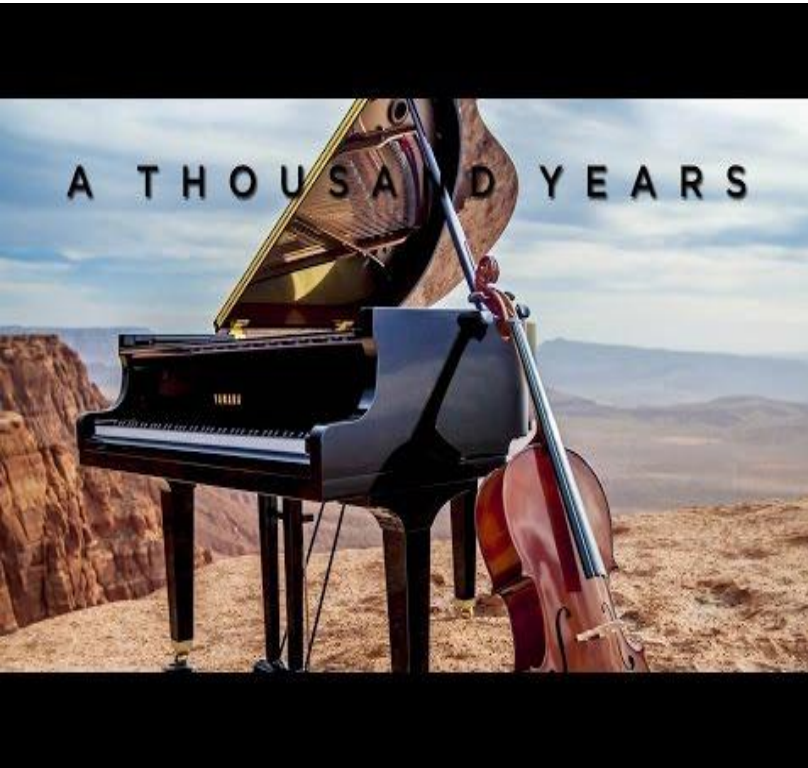


Musical Connection to Learning

By: Linnea Puckett

Quick Experiment



Neuromusicology

“The Scientific study of the effects of music on the brain. It is rooted in traditional cultural beliefs, and many ancient societies believed that music has a therapeutic effect on the mind and body”



This Form of Science is now using musical therapy in attempt to treat behavioral problems and encourage social learning.

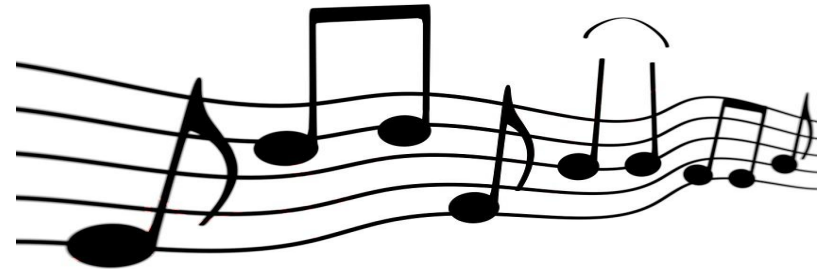
The scientists behind this study hope it will prove valuable in treating autism, attention, memory, speech, and pain management. They also study conditions that affect musical ability. Such as Musicogenic epilepsy and Musician's dystonia.

How does Music affect the child's brain?

With the work by Daniel J. Levitin, we find that music engages all sensory areas. By also engaging the cerebellum, the motor cortex and the frontal lobes, it plays an important role in language development.

He also found that music activates both hemispheres of the brain and help transfers information from one side to the other.

Teachers found that when students listened to music they had improved listening skills and longer attention spans. School attendance and parental involvement were higher, as were the children's confidence and self-esteem levels.



Case Study #1

- Music and cognitive abilities -Ingo Roden, Dietmar Grube, Stephan Bongard, and Gunter Kreutz
- 50 children (23 male,27 female).
- Four primary schools in four different parts of Germany.
- Twenty five children(10 male, 15 female) music group. Remaining Twenty five(13 male, 12 female) control group(Natural science)
- Only attained to children past the second grade
- Music group- basic training in singing, rhythm, ear training, then instrumental instruction
- Control group- only curriculum based music lessons.
- IQ, SES and musical background tested before using the Baddeley's working model
- Corsi Block, Matrix Span, One-Syllable Word Span , Norword recall, Counting span, Complex span, and Color span backwards tests.

