JAAA CEU Program

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The questions below refer to Campbell, Nielsen, Bean, and LaBrec, "Auditory Gating in Hearing Loss," pages 559–565.

Learner Outcomes:

Readers of this article should be able to:

- Understand why hearing loss may decrease sensory inhibition and describe why auditory gating is a useful measure of this deficit.
- Identify the cortical auditory evoked potential (CAEP) gating component that is reflective of decreased inhibition in hearing loss, as well as the underlying cortical inhibitory networks that are active in adults with "normal" hearing and atypical in adults with hearing loss.

CEU Questions:

1. Which auditory gating component is typically considered a biomarker of decreased sensory inhibition?
   A. P50
   B. N1
   C. P2

2. Hearing loss may decrease sensory inhibition through:
   A. Increased central gain at the level of the cortex
   B. Decreased firing in peripheral excitatory neurons
   C. Peripheral deafferentation resulting in a reduction of inhibitory inputs

3. How was auditory gating quantified in this study?
   A. CAEP amplitude gating ratio and difference values
   B. Current density reconstructions via sLORETA
   C. CAEP gating component latencies

4. How did the P2 gating component reflect decreased inhibition in hearing loss?
   A. The amplitude gating ratio was lower in the hearing-loss group
   B. The amplitude difference value was lower in the "normal-hearing" group
   C. The amplitude gating indices correlated with hearing-loss severity

5. What key inhibitory source underlying the P50 gating component was absent in the hearing-loss group?
   A. Frontal cortex
   B. Prefrontal cortex
   C. Temporal cortex

6. What key inhibitory source underlying the P2 gating component was absent in the hearing-loss group?
   A. Frontal cortex
   B. Prefrontal cortex
   C. Temporal cortex

7. Why might typical gating function, as observed through CAEP amplitude indices, have been absent in the "normal-hearing" group?
   A. The sample size was too small
   B. The stimulus was presented near threshold
   C. The age range was higher than previous studies in that lab

8. Which CAEP component appears to be consistently reflective of central auditory plasticity in adult-acquired hearing loss?
   A. P50
   B. N1
   C. P2

9. What compensatory behavior might such plasticity be associated with?
   A. Effortful listening
   B. Avoidance
   C. Enhanced speech perception in background noise

10. What is a possible hypothesis for the absence of key inhibitory networks observed in the hearing-loss group?
    A. Cross-modal reorganization of early visual processing to the temporal cortex
    B. Cortical resource reallocation of early auditory processing to the frontal cortex
    C. Heightened activation of the parietal cortex

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