Music training enhances empathy in children

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Introduction

Empathy, is understanding someone's mental state, needs, feelings and desires. There are two main components to empathy, emotional and cognitive. The emotional component is responding to other person's feelings: the behavioral response. The cognitive component is the ability to understand the distress of other and to recognize one's feelings and perspective (Knafo et al., 2009).

Thesis

Music group training enhances empathy in children.

Active music training enhances empathy and pro-sociability

Kalliopuska & Tiitinen (1991)

Method

- Children were randomly assigned to three different groups: Music, Acting or control group.
- The duration of the experiment was 4 months.
- The researchers measured empathy and pro-sociability before & after training.
- Empathy measurements: Feshbach and Roe test, Ikonen- Nylund test.
- Pro-Sociability measurements: Kallioouska Scale, Weir and Duveen Scale.

Results

Empathy and pro-sociability increased in the Music group and Acting group, but not in the control group.

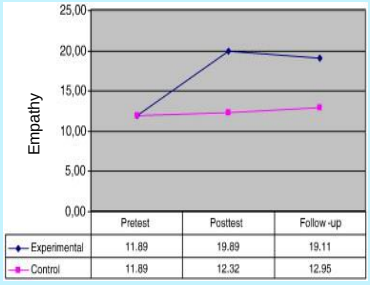
Active music training preventing bullying behavior (Sahin, 2012)

Method

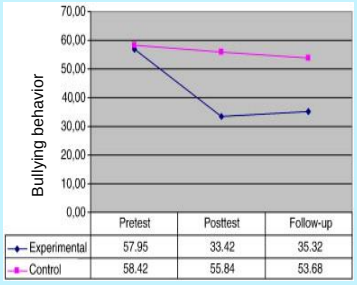
- Children with bullying behavior were randomly assigned to experimental or control group.
- The duration of the experiment was 3 months.
- The researchers measured empathy and bullying behavior before and after the experiment.
- Empathy measurements: Index of Empathy.
- Bullying behavior measurements: The scale of Identifying Bully/ Child Form.

Results

Music training increased empathy in the experimental group and decreased bullying behaviors in the experimental group.



A- Empathy levels



B- Bullying behaviors

In graph A, empathy increased in the experimental group after music training. In graph B, bullying decreased after music training in the experimental group (Sahin, 2012).

Music group interactions increase empathy in children

(Rabinowitch, Cross & Burnard, 2013)

Method

- Children from primary school were randomly assigned to Music interaction group or control group.
- The duration of the experiment was 9 months.
- The researchers measured empathy before and after training.
- Empathy measurements: Matched faces test, index of empathy, memory task.

Results

Children in the Music group interactions had higher empathy scores compared to the control group and after training.

https://images.app.goo.gl/Krtto8CiqBzMSJgT8

How music can enhance empathy?

Cross et al. (2012) found that music enhances empathy in five ways:

- **Entrainment:** The players adjust to the rhythm and emotional state of others.
- **Ambiguity:** Understanding that each member could have a different perspective.
- **Flexibility:** Understanding that people have different emotions and preferences.
- **Imitation:** Physical mimicry of other players' movements and emotions.
- **Disinterested Pleasure:** Pure experience where players are immersed in the music, and merge their individual intentions into a shared one.

Counterarguments

- Team sports and performing music requires the understanding of someone else's feelings and intentions (Sevdails & Raab, 2014); therefore, we can assume that playing in team sports can have the same effect on empathy, hence participating in team sports will enhance empathy level in the individual.
- Acet, Karademir, & Gökçiçek (2017) found that adolescents that play team sports show higher levels of empathy than adolescents that do not play sport. On the contrary, another study on handball found no such effect (Garcia-Lopez & Gutiérrez, 2015).

Conclusion

Group music training increases empathy in children. In addition, the increase in empathy causes the increase in pro-sociability and reduces bullying behaviors in children.

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The role of audiation in sight-reading ability

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Seminar Music Psychology
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Thesis: Audiation (inner hearing and understanding of written music) plays a key role in improving sight-reading ability (SRA).

Sight-reading is an important skill in different music practices. The whole classical music repertoire is written music; hence good SRA is required. Furthermore, proper SRA is required for studying an instrument on university-level. Therefore, knowing what determines good SRA helps many musicians in western classical music practices.

