



MUSIC AND YOUR BRAIN: THE EFFECTS OF LISTENING TO, DANCING WITH, AND PLAYING MUSIC ON NEUROLOGICAL DEVELOPMENT

BRADFORD B. WILES, PH.D.

ASSISTANT PROFESSOR AND EXTENSION SPECIALIST

KANSAS STATE UNIVERSITY

BETTER BRAINS FOR BABIES SPRING WEBINAR SERIES

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BEFORE WE BEGIN...

- A demonstration of the Universality of Music

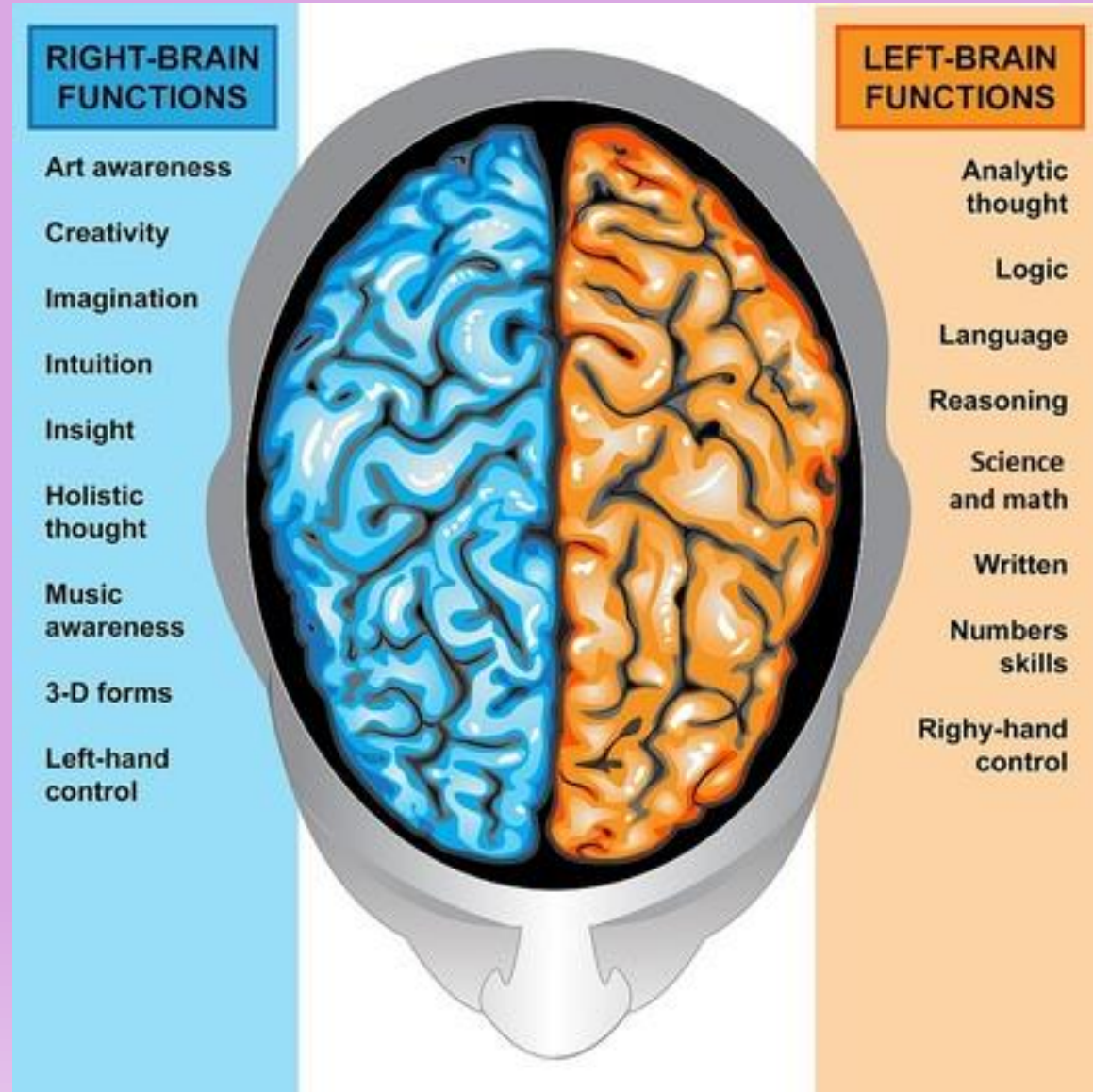


OVERVIEW

- Brief Overview of Brain Anatomy
- Listening to Music and the Brain
- Dancing and Moving to Music and the Brain
- Playing and Learning to Play Music and the Brain



