**Brain Lateralization of a Whistled Language**

Left-hemispheric language dominance is a well-known characteristic of the human language system; however, this dominance decreases dramatically when people communicate with a whistled language. Whistled languages present a transformation of a spoken language into whistles, facilitating communication over great distances. In order to investigate the laterality of Silbo Gomero, a form of whistled Spanish, we used a dichotic listening task in a sample of 75 healthy Spanish speakers separated into three groups according to whistle experience: a non-whistling control group, a learners group and an advanced whistlers group. All three groups showed clear left hemisphere dominance for the recognition of spoken syllables. However, this dominance was drastically reduced for whistled syllables, reaching hemispheric symmetry in advanced whistlers, but still showing leftward asymmetry in the learners group. This finding supports the idea that whistled languages alter brain asymmetries, but shows that experience plays an important role in this process.