Audiation: inner hearing and understanding of written music
Deliberate practice (DP): a regimen of effortful activities to optimize improvement (Ericsson et al., 1993)
Sight-reading ability (SRA): the ability to simultaneously read and play an (unknown) written piece of music
Working memory capacity (WMC): ability to maintain task-relevant information in an active state (Meinz & Hambrick, 2010)

Understanding of written music improves SRA

- The recognition of patterns in written music improves SRA (Waters et al., 1998)
- Prediction skills improve SRA (Waters et al., 1998)
- Auditory representations of written music improve SRA (Waters et al., 1998)

Practice of different skills improves SRA

- Mishra (2013) did a meta-analysis of 92 research studies on all researched variables on SRA
- Factors gained by practice make you sight-read better (Mishra, 2013)
- Stable factors, like attitude and personality, do not improve SRA (Mishra, 2013)
- Ear training ability, music knowledge, technical ability and improvisational skills are the variables that improve SRA the most (Mishra, 2013)

Deliberate Practice and working memory capacity

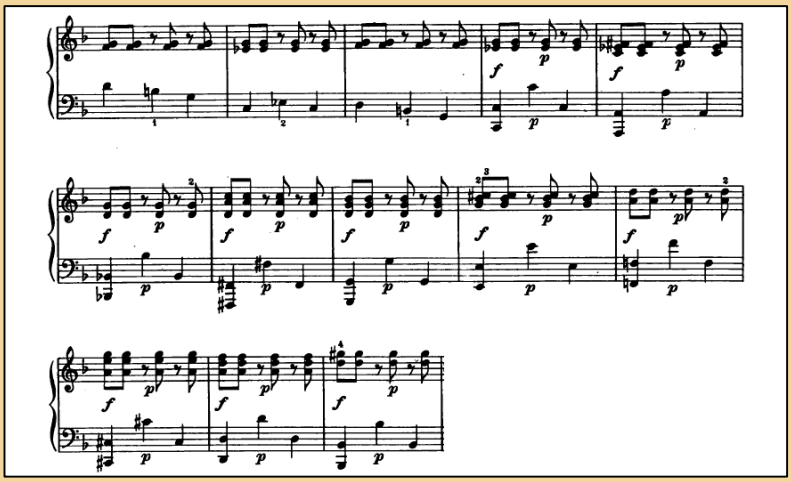
- Deliberate practice (DP) improves SRA, however: Meinz & Hambrick (2010) found that DP accounts only for nearly half of the total variance of the total piano sight-reading performance, and that there is a increasing positive effect of WMC on SRA.
- If patterns in notated music are recognized, less information is to be remembered
- Therefore, there is a smaller burden for the WMC

Conclusion

- Audiation does play a key role in improving SRA
- Better inner hearing and a better understanding of written music improve SRA
- SRA is not necessarily improved with more sight-reading experience; DP partially improves SRA
- WMC has a positive effect on SRA
- With proper understanding of written music (as part of audiation), the WMC is less burdened, and music can be sight-read more efficient
- For efficient learning of sight-reading, one should focus on ear training and music theory, next to regular practicing

Inner hearing improves SRA

- Pianists with a good inner hearing can sight-read better (Kopiez & Lee, 2008)
- Inner hearing plays an important role in sight-reading more complex music (Kopiez & Lee, 2008)



Excerpt from Mozarts Piano sonata KV 332 which elucidates the importance of pattern recognition and understanding of written music: a good sight-reader recognizes the sequential pattern and focusses thereby on the harmonic changes, instead of on individual different notes. Therefore, less information needs to be stored during the sight-reading activity.

More experience in sight-reading does not improve SRA at university level pianists

- More sight-reading activities does not mean that one can sight-read better (Zhukov, 2017)
- After a 10-week period classical university level pianists showed almost no improvement in SRA (Zhukov, 2017)
- Experiential sight-reading practice does not necessarily improve SRA (Zhukov, 2017)

Literature

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The cross-cultural recognition of basic emotions in music

Thesis: The recognition of basic emotions in music is independent of cultural background

Can listeners from an African population recognize emotions in western music?

(Fritz et al., 2009)

Method

People from a native African population (Mafa) and Western controls listened western piano music and rated the strength of three basic emotions.

Computer generated piano music excerpts lasted 9-15s

→ The music was specifically designed to express the emotions happy, sad, and scared/fearful

→ It unfamiliar music for western people as well

→ The music varied with respect to mode, tempo, pitch range, tone density and rhythmic regularity

Results (see Figure 1)

- Mafa participants recognized emotions above chance level
- Happy music was more often correctly recognized rated better than sad or scared
- Western listeners had a higher hit rate then Mafa listeners
  → suggesting: listeners are more sensitive to emotion in music of their own culture

Methodological problem

The design was not symmetrical. The Western listeners were not asked to rate examples of Mafa music (or other African music).
→ Can westerners correctly recognize basic emotions in Mafa music?

