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Often, virtual acoustic environments present cues that are inconsistent with an individual s normal experiences.

both in the computation of spatial position (sensory noise) and at higher levels of the system (memory noise). Short-term adaptation only affects how internal positions are mapped to responses (and memory noise), not how locations are computed; long-term adaptation can affect how spatial percepts are computed. Such a model can account quantitatively for short-term training effects in many experiments [4]; qualitatively, the model accounts for the fact that resolution is degraded in short-term experiments when novel combinations of interaural and spectral cues are presented simultaneously (e.g,. see [1]). In order to account for the data, the model assumes that listeners approximate the new nonlinear relationship between internally-computed location and exocentric space with a linear map. In the model, the slope of this mapping decreases exponentially with time and asymptotes at the optimal slope (i.e., the slope that minimizes the mean square difference between the expected and the actual internal percept for each response location). Finally, this change in internal slope directly determines the amount of memory noise affecting the response. These correlated changes in the mapping and internal decision noise completely explain changes in mean response and resolution during the course of the adaptation experiments [4].

The current experiments are designed to directly probe the assumptions of this model by testing subjects with a purely linear remapping (triangles in Figure 1). In contrast to previous experiments, which used non-individualized HRTFs, the current experiment uses personalized HRTFs, which should, if anything, reduce the sensory noise in the spatial percepts. Such experiments improve our understanding of the limitations of auditory spatial plasticity and provide insight into how to provide robust spatial auditory information that can be accurately perceived by human listeners.

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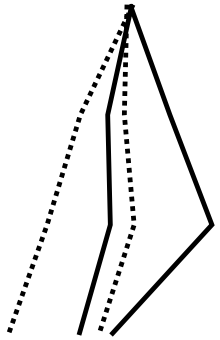

identification task, if the source is perceived as coming from outside the range of allowed responses, the expected mean response for the location will be the edge. Such an edge effect makes it difficult to estimate d for positions at the edges, and