Results

The results show the Music group growing; significantly outperforming control group by the third time point

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Table 2. Means (and SD) of working memory assessment data for music and natural science groups at three time points (T1–T3).

Measures	Music (n = 25)			Natural sciences (n = 25)		
	T1	T2	T3	T1	T2	T3
<i>Visuospatial sketch pad</i>						
Corsi Block	3.87 (.55)	3.85 (.83)	4.57 (.70)	4.26 (.83)	4.25 (.68)	4.57 (.78)
Matrix Span	4.17 (.84)	4.70 (1.10)	5.00 (.98)	4.35 (1.13)	4.77 (1.10)	4.82 (1.45)
<i>Phonological loop</i>						
Nonword Recall	16.24 (2.86)	18.68 (3.01)	20.04 (2.54)	14.20 (3.54)	15.84 (3.58)	14.36 (3.53)
One-Syllable	3.80 (.56)	4.21 (.57)	4.65 (.68)	3.79 (.48)	3.85 (.44)	3.80 (.71)
<i>Word Span</i>						
<i>Central executive</i>						
Counting Span	3.03 (.56)	3.57 (.70)	3.85 (.66)	3.13 (.74)	3.44 (.63)	3.42 (.60)
Color Span	2.85 (.81)	3.30 (.96)	3.63 (.82)	2.82 (.81)	3.13 (.75)	3.19 (.62)
Backwards						
Complex Span	3.08 (.46)	3.45 (.54)	3.89 (.79)	3.07 (.62)	3.27 (.70)	2.99 (.57)

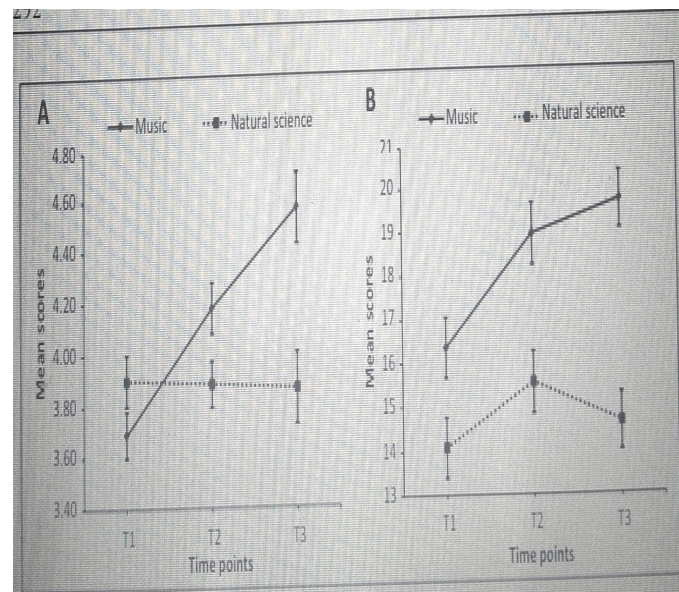


Figure 1. Mean scores of the One-syllable Word Span (A) and the Nonword Recall Test (B) for the two experimental groups (N = 50) at baseline (T1), after 1 year (T2) and after 1.5 years (T3) of music or natural science tuition.

(Note: error flags indicate standard errors of means (SEM).)

Case Study #2

Musical Therapy and Social Skills in Autism

- Objective: examine effects of music group therapy on eye gaze, joint attention, and communication.
- Seventeen children, (6 to 9).
- Divided between Music therapy group and non.
- Ten 50 min group sessions for 5 weeks
- Target social skills using Social responsiveness scale, Autism Evaluation Checklist, and Video Analysis
- Results: Significant differences in eye gaze, no significant difference in communication, and significant interaction between time and groups for SRS scores, but no improvement in ATEC
- Conclusion: Musical Therapy supports developing joint attention.

