

Abstract for thesis entitled:

Attention to Time in the Auditory Modality

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## Abstract

Although attention is distributed across time as well as in space, the temporal allocation of attention has been less well studied than its spatial counterpart, especially in the auditory modality. However, temporal information is crucial to processing in audition and it is expected that attention to time may play a more important role in the auditory modality than in the visual modality. In the present thesis, I pursued three studies to gain more understanding of auditory temporal attention. In study 1, the basic temporal attention orienting was studied in the auditory modality. The results showed a cue effect indicating that it is possible to orient attention based on temporal information in the auditory modality, and that the temporal attention modulates perceptual and subsequent processing stages. In study 2, auditory attention in the temporal and spatial modalities was directly compared in one paradigm. The results showed that the temporal attention interacts with spatial attention, and temporal information is more dominant in guiding attention in the auditory modality. Temporal attention and spatial attention have some overlap in their neural correlates, such as the N1 and P2 components, but differ in the late P300

component. Finally, I extended current studies to another aspect of attention concerning attentional selection, to examine how auditory attention selects target items and suppresses or inhibits distractor items purely based on temporal information. Using the analog of a spatial flanker task, study 3 investigated the efficiency of attentional selection, and the results showed an interference effect and magnitude of temporal segregation were the primary factors that determine temporal attentional selection. In summary, the studies provide the first set of empirical evidence probing the nature of temporal attention in auditory modality.