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## Music Therapy & Fragile X Syndrome Fact Sheet

### Definition:

Fragile X Syndrome is a hereditary condition that causes a wide range of mental impairment, from mild learning disabilities to severe mental retardation. It is the most common cause of genetically inherited mental impairment. In addition to mental impairment, Fragile X Syndrome is associated with a number of physical and behavioral characteristics. Males and females exhibit quite different physical, cognitive, behavioral, sensory, speech and language impacts of Fragile X Syndrome. In general, either females with Fragile X do not have the characteristics seen in males, or the characteristics show up in a milder form.

### Incidence:

Fragile X Syndrome is prevalent in approximately 1:3600 males and in 1:4000 to 1:6000 females.

### Characteristics and Need Areas:

- **COGNITIVE:** Males and females demonstrate problems in attending, sustaining effort (motivation and focus) during tasks, problem solving, and processing feedback. Poor understanding of spatial relations and difficulty in learning mathematic concepts are also areas of weakness.
- **SPEECH/COMMUNICATION:** Males often have imprecise articulation, a fast rate of speech, and cluttered speech (a disturbance in the fluency of speech where people speak at a more rapid rate than normal, causing the person to stumble and repeat their words in their attempt to impart meaning). These things affect intelligibility in addition to loud voice volume, with unusual, high pitch, and harshness. They have difficulty understanding multiple meaning and abstract words. A decreased ability to combine words into phrases and then sentences is common. Pragmatics, or conversational skills, are a major area of concern for boys and girls with Fragile X Syndrome. Poor eye contact, perseverative speech, poor topic maintenance, and constant self-talk (repeating a string of chatter to themselves, perhaps as a self-protective measure) are other difficulties. Females often have run-on, disorganized speaking styles, with



*Scott, a 15-year old with Fragile X Syndrome, playing the QChord*

frequent tangential comments (unable to stay focused on a topic). Understanding conversational cues such as tone (sarcasm, humor), facial expressions, and volume are also difficult.

- **MOTOR SKILLS:** There may be delays in the acquisition of early milestones. This may include sitting, walking and crawling. Difficulties with motor movement, poor motor planning (throwing and catching a ball), and poor balance are also common.
- **SOCIAL:** Individuals may display difficulties with processing conversation and making eye contact. Some girls with Fragile X Syndrome do not monitor their responses in conversations well. This may result in them making inappropriate comments to others.

## **How can music therapy address the need areas for an individual with Fragile X Syndrome?**

**SPEECH:** Singing is an effective technique used to increase sentence length, fluency, rate, appropriate pitch and volume of the speaking voice. Rhythmic cueing can also improve the rate of speech. Conversational skills can be enhanced through “musical conversations” with instruments where the child takes turns ‘talking’ with a peer.

**COGNITIVE:** Music therapy songs and techniques are effective in addressing academic skills. Some of these skills may include number identification, counting, and mathematical problem solving. Music therapy is motivating and can allow an individual to attend to a task for a longer period of time. Because music is processed in both hemispheres of the brain, music can stimulate cognitive functioning and may be used for remediation of some speech/language skills.

**MOTOR SKILLS:** Music therapy strategies can be devised to address poor coordination and balance issues. For instance, tapping rhythm sticks together with a partner requires refined coordination and is a fun, motivating way to work on a motor skill. Because rhythm is structured and predictable, it is often used to improve an individual’s gait or walking stride.

**SOCIAL:** Social song stories can be created specifically for the child to target specific social skills such as turn-taking, eye contact and appropriate interaction with peers. In the music therapy setting, the individual has the opportunity to role-play different scenarios where this skill might be used which can aid in the generalization of skills to other settings. An individual may also learn these skills (such as eye contact) through cooperative instrument playing. For instance, if two people are taking turns playing the marimba (an xylophone-like instrument) they may make eye contact (without words) to signal that it’s the other person’s turn to play.



### GOAL EXAMPLE for SOCIAL

**By (date), given melodic cueing and visual conversation strips, Scott will demonstrate the ability to participate in 5 exchanges of a conversation with therapist or peer, remaining on topic for 75% of opportunities with minimal prompting.**

*Baseline: Scott currently can engage in conversation for 2 exchanges and frequently is off topic. Due to his increased motivation and attention when music is, music provides an enhanced way for Scott to role play and practice conversational skills.*

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## **NATIONAL ORGANIZATIONS**

### **American Music Therapy Association (AMTA)**

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### **The National Fragile X Foundation**

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