OVERVIEW OF BRAIN ANATOMY



LISTENING TO MUSIC

- Auditory cortex (hearing)
- Emotion recognitions (Amygdala, Hypothalamus, Frontal lobes)
- Inhibitory control (Frontal lobes)
- Frontal cortex (motor control)
- Visual cortex (“seeing” music)
- Dopamine release (pleasure)

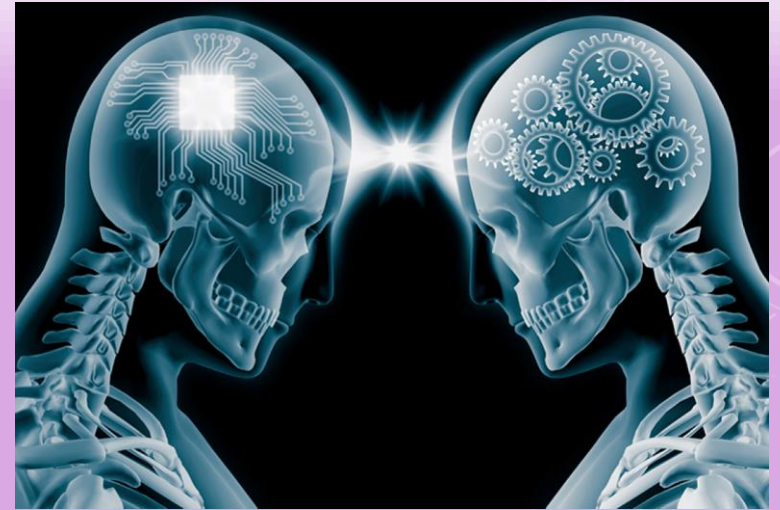


IMPLICATIONS FOR LISTENING TO MUSIC AS A LIFESPAN DEVELOPMENTAL PROCESS



- Reminiscence Therapy
- Memory
- Positively affects mood, physical endurance, concentration, creativity, pain relief, social skills
- No “Mozart effect” on babies

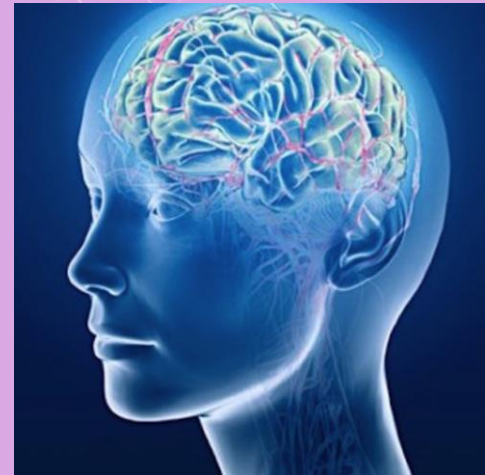
DANCING TO MUSIC



- Pleasure Double-play!
- Somewhat similar to other physical activity
- But! – mental effort and social interaction = reduced risk of dementia

DANCING TO MUSIC IN EARLY CHILDHOOD

- Planning, control, and execution of voluntary movement (Motor cortex)
- Motor control and hand-eye coordination (Somatosensory cortex)
- Smooth coordination of movement (Basal Ganglia)
- Integrating input from the brain and spinal cord / fine and complex motor actions (Cerebellum)



IMPLICATIONS FOR DANCE AS A LIFESPAN DEVELOPMENTAL PROCESS

- Dance as protective factor against falls
- Dance as therapy for Parkinson's
- Dance as protective factor against dementia



HOW LEARNING TO PLAY AND PLAYING AN INSTRUMENT AFFECTS THE BRAIN



• Playing Music and the Brain

Music and the brain

Playing and listening to music works several areas of the brain

Corpus callosum:

