Auditory Integration Training in Current Practice: Ethical Issues

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Abstract

In 2003 ASHA determined that provision of Auditory Integration Training (AIT) therapy is a violation of the ASHA Code of Ethics (ASHA, 2003b) except as conducted for research purposes. Yet, ASHA-certified practitioners continue to provide AIT services across the country. This presentation reviews ethical issues in light of contemporary AIT practice, current research status, and the ASHA Code of Ethics. Guidelines are discussed regarding scope of practice and safe delivery of AIT within the current environment of AIT practice.

What is AIT?

- Therapy aimed at eliminating auditory spikes through listening to frequency-filtered and amplitude-modulated music through headphones.
- AIT was first developed in the 1980's by French ENT, Guy Berard.
- Popularized with 1991 publication of *The Sound of a Miracle* (Stehli, 1991), describing a miraculous cure after AIT therapy. Widely publicized, featured on Larry King, 20/20.
- Said to treat autism, ADHD, APD, and a wide variety of other disorders.
- Audiogram required before treatment to determine eligibility and customize filtering.
- Typical course of treatment consists of two half-hour sessions per day for 10 days.
- Cost is usually about $1,200-$2,000 (e.g., Madell, personal communication, February 23, 2007).
- Therapy is provided by audiologists, speech-language pathologists or any AIT-trained provider.
- Training is usually 2-4 days; equipment cost is about $4500 (AIT Institute, 2007b).

Theory behind it / How it claims to work

- Based on a theory that spikes in hearing sensitivity may cause disturbances in attention, communication, and behavior.
- There are a variety of explanations as to how the treatment actually works:
  - Changes the way in which the brain processes sounds (Veale,1994).
  - Stimulates the brain through listening to unpredictably modulated music (Madell,1999).
  - Treats hypersensitivity in the cochlea (Berard, 1993).
  - Exercises and strengthens middle ear muscles which focus the ear (Berard, 1993 as cited by Madell,1999).
  - Differentially rests and exercises hair cells within the cochlea (Berard, 1993 as cited by Veale, 1994).
  - Progressively strengthens the right ear in its dominant role in speech perception (Berard, 1993).

Current Status of AIT

- Research has been conducted but methods found questionable and results mixed.
- The American Academy of Audiology (1993), ASHA (1994) and the American Academy of Pediatrics (1998) all agreed that AIT should be considered an experimental procedure. More research was recommended.
- In 1999, FDA denied approval of AIT devices, except for educational use (ASHA, 2004a).
- ASHA finds that AIT has not met scientific standards for efficacy to justify its practice, except for purposes of research (ASHA, 2004b).
- In 2003, ASHA advised that members may be found in violation of the Code of Ethics if they provide services such as AIT, for which there is no reasonable expectation of benefit (ASHA, 2003a).

However,

- AIT continues to be practiced across the country. Methods and provider qualifications vary.
- Device replacing the FDA-banned AudioKinetron, has been ruled not to require FDA regulation (AIT Institute, 2007a).

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In Support of AIT

- Anecdotal evidence from parents and clinicians, reporting reduction in problem behaviors, decreased hypersensitivity to sounds, and improved language skills.
- Research claims of improvements in: auditory processing, attention, expressive/receptive language, autism, handwriting (Innovative Developments for Educational Achievement, 2005; Madell, 1999).
- Claims of improved word recognition scores (Madell, 1999).
- Backed by some well-established audiologists, based on experience with clients (Madell, personal communication, February 23, 2007).
- AIT is a non-invasive procedure.
- Other common therapies are also unproven (oral-motor therapy for speech, for example) (Lof, 2003).

In Opposition to AIT

- Research to date is inconclusive and methods problematic (e.g. Tharpe, 1999; Gravel, 1994; Miller, 1997).
- No published peer-reviewed studies using acceptably rigorous and carefully designed research in order to prove efficacy of AIT (e.g., double-blind method, adequate controls, sample size and participation criteria) (ASHA, 2004a).
- Explanations as to how AIT actually works are incomplete and inconsistent (e.g. Tharpe, 1999; Gravel, 1994; Miller, 1997).
- Current practice includes widely varying methods, regimens, equipment, levels of expertise and standards:
  - Sound volume is high (85dB and higher), may damage hearing if improperly used (e.g., Rankovic et al., 1996). Many practitioners are not audiologists (e.g., Gravel, 1994).
  - ASHA advises that diagnosis of APD for children below the mental age of 7 may lack reliability (ASHA, 2005).
  - Treatment is expensive, preys on desperate parents who will try anything to help their children.
  - Rejected by ASHA (1994) and American Academy of Audiology (1993) pending further research.

Ethical Issues

Ethical Questions:

- From a broader perspective: What *is* the proper balance between protecting the public from unproven therapies and allowing consumers the freedom to make choices – choices which may well be costly and disappointing?
- Why are current practitioners charging market rate prices if treatment is for purposes of research? Have IRB approvals been secured?
- At what point should any unproven treatment be restricted?
- Is evidence based practice merely a personal choice?

Scope of practice:

ASHA Code of Ethics states that "Individuals shall engage in only those aspects of the professions that are within the scope of their competence, considering their level of education, training, and experience." (ASHA, 2003b, p.2).

