

# JAAA CEU Program

Volume 29, Number 4 (April 2018)

Questions refer to Johnstone et al, “Open-Fit Domes and Children with Bilateral High-Frequency Sensorineural Hearing Loss: Benefits and Outcomes,” 348–356.

## Learner Outcomes:

Readers of this article should be able to:

- Summarize the benefits of using open-fit domes with children who have bilateral high-frequency hearing loss.
  - Discuss how developmental factors may impact sound localization accuracy in children with bilateral high-frequency hearing loss.
1. The development of sound localization accuracy in childhood:
    - a. occurs rapidly over the first two years of life
    - b. requires much practice over the first decade of life
    - c. is not fully developed in humans, until age 20 years
  2. Published research evidence regarding use of open-fit domes (OFDs) in children would:
    - a. make no difference in audiology pediatric practice with regards to their use with children
    - b. make it easier for audiologists to justify OFDs as part of evidence-based pediatric practice
    - c. make it harder for audiologists to justify OFDs as part of evidence-based pediatric practice
  3. Sound localization ability allows a listener to improve speech understanding by:
    - a. knowing where to orient his/her head to exploit binaural advantages
    - b. avoiding danger
    - c. reducing the signal-to-noise ratio in complex environments
  4. For the children with hearing loss in this study, the measured long term average speech spectrum (LTASS) for the OFD showed:
    - a. an average 10 dB less amplification at 500 and 750 Hz and 10 dB more amplification at 3000, 4000, and 6000 Hz with similar estimates of aided speech intelligibility index (SII) as compared to the conventional earmolds
    - b. an average 10 dB more amplification at 500 and 750 Hz and 10 dB less amplification at 3000, 4000, and 6000 Hz with similar estimates of aided speech intelligibility index (SII) as compared to the conventional earmolds
    - c. an average 10 dB less amplification at 500, 750, 3000, 4000, and 6000 Hz with similar estimates of aided speech intelligibility index (SII) as compared to the conventional earmolds
  5. For the younger children (age 6 to 9 years) with hearing loss in this study, the use of OFDs resulted in:
    - a. no significant differences between OFD and any other listening condition
    - b. significantly poorer sound localization accuracy (greater localization error) using OFD as compared to unaided
    - c. significantly better sound localization accuracy (less localization error) using OFD as compared to unaided
  6. For the younger children (age 6 to 9 years) with hearing loss in this study, localization performance was significantly poorer than older children (age 10 to 16 years) with hearing loss when listening with:
    - a. their hearing aids using either their conventional earmolds or OFDs
    - b. unaided hearing and/or their hearing aids with their conventional earmolds
    - c. unaided hearing and/or their hearing aids with their OFDs
  7. OFDs offered immediate benefit to children with bilateral high-frequency hearing loss. However, this immediate benefit was primarily found for:
    - a. older children who had used conventional earmolds for more than six years
    - b. younger children who had used conventional earmolds for more than six years
    - c. children who had used conventional earmolds for less than six years
  8. When sound localization accuracy was compared between children with bilateral high-frequency hearing loss and children with normal hearing:
    - a. performance was significantly degraded by hearing loss and by younger chronological age
    - b. performance was significantly degraded by hearing loss and by older chronological age
    - c. performance was significantly degraded only by hearing loss; chronological age was not a significant factor
  9. Models of the occlusion effect have implications for children in that smaller ear canal volume is associated with:
    - a. inability to use OFDs
    - b. smaller trapped, low-frequency SPL in the ear canal (less head-in-a-barrel sensation)
    - c. larger trapped, low-frequency SPL in the ear canal (greater head-in-a-barrel sensation)
  10. Without early use of minimally disruptive HA technology (e.g., OFDs):
    - a. children with bilateral high-frequency hearing loss will eventually learn to localize sounds as well as their peers with normal hearing
    - b. children with bilateral high-frequency hearing loss will rarely equal the sound localization ability of peers with normal hearing
    - c. children with bilateral high-frequency hearing loss will not pay as much attention to sound sources as their peers with normal hearing



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