Connects both sides of the brain

Motor cortex: Involved in movement while dancing or playing an instrument

Prefrontal cortex:

Controls behavior, expression and decision-making

Nucleus accumbens and amygdala:

Involved with emotional reactions to music

Sensory cortex:

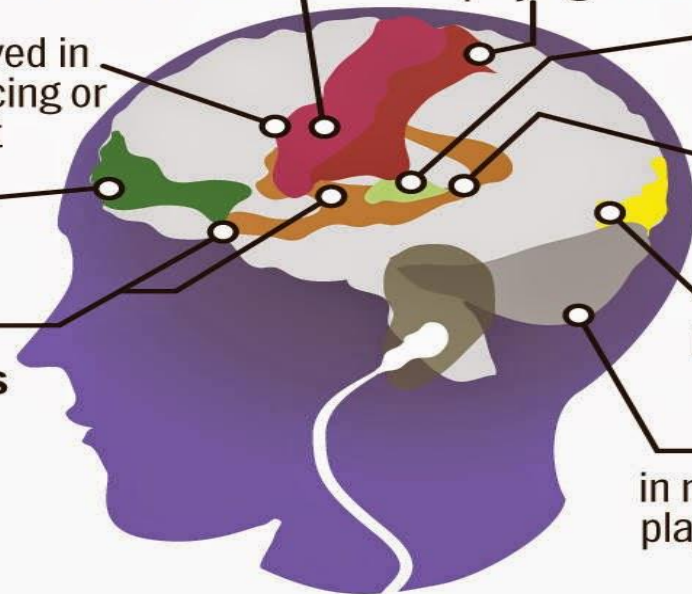
Controls tactile feedback while playing instruments or dancing

Auditory cortex: Listens to sounds; perceives and analyzes tones

Hippocampus: Involved in music memories, experiences and context

Visual cortex: Involved in reading music or looking at your own dance moves

Cerebellum: Involved in movement while dancing or playing an instrument, as well as emotional reactions



SOURCE: Music for Young Children

DESERET NEWS GRAPHIC

PLAYING AND LEARNING TO PLAY MUSIC



- Practice is tedious
- Benefits go FAR BEYOND anything regarding music
 - Memory
 - Creativity
 - “Full brain workout”

MUSICIANS AND NON-MUSICIANS



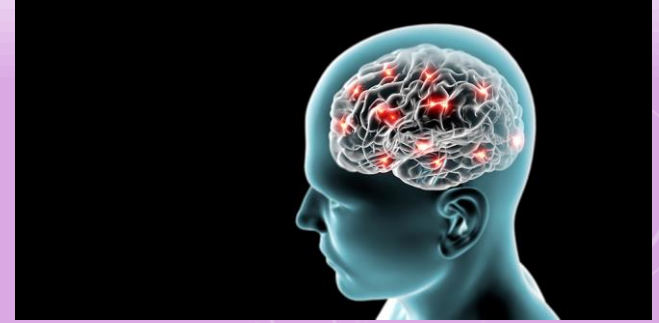
- Differences in function
 - Emotional states (sadness, fear, happiness)
 - More intense emotional activity when listening to music
 - Memory
 - Executive Function

MUSICIANS AND NON-MUSICIANS

- Differences in structure
 - Stronger and larger Corpus Callosum
 - More intrahemispheric coherence
 - More gray matter density in hippocampus
 - Engages Visual, Auditory, and Motor Cortices



IMPLICATIONS FOR MUSIC TRAINING AS A LIFESPAN DEVELOPMENTAL PROCESS



- Only learning & playing music has these benefits!
- Can slow cognitive decline / reduce risk of dementia
- In children: Math skills, reading skills, self-efficacy, and school attendance
- In children and adults: spatial reasoning, memory, creativity, working memory, inhibitory control

TAKE HOME MESSAGES

- Music is universal
- There are important benefits to listening to music
- Dance bridges listening and moving and has important benefits
- Playing an instrument bridges listening, moving, and cognition.
- Each has tremendous implications for brain development



CURRENT RESOURCES IN EXTENSION

- BETTER BRAINS FOR BABIES
- FAMILY DANCE!
- Any others? Please put them in the chat box 😊



QUESTIONS?

- Please fill out the [Evaluation!](#)

