

ACOUSTICS2008/462 Hemispheric Differences in the Recognition of Environmental Sounds

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In the visual domain, Marsolek and colleagues have provided support for their claim that two dissociable and parallel neural subsystems underlie abstract and specific object recognition [Marsolek, 1999; Marsolek & Burgund, 2003]. According to their dissociable subsystems theory, an abstract-category subsystem operates more effectively in the left hemisphere (LH) and is less sensitive to the specific surface characteristics of the stimuli, whereas a specific-exemplar subsystem operates more effectively in the right hemisphere (RH) and is more sensitive to specific stimulus characteristics. In the present study, we tested this hypothesis in the auditory domain by conducting 2 long-term repetition-priming experiments on the recognition of environmental sounds. Participants attempted to identify target sounds from an initial 750 ms sound stem. Target stems were primed by either an identical or a different exemplar sound (e.g., the same or different tokens of a bagpipe). Target stems were presented monaurally in both experiments; however, in Exp. 2 white noise was simultaneously administered to the opposite ear. Our results are consistent with Marsolek's framework. In particular, in both experiments an exemplar specificity effect was obtained when the sounds were presented to the left ear (RH), but not when the sounds were presented to the right ear (LH).