

Therapeutic Function of Music Plan Worksheet

Problem Statement:

“Speech involves strength, coordination, and timing of precise muscle movements...When we compare speech, language, and communication, speech is by far the most difficult for children with Down syndrome to use.” (Cohen W., 2002) The development of speech requires frequent social interaction. Parents oftentimes attempt to provide this by “bathing their children in language”. Research has shown that not only can this be too much stimulation, but also that children are not given enough time to practice communicating back. Because speech development is slow, many parents are satisfied when their children are communicating at all. Even after a person is capable of creating words, he or she may revert to old sounds and movements when they get the attention they are looking for. (Macdonald, Unknown) For some adults with Down syndrome these bad habits are perpetuated, and the idea that one “cannot speak” becomes grounded. By promoting confidence in the improvement of speech, and through continuous practice, a person with Down syndrome can learn important phrases to increase his quality of life by increasing his independence.

Goal: Learn one functional phrase

Musical Element:	Theoretical Framework:	Purpose of musical element:	Explicit description of the musical element:
<p>Pitch <i>Tones of high or low frequency</i></p>	<p>Pitch is used in speech to add stress to certain words or syllables, putting emphasis on different ideas. The pitch level at the end of a sentence also provides prosodic clues of a question or statement. (Nooteboom, 1997) People with no musical background have a harder time attending to change in pitch (Ott, Skarloken, Kurtz, & Howell, 2014). Men with Down syndrome often have a smaller range of vocal flexibility that consists of three or four whole steps in a lower range. (Lee, 2009) Low pitched voice with a breathy quality can sometimes be hard to comprehend.</p>	<p>The pitch will support the natural sound of each word in a phrase in order to develop the ability to discern vocal inflection.</p>	<p>The pitch should be within a natural and comfortable range for singing and listening (A2-G4). The pitch movement should be kept simple and at a mild pace so that the auditory brainstem can process and make proper connections.</p>
<p>Rhythm <i>A regular repeating pattern</i></p>	<p>Speech is organized with each syllable having a certain strength and duration. This helps the mental processing of the listener and can be imitated by other speakers. The accents also help to give prosodic cues. (Nooteboom, 1997) Learners who can maintain the rhythm of language sound more natural and fluent. Phonological processing is correlated to the ability to copy rhythmic patterns. (Rodriguez, Bybee, & Whittaker, 2014)</p>	<p>Rhythm should be used as a guide to separate words with natural spacing and to add emphasis in order to make phrases more intelligible and meaningful and thus improve the perception and production of language.</p>	<p>The rhythm should be predictable and maintain a simple structure (3/4, 4/4) Different rhythms may be allowed to encourage self-expression of the client, but the focus should be on the consistency and support of the normal speaking pattern.</p>

<p>Dynamics <i>The loudness or softness of a sound</i></p>	<p>Dynamics are important for audibility and emotional expression. The volume of one's speech may also be correlated with self-confidence. Speaking with a breathy quality can be harmful as it dries out the vocal folds. Increasing loudness in a song has been shown to increase the loudness of speech and improve articulation precision (Levine, Smiley, Robinson, & Crownover, 2014).</p>	<p>Dynamics should encourage proper breath support and the confidence to vocalize at an appropriate volume.</p>	<p>The dynamics will be at a mezzo-forte level, encouraging the client to match the volume without drowning him out. The client's state of arousal and environmental noise will also be monitored and changes made accordingly.</p>
<p>Timbre <i>The tone color and quality of a sound</i></p>	<p>Timbre is important in both speech and music perception. It allows one to identify phonemes in speech and distinguish instrument families. (Houtsma, 1997) Pairing different timbres to phonemes could be a positive aural stimulus to exaggerate the difference of certain sounds from others. Timbre is also crucial for the perception of aesthetics which keeps distraction low and engagement high.</p>	<p>Timbre should support other musical elements in an aesthetically pleasing way. Discriminating between different timbres (brighter vs. darker) could be used to improve the processing of speech (Hawes, Lesiak, McClusky, & Polasik, 2014).</p>	<p>This musical element should support the basic sounds of speech and be within the client's preferred instrumentation (percussion).</p>
<p>Tempo <i>The pace at which a piece moves</i></p>	<p>In both music and speech, fast tempos typically generate excitement, energy, and action, while slow tempos instill feelings of reflection and solemnity. (Cohen S., 2011) Tempo also relates to level of development or skill. A child may speak slowly, while an adult with fluent English is able to produce many phrases at a quick rate.</p>	<p>Tempo provides motivation and the structure of natural speech, at the level of the client.</p>	<p>In first learning speech, the tempo should be slow so that each element of phonemes and syntax are clearly understood. The pulse should remain constant, but the speed should be adjusted based on the client's ability at a task and his state of arousal.</p>
<p>Melody <i>An organized sequence of pitches</i></p>	<p>In English, contours of spoken sentences are the principle carriers of prosodic information. (Nooteboom, 1997) Melodic based therapy is found to improve speech production at a faster rate and a higher gain (Lumley, Nance, & Quitno, 2014). Melody is important for emphasizing and reinforcing the natural inflection of words and phrases.</p>	<p>The melody will be used to improve the perception and production of vocal inflection.</p>	<p>The melody will have mostly stepwise motion and will exaggerate the natural rise and fall of the desired phrase. Familiar melodies will also be used.</p>
<p>Lyrics</p>	<p>Lyrics use verbal language to communicate ideas and emotions.</p>	<p>The lyrics should support the learning of</p>	<p>Concrete ideas should be utilized. The lyrics</p>

