Implicit Motor Sequence Learning and Cognition in Children and Adolescents with Fragile X Syndrome

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Abstract
Relatively little is known about implicit motor sequence learning in Fragile X Syndrome despite hypothesized deficits in learning. The purpose of the present study is to examine learning using a Serial Reaction Time (SRT) task in children and adolescents with Fragile X Syndrome as compared to typically developing children and adolescents. The present study will also examine the impact of cognitive abilities as they relate to learning.

Implicit Learning
The acquisition of skills, habits, and behaviors and occurs without awareness of the process of learning.

Implicit Sequence Learning
Learning of the sequential structure of events or patterns.

One population in which implicit sequence learning may be impaired is the population of individuals with Fragile X syndrome (FXS).

Background
Learning and memory are important aspects of healthy development. Storage and retention of learned information allows us to build upon previously acquired information.

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Hypotheses

Hypothesis 1
It is predicted that individuals with FXS will show impairment on an implicit motor sequence learning task as compared to typically developing, mental age matched controls.

Hypothesis 2
It is predicted that there will be a correlation between learning rate on an implicit motor sequence learning task and cognitive abilities.

Methods

One group of individuals with FXS and one group of typically developing individuals.

Serial Reaction Time (SRT) Task
Modified version of original SRT task.
- 7-step target sequence: 3 1 2 3 1 2 4

Stanford-Binet Intelligence Scales, 5th Edition (SB5)
Standardized, clinician-administered test of intellectual abilities
- Five factor indices: Fluid Reasoning, Knowledge, Quantitative Processing, Visual-Spatial Processing, and Working Memory
- All indices measured across verbal and nonverbal subtests.

References