Precision Songs® NEWSLETTER
www.precisionsongs.com

> *"It was only through music that I could establish any contact with the most inaccessible among [the patients with autism], and I felt this so strongly that I brought my own piano where I worked. It seemed to act as a sort of magnet for some of these nonverbal youngsters." (Musicophilia, p. 291)*

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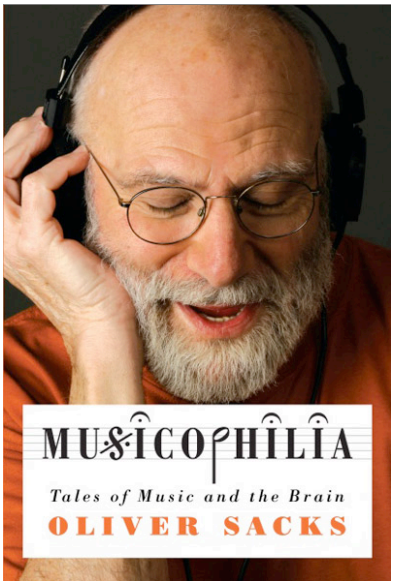
In his new book, *Musicophilia*, Dr. Oliver Sacks describes the groundbreaking work of psychologists, neuroscientists, neurologists, technologists, and musicians as they explore the most profound and enjoyable of human activities—music. Much about music remains shrouded in mystery, but light is being shed as brain scanning and other tools of measurement advance in their precision.

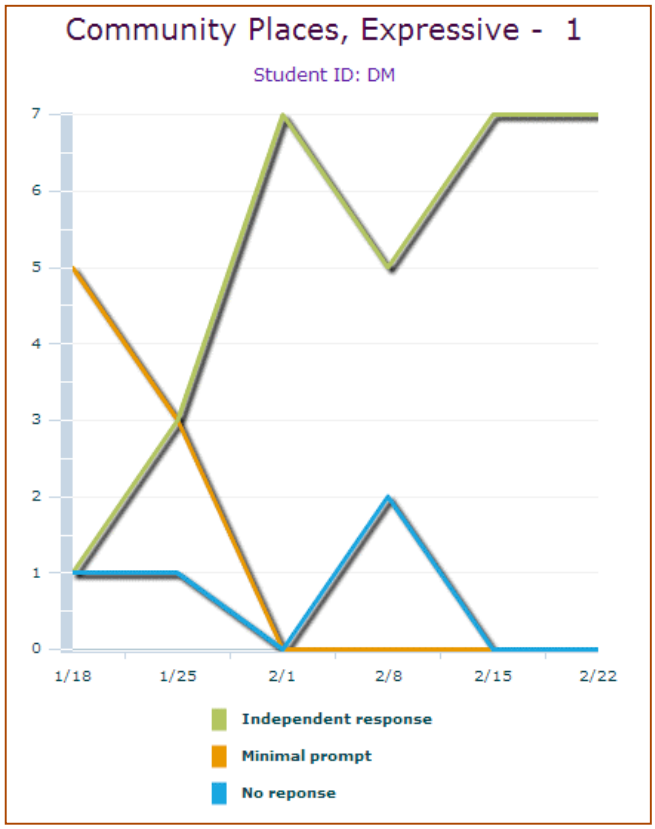


Outside the use of advanced medical equipment, it is difficult to define and measure the obvious positive effects of music. How does one measure social connection and emotional expression? How does one attach meaning or quantify dance and other physical responses? Positive outcomes are obviously being achieved, but how is it "proved" scientifically when, in addition to problems of definition and measurement, diverse individuality makes a control group nearly impossible to form?

When setting up research for Precision Songs®, we decided to go back to our roots in behavioral science. We had designed our music to include blanks for the purpose of creating a hook. (The urge for completion is a powerful tool to draw language out of many special populations). But, in hindsight, we also realized it was the perfect place to collect data. Why not count behaviors? We decided to count how many blanks a child actually filled and graph that number over time. Our doctoral student quickly adopted the simplicity of the idea (in addition to other measures), and by mid trial, we began seeing exciting progress in teachers' graphed observations.

> *"When I was growing up, I was raised on songs and stories. There was a constant playing of Irish music in our home…Even when the talks and screaming and reprimands could not get through to me, the music (and the lyrics) did."* (From Thomas A. McKean's biography, *Soon Will Come the Light*: *A View from Inside the Autism Puzzle,* Future Horizons, 1994, p. 71.)

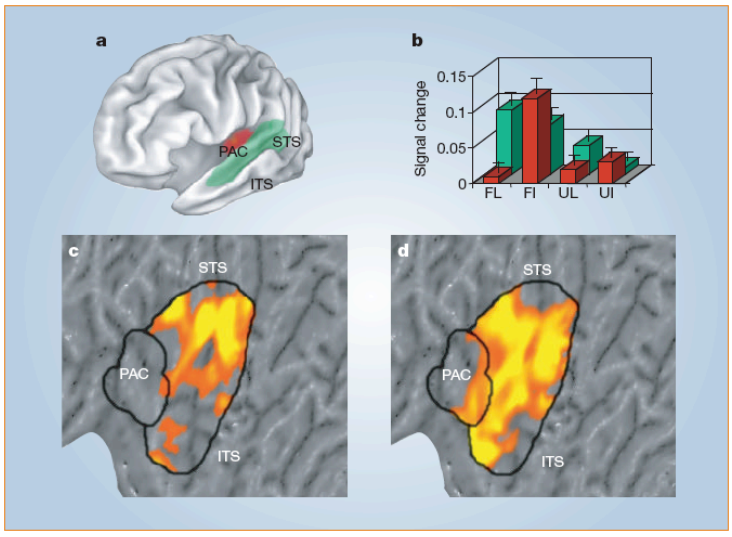
So, through old-fashioned direct observation, progress is being measured, recorded, and graphed in a definable, quantifiable way! This measurement of progress is good for our research but even better for the individual student. For many special students, meaningful individualized data is hard to come by for building educational goals and objectives.



How the Brain Deals with Gaps in Music

A 2005 study out of Dartmouth College* used functional magnetic resonance imaging (MRI) to investigate the physiology of brain activity when blanks are left in familiar tunes. Muting short gaps of familiar music was sufficient to trigger auditory imagery showing that the phenomenon was automatic and irresistible. Pictures (c) and (d) below show that silent gaps embedded in familiar songs induce greater activation in auditory association areas than silent gaps embedded in unknown songs.

So, when teachers have children listen repeatedly to Precision Songs track 1, students become very familiar with how a song ought to be. When track 2 introduces silent gaps for students to take turns filling in the blanks, the brain literally "lights up." ***The bottom right image is a picture of the obligatory, irresistible urge for completion as it shows up on a MRI.*** What began as a simple, pragmatic teaching tool has found its research base!



* D.J. Kraemer, C.M. Neil, Kelley, W.M. and Green, A.G., "The Sound of Silence," *Nature, Vol. 434* (2005).