native speakers while this performance declined with age of learning. In semantic processing, however, age effect showed itself in the timing of processing. This study was important paving the way to many others which attempted to reveal the extent of vulnerability of grammar as opposed to lexical processing as age of learning increases.
Judging from these and other similar findings in the literature, it can be said that lexical processing is less resilient to age effects. In other words, the processing of semantics is relatively easier compared to morphology or syntax for late learners. The relative success in semantic processing as compared to grammatical processing in L2, however, cannot be taken as perfect mastery in the late-learned language. One important point to consider is the frequency of language use. As established in the psycholinguistic literature, more frequently used words are recognized faster due to strengthened ties between the words and the referential concepts (Dijkstra & van Heuven, 2002). As suggested by some prominent views, strengthened ties enable activation of lexical nodes meaning that they have lower activation threshold, which in turn raises the likelihood of being selected with ease and speed. Thus it can be said that, despite late-learners’ relative advantage in semantic processing, this depends predominantly on how frequently they use their L2.

Another point to consider in lexical processing is the emotional content of words. It is known that emotion and language systems develop simultaneously, leading to their integration in processing. A newborn is exposed to linguistic input accompanied by the supporting emotional reactions from others, and these experiences cause these reactions to be embodied in the memory. Embodiment can be defined as simulating physical experiences in mind. During the first years when the language system is maturing, the emotional experiences are closely associated with the words and sentences in the native language, and are encoded in an integrated way. In other words, new words and their emotional connotations are encoded in combination in the memory leading to a deeper understanding of the emotional content in the native language (Pavlenko, 2012). For example, Altarriba (2003) asked bilingual participants to rate emotion words according to concreteness, imageability and context availability, and found that the participants gave similar ratings for words in their native language, but not for words in their second language. Similarly, Pavlenko (2008) draws attention to the fact that the lexical-syntactic association of concepts do not necessarily overlap, making it difficult for late-learners to employ emotion load of words in their L2. Based on these results, it can be argued that the mental representations of emotion concepts are not necessarily similar in both languages of bilinguals. According to Pavlenko (2017), the late-learned language may be less emotionally resonant, being developed after the first language. Research based on bilinguals’ own accounts of emotional experiences has revealed that the first learned language is more emotional than later-learned languages (Dewaele, 2004; Pavlenko, 2004). The psycholinguistic literature abounds with support for this view. Particularly, The emotional resilience of the first language has been particularly revealed in studies eliciting skin conductance responses (SCR) which show physiological changes in
the body when the participants are exposed to linguistic stimuli with emotional content. In one such study, Iacozza, Costa and Dunabeitia (2017) reported a clear dissociation between participants’ ratings and SCR measures in their both languages. The bilinguals in their study rated the words based on their emotionality, and reported comparable results across languages, but the SCR measures failed to support this result. This showed that the perceived emotionality in a language may differ from actual emotionality. Also, during language acquisition, a newborn baby is acquainted not only with the emotional load, but also with the cultural elements in the language he/she is exposed to. Cultural aspects of a language are predominantly accompanied by emotion vocabulary, or they carry emotional tone, which means that cultural aspect of the late-learned language is inevitably less fully developed the native language.

Conclusion

Language learning has long been one of the most studied topics, with focus on different aspects of the process. In this paper, we deal with the implications of late language learning, based on data from psycholinguistic literature. The focus of the paper is on how this process differs according to how grammatical and lexical processing are carried out by late learners. Findings in the literature show that both language components have their unique ways of attainment. While it seems that grammatical processing is relatively more difficult than lexical processing, factors such as emotional and cultural load of the words and their frequency of use are important determiners of success in the latter.

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