- As a purely auditory treatment, based on auditory testing and with potential for causing damage to hearing at excessive decibel levels,the practice of AIT appears to fall properly in the domain of the audiologist.
- ASHA asserts the need for extensive training and education in audiology and suggests a collaborative team approach (audiologist, SLP, and other professionals) in testing and treatment of audiological disorders such as APD (ASHA, 2005).

Safety guidelines:

Need to be established for decibel levels and exposure times for the young clients who are most often the subjects of AIT therapy (ASHA, 2004a).

Research	Description	Findings/Conclusions	Flaws Identified
Rimland and Edelson (1994)	▪ n=445, age 4–41, mean age 10.73 ▪ All heard AIT-modulated music, with different filtering conditions ▪ Groups used different AIT devices (EERS, BGC, and AudioKinetron) ▪ Main focus was to compare the devices and filtering conditions.	▪ Reduced sound sensitivity ▪ Slight improvement in hearing ▪ Reduced peaks and dips in audiogram ▪ Decreased problem behaviors ▪ Greater gains for lower-functioning subjects ▪ No difference in effect between devices	▪ No control group (referred to control group (n=9) from 1991 study) ▪ Participants were charged for treatment ($1000 + travel) ▪ Experimenter & parental response bias ▪ Possible placebo effect ▪ Audiograms obtained for only 45%
Rimland and Edelson (1995)	▪ n=17, age 4–21, Pilot study ▪ Diagnosed with autism ▪ 8 heard AIT-altered music, 9 heard same unaltered music ▪ Behavior assessed by ABC checklist, pre-/post-treatment ▪ AIT practitioners/experimenters not blinded, outcome assessors blinded	▪ Behavioral improvements in AIT group ▪ No reduction in sound sensitivity	▪ Small sample size ▪ No true control (no-treatment) group ▪ Subject selection not based on audiological criteria ▪ Audiograms obtained for only 59% ▪ AIT practitioners/experimenters not blinded
Edelson et al. (1999)	▪ n=19, age 4–39 ▪ Children and adults with autism ▪ Behavior assessed by ABC checklist, pre- and post-treatment ▪ P300 ERP measured ▪ Audiometric battery ▪ Random assignment to groups ▪ Double blind design	▪ Improved P300 ERPs in AIT group only ▪ Reduced behavioral problems in AIT group only	▪ Small sample size ▪ No true control (no-treatment) group ▪ Unable to obtain sufficient audiometric results for analysis due to difficulty in testing of this population
Bettison (1996)	▪ n= 80, ages 3–17 ▪ Diagnosed with autism, Asperger's syndrome, and sound sensitivity ▪ One group heard AIT-altered music, one group unaltered music ▪ AIT practitioners/experimenters not blinded, outcome assessors blinded	▪ Equal improvement in both groups: - Improved behavior - Improved verbal and performance IQ ▪ Suggests listening to music may be cause of improvement	▪ No true control (no-treatment) group ▪ Audiograms obtained for only 6% of subjects (Tharpe, 1999) ▪ AIT practitioners/experimenters not blinded
Zollweg, Palm, and Vance (1997)	▪ n=30, ages 7–24 ▪ Subjects with multiple handicaps (autism and/or developmental delays) ▪ Placebo group (unaltered music), and experimental group (altered music) ▪ Hearing sensitivity and loudness tolerance measured ▪ Behavior assessed by ABC checklist, pre-/post-treatment ▪ Double blind design	▪ No changes in hearing thresholds or loudness tolerance ▪ Slight behavior improvements in both groups ▪ Suggests improvement due to other factors	▪ Sample too broad and varied ▪ Time span (1 year) prone to reflecting co-occurring treatment ▪ Possible Hawthorne effect
Yencer (1999)	▪ n=36, ages 7–9 ▪ Diagnosed with APD ▪ 3 groups: placebo (unaltered music), experimental (AIT-altered music), and no-treatment group ▪ ABR and ERP P300 measured ▪ APD testing, pre-/post-treatment ▪ Parents blinded to test/placebo	▪ No AIT effect seen ▪ No meaningful differences between groups in APD test measures ▪ No differences in hearing thresholds	▪ Some subjects simultaneously receiving SLP services ▪ No measures of spikes in hearing ▪ AIT practitioners/experimenters not blinded, outcome assessors not blinded
Mudford et al. (2000)	▪ n=19, ages 5–13 ▪ Diagnosed with autism ▪ Mean IQ = 56 (8 mentally retarded) ▪ Pre-/post-treatment behavior rated ▪ 2 groups: altered vs. unaltered music ▪ Cost of treatment/travel paid by study ▪ Double blind design	▪ No improvements in either group, in either behavior, language, or IQ	▪ Small sample size ▪ Headphones worn but unaltered music not played through headphones ▪ Crossover design: All children received both treatments in opposite order (problematic based on Berard instructions to avoid headphone use following AIT)

Future research: What elements can confirm a hypothesis of efficacy?

- Inclusion of complete audiological evaluation, and examination for presence of audiological disorders.
- Audiograms and objective measures (ABR, OAE).
- ERP/PET (also objective measures) can be used to investigate effect on CANS.
- Double-blind (to eliminate experimenter effect, expectation effects, Hawthorne effect).
- Well controlled (control group / test group: no music, filtered, randomized subject selection - not self-selected) with adequate sample sizes.
- Subject selection criteria has to be clear. As first step, may focus on one population. Detailed individual background information needed.