

ABSTRACT

Language learning aptitude during adulthood varies markedly across individuals. An individual's native-language ability has been associated with success in learning a new language as an adult. However, little is known about *how* native-language processing affects learning success and what neural markers during native-language processing, in any, are related to success in learning. We therefore related variation in electrophysiology during native-language processing to success in learning a novel artificial language. Event-related potentials (ERPs) were recorded while native English speakers judged the acceptability of English sentences prior to learning an artificial language. There was a double dissociation in the relations between the magnitudes of English-language N400 versus P600 responses and the learning of specific aspects of grammar and vocabulary. Individuals who exhibited a greater N400 effect showed better learning of the vocabulary, but there was no relation between the N400 and grammar learning. In contrast, the P600 effect size correlated with grammar learning but not vocabulary. These findings show that neural signatures of native-language processing can predict success in learning a new language.