<i>The words, phrases, or sentences used in a musical piece</i>	Even still, non-verbal individuals may still have the ability to sing words. Language is located in the right hemisphere, and since music is multisensory and does not have a specific center in the brain, a musical structure can be used to allow an individual to reproduce phrases. (Edmonds, 2009)	speech by using familiar words at a clearly comprehensible pace.	should encourage natural and important phrases by repetition and minimization of songs with an abundant amount of words.
Form <i>The structure in which a piece is arranged</i>	Music has discrete structural elements such as tones and chords that create structured sequences, much like how words form organized sentences. (Patel, 2011)	Music should be structured in a logical manner that imitates English syntax and emphasizes the form of language.	The form should be in the client's preferred style of music. Only one or two verses of a song are necessary with the focus on the repetition of the chorus.
Harmony <i>The structural spacing of sounds</i>	Harmonic processing activates language skills in stimulating the brain. Harmony has been shown to either challenge or confuse the listener based upon cognitive ability of the client and state of arousal. (Taylor, Koo, & Han, 2014)	Should be used as aesthetic accompaniment support for the melody.	A simple I-IV-V harmonic structure should be used to complement the other musical aspects and provide stimulation without distraction.
Style <i>The elements of a song that categorize it as a particular genre or culture</i>	People find identity in specific musical styles. Utilizing preferred music has been found to improve emotional state, as well as encourage participation, focus, and motivation. (Dyrlund, 2008)	The style used should validate the client's preferences to encourage individuality and engagement.	Songs with familiar lyrics and that elicits positive reactions should be used to encourage participation in the session.

Theory-based Synthesis of the Music:

Music can provide the positive social interaction necessary for the improvement of speech. It creates opportunity for non-obtrusive verbal and non-verbal communication. A steady rhythm with a strong pulse can help to strengthen motor muscle movement and provide structure for the natural timing and accents of speech. The tempo provides pacing of speech within the client's skill level. It helps all words to be kept separate from one another so that words may be recognized in a different context. The pitch will mimic the natural inflection of words which provides necessary prosodic information. The melody will move in mostly stepwise motion, in conjunction with the pitch, exaggerating the rise and fall of the desired phrase's tone. In this way, the melody will attempt to expand the vocal range of the client. The lyrics used will be familiar to encourage vocalization. The other use of lyrics will be the functional phrase itself, put to a melody and rhythm that resembles speech patterns. Even if the client understands and memorizes a phrase as well as has the proper motor movements, unless he is able to be heard it is not functional. Thus dynamics are important to increase the volume of the client's speaking voice by encouraging the client to match the volume of the instrument that is being played. Timbre is important for identifying the phonemes of speech. Different instrumentation can be used to train the client to discriminate between different speech sounds and thus improve his own production and articulation. Timbre will work together with style to validate the client's musical preferences and in this way promote positive emotions, engagement, and attention. Lastly, in all of these things repetition is important. The form of the music should be sequenced in such a way that the client has ample opportunity for repetition and thus learning of the speech.

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