

Factors Associated with Successful MRI Scanning in Unsedated Young Children

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Abstract

Background:

Young children are often unable to remain still for magnetic resonance imaging (MRI), leading to unusable images. Various preparation methods may increase success, though it is unclear which factors best predict success. Here, in a retrospective sample, we describe factors associated with successful scanning in unsedated young children. We hypothesized that the mock scanner training and fewer behavior problems would result in higher success rates.

Methods:

We recruited 134 children aged 2.0–5.0 years for anMRI study. We compared success between children whose parents opted for mock scanner training ($n = 20$) or not ($n = 114$), and evaluated

demographic and cognitive factors that predicted success.

Results:

Ninety-seven children (72%) completed at least one MRI sequence successfully on their first try; 64 children (48%) provided high-quality data for all 3 structural imaging sequences. Cognitive scores were higher in successful than unsuccessful children. Children who received mock scanner training were no more likely to be successful than children without, though they had slightly higher scores on T1 image quality.

Conclusions:

Our data shows that scanning with minimal preparation is possible in young children, and suggests limited advantages of mock scanner preparation for healthy young children. Cognitive ability may predict success.

Keywords: magnetic resonance imaging, mock scanner, sedation, anesthesia, children, neuroimaging