

Past tense generation in monolinguals and bilinguals: An fMRI comparison

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Recent work in the bilingual literature has revealed that the neural signatures associated with syntactic processing are modulated by the age of second language acquisition. To date, however, no published study has investigated whether differences between groups are modulated by the regularity of a given syntactic function. We conducted an fMRI investigation in which college-aged English monolinguals (n=12) and early Spanish/English bilinguals (n=12) were presented with present tense forms of regular and irregular English verbs and were asked to covertly produce the past tense form of the verb. Across both the monolingual and bilingual groups, generation of the past tense form of irregular verbs produced significantly greater activation than for regular verbs. Direct comparison between groups revealed greater functional activation in bilinguals than monolinguals during past tense production, the most significant differences seen during irregular past tense generation. For the bilinguals > monolinguals irregular verb comparison, primary functional activation foci were located in the left inferior frontal gyrus, left insular cortex, left medial frontal gyrus and bilateral precentral gyrus. These differences in activation patterns remained when verbs were controlled for word length, frequency, and consonant-vowel structure. The larger activation patterns seem to implicate that the bilingual participants had greater difficulty performing the past tense generation task, particularly for irregular verbs. These results are consistent with the view that processing irregular verbs reveals larger differences for non-native speakers relative to native speakers. The findings will be discussed with regard to current models of past tense processing in English.