Week 14 Presentation: Auditory Scene Analysis (Chapter 12)

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Introduction:

In a noisy coffee shop, we can tune into a single conversation while ignoring the clatter of cups and background music. This is the "Cocktail Party Problem." This topic explores how the auditory system groups sounds by pitch, timbre, and location to segregate the auditory stream into distinct objects, similar to figure-ground segregation in vision.

Brainstorming Questions:

1. **The Coughing Radio:** Have someone cough loudly while you are saying a sentence. Did the listener hear the missing word anyway? Explain, as if you were talking to, your grandma that her brain is a "polite editor" (Phonemic Restoration) that fills in missing sounds so smoothly she doesn't even notice the gaps, just like autocorrect for her ears.
2. **The Soldier vs. The Crowd:** Listen to a random clatter vs. a drum beat. Why is one noise and the other music? Explain, as if you were talking to, a child that music is "organized sound" that our brain likes to predict. Use an analogy of marching soldiers (music) coming down the street vs. a disorganized crowd of people (noise) bumping into each other.
3. **The Party Challenge:** Put on earmuffs and try to listen to one person talking at a loud party. Exhausting, right? Explain, as if you were talking to, your grandfather why hearing loss makes him so tired. Tell him his brain has to work out like a bodybuilder just to separate the "voice" from the "noise" without the clear signal, which consumes all his energy.

Recommended Readings:

- Julesz, B. (1971). *Foundations of cyclopean perception*. University of Chicago Press.

- Holway, A. H., & Boring, E. G. (1941). Determinants of apparent visual size with distance variant. *The American Journal of Psychology*, 54(1), 21-37.