Variability and Invariance in Speech and Lexical Processing: Evidence from Aphasia and Functional Neuroimaging

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The processes underlying both speaking and understanding appear to be easy and seamless. And yet, the listener has a daunting task in processing language input: the environment is typically noisy; speech input is highly variable with a many to many mapping of the acoustic properties of speech to sound structure representations; and sound structure representations map on to lexical form where many potential word candidates share sound shape properties and hence compete for selection. The goal of this research is to examine how and in what ways the neural system is, on the one hand, sensitive to the variability in the speech and lexical processing system, and, on the other, how it is able to resolve this variability. We will review recent research investigating how the perceptual system resolves variability in determining what category a sound belongs to, e.g. [d] or [t], and how different acoustic features of sounds, e.g. [d-t] vs. [s-z], map on to a common abstract feature, e.g. voicing. We will then examine the resolution of lexical competition during word recognition and spoken word production. Finally, we will consider how higher level information sources such as semantic and conceptual information are used to disambiguate degraded speech input. The implications of these findings will be considered for models of the functional and neural architecture of language.

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Host: Dr. Jared Novick
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