ATEC-1/11-95

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This form is intended to measure the effects of treatment. Free scoring of this form is available on the Internet at: www.autism.com/atec

Name of Child _____
 Last First
☐ Male Age _____
☐ Female Date of Birth _____
 Form completed by: _____ Relationship: _____
 Today's Date _____

Please circle the letters to indicate how true each phrase is:

1. Speech/Language/Communication:		[N] Not true	[S] Somewhat true	[V] Very true
N S V	1. Knows own name	N S V	6. Can use 3 words at a time (Want more milk)	N S V
N S V	2. Responds to 'No' or 'Stop'	N S V	7. Knows 10 or more words	N S V
N S V	3. Can follow some commands	N S V	8. Can use sentences with 4 or more words	N S V
N S V	4. Can use one word at a time (No!, Eat, Water, etc.)	N S V	9. Explains what he/she wants	N S V
N S V	5. Can use 2 words at a time (Don't want, Go home)	N S V	10. Asks meaningful questions	N S V
			11. Speech tends to be meaningful/ relevant	
			12. Often uses several successive sentences	
			13. Carries on fairly good conversation	
			14. Has normal ability to com- municate for his/her age	

II. Sociability:			
[1] Not descriptive	[2] Somewhat descriptive	[3] Very descriptive	
N S V 1. Seems to be in a shell – you cannot reach him/her	N S V 7. Shows no affection	N S V 14. Disagreeable/not compliant	
N S V 2. Ignores other people	N S V 8. Fails to greet parents	N S V 15. Temper tantrums	
N S V 3. Pays little or no attention when addressed	N S V 9. Avoids contact with others	N S V 16. Lacks friends/companions	
N S V 4. Uncooperative and resistant	N S V 10. Does not imitate	N S V 17. Rarely smiles	
N S V 5. No eye contact	N S V 11. Dislikes being held/cuddled	N S V 18. Insensitive to other's feelings	
N S V 6. Prefers to be left alone	N S V 12. Does not share or show	N S V 19. Indifferent to being liked	
	N S V 13. Does not wave 'bye bye'	N S V 20. Indifferent if parent(s) leave	

III. Sensory/Cognitive Awareness:			
	[N] Not descriptive	[S] Somewhat descriptive	[V] Very descriptive
N S V 1: Responds to own name	N S V 7. Appropriate facial expression	N S V 13. Initiates activities	
N S V 2. Responds to praise	N S V 8. Understands stories on T.V.	N S V 14. Dresses self	
N S V 3. Looks at people and animals	N S V 9. Understands explanations	N S V 15. Curious, interested	
N S V 4. Looks at pictures (and T.V.)	N S V 10. Aware of environment	N S V 16. Venturesome - explores	
N S V 5. Does drawing, coloring, art	N S V 11. Aware of danger	N S V 17. "Tuned in" - Not spacy	
N S V 6. Plays with toys appropriately	N S V 12. Shows imagination	N S V 18. Looks where others are looking	

IV. Health/Physical/Behavior:		[M] Minor Problem	[S] Serious Problem
N MI MO S 1.	Bed-wetting	N MI MO S 9. Hyperactive	N MI MO S 18. Obsessive speech
N MI MO S 2.	Wets pants/diapers	N MI MO S 10. Lethargic	N MI MO S 19. Rigid routines;
N MI MO S 3.	Soils pants/diapers	N MI MO S 11. Hits or injures self	N MI MO S 20. Shouts or screams
N MI MO S 4.	Diarrhea	N MI MO S 12. Hits or injures others	N MI MO S 21. Demands sameness
N MI MO S 5.	Constipation	N MI MO S 13. Destructive	N MI MO S 22. Often agitated
N MI MO S 6.	Sleep problems	N MI MO S 14. Sound-sensitive	N MI MO S 23. Not sensitive to pain
N MI MO S 7.	Eats too much/too little	N MI MO S 15. Anxious/fearful	N MI MO S 24. "Hooked" or fixated on certain objects/topics
N MI MO S 8.	Extremely limited diet	N MI MO S 16. Unhappy/crying	N MI MO S 25. Repetitive movements (stimming, rocking, etc.)
		N MI MO S 17. Seizures	

[illegible]

Case Study #3

At-risk Children and the effect of drumming circle therapy

- Alternative High school in Canada.
- 11th grade class, 10 students participated (four girls six boys) 16 to 17 years old
- Came from troubled homes, drug addicted parents, no parents, jail time, etc
- School was safe haven,
- Twelve weekly sessions (1 hour each)
- Basic hand drumming techniques, call and response, dialogues, drum battles, encouraged to make their own beat.
- Data collected by videotaping, written observations, and questionnaires.
- Results showed incredible change in students behaviors over time.
- Conclusion: Students reported feeling better about themselves, half stated music helped with stress, anger, motivation, and self esteem.

Future Research

- More case studies done with students in elementary school
- Correlation of music to SES, Gender, Teacher efficiency, and musical background
- Effect of music on mood, attitude, and behavioral issues in the classroom
- More range in musical study (styles,singing, listening, dancing)
- More on the why
- Free Research

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