

“Scanning Children without Sedation”

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Overview

The goal of this lecture is to illustrate commonly used approaches for performing brain MRI scans in infants and children. Two main obstacles must be overcome for acquiring these scans in pediatric populations: 1) **physical and psychological comfort in the scanner**: children’s anxiety in new environments must be met with desensitization protocols and other methods to calm them, creating a comfortable environment in which children will be compliant with the protocol, and 2) **motion**: several approaches are used to improve children’s compliance with instructions to remain motionless during the scan. These approaches reduce motion artifact in resulting images, and differ in strategy based on the child’s developmental level. The lecture will begin with approaches used for infants and then progress to those used with older children.

Outline

- I. Scanning infants
 - A. Hearing protection
 - B. Vacuum-fix papoose
- II. Scanning children: awake
 - A. Pre-scan training
 - i. Desensitization
 - a) At home
 - b) In the lab and/or mock scanner
 - ii. Behavioral training to reduce motion
 - B. During the scan
 - i. Thermoplastic masks
 - ii. Favorite cartoons
 - iii. Video monitoring of head coil
 - iv. Weighted blankets
- III. Scanning children: asleep
 - A. Pre-scan training
 - i. Sleeping with scanner noises playing at home
 - ii. Following a bedtime routine that can be translated to the scanner
 - B. During the scan
 - i. Scanning environment as similar to home bedroom as possible
 - ii. Co-sleeping with parents

Suggested reading

- Kotsoni et al., 2006. Special considerations for functional magnetic resonance imaging of pediatric populations. *J Magnetic Resonance Imaging* 23: 877-886
- Nordahl, et al., 2008. Brief report: Methods of acquiring structural MRI data in very young children with autism without the use of sedation. *J Autism and Developmental Disorders* 38: 1581-1590.
- Slifer et al., 1993. Behavior analysis of motion control for pediatric neuroimaging. *Journal of applied behavior analysis* 26: 469-70.
- Bookheimer, 2000. Methodological issues in pediatric neuroimaging. *Mental Retardation and Developmental Disabilities* 6: 161-165.