Can Western listeners recognize emotions in Hindustani music?

(Balkwill et al., 1999)

Method

- Western participants heard Hindustani raga-rasa and had to rate which emotion each raga expresses
  - Each raga should evoke a special emotion (rasa)
    → in that case either joy, sadness, anger, or peace

Result

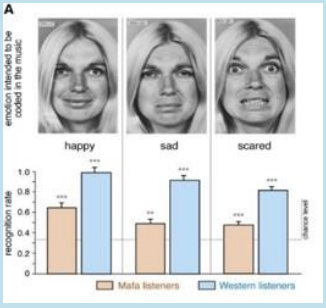
- The participants were able to assign the ragas to the correct rasa (→ the intended emotion)
- Western listeners were sensitive to musically expressed emotion in an unfamiliar tonal system

Implications

(Higgins, 2012)

- Humans can recognize basic emotions in the music of any culture via universal psychophysical cues.
- In this way, music provides an affective sense of human affiliation and security. It facilitates feelings of transcultural solidarity and global unity.

Visual stimuli and results of Fritz et al., (2009). All participants identified basic emotions by deciding which of these three faces fits the music the best. The graph shows that all listeners recognized the emotions above chance level.



Limitations

- No study shows that basic emotions can't be recognized across cultural boundaries
- But: Listeners are generally more sensitive to familiar music such as music of their own culture.

→ **The recognition of basic emotions in music is not completely independent of the culture. We may be able to recognize emotions in the unfamiliar music of another culture.**

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SEMINAR MUSIC PSYCHOLOGY, WINTER SEMESTER 2019/2020

Music Performance Anxiety (MPA)

How does it depend on personality?

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Music Performance Anxiety – MPA (Wilson & Roland, 2002)
Persistent anxious fear related to musical performance.

- Doesn't necessarily influence the performance
- May be unrelated to actual musical accomplishments
- Experienced in different music performance settings

Introduction

Classical musicians often experience music performance anxiety (MPA). Do those with MPA tend to have a certain kind of personality?

The Big Five is a taxonomy for personal traits. These include: Openness to experience, Conscientiousness, Extroversion/Introversion, Agreeableness, and Neuroticism (Goldberg, 1990).

We might expect a priori that all five are related to MPA. For example, we might expect musicians who are less open to experience to suffer more from MPA.

The "Big Five" and MPA

Openess to Experience (Weisberg, DeYoung & Hirsh, 2011)

- "Openness reflects imagination, creativity, intellectual curiosity, and appreciation of esthetic experiences"
- Hypothesis: People who are open to experience have less MPA

Conscientiousness (Weisberg et al., 2011)

- "Conscientiousness describes traits related to self-discipline, organization, and the control of impulses, and appears to reflect the ability to exert self-control to follow rules or maintain goal pursuit"
- Hypothesis: More conscientious people have more MPA

Extraversion/Introversion

- "Extraversion reflects sociability, Assertiveness, and positive emotionality'' (Weisberg et al., 2011), whereas introversion is described as a tendency to be more self-reflective, reserved and more keen to spend time alone than with large groups of people (Meisgeier, Murphy & Meisgeier, 1989)
- Hypothesis: More extravert people have less MPA

Agreeableness (Weisberg et al., 2011)

- "Agreeableness comprises traits relating to altruism, such as empathy and kindness."
- "Involves the tendency toward cooperation, maintenance of social harmony, and consideration of the concerns of others"
- Hypothesis: People prone to agreeableness have more MPA

Neuroticism (Leary & Hoyle, 2009)

- "An enduring tendency or disposition to experience negative emotional state"
- Associated with anxiety, anger, guilt, and depression
- Hypothesis: People who score highly on neurosis have more MPA

Personality, MPA and trait anxiety (Smith & Rickard, 2004)

Method

- Evaluation of relationships between gender, personality traits, trait-anxiety levels and MPA in adolescent Australian musicians
- Measure: Questionnaire (demographic info, duration of instrumental study, 1st/2nd instrument, school grade, age), Performance Anxiety Inventory, Trait Anxiety Inventory, Eysenck Personality Inventory

Results

- MPA correlated positively with trait anxiety and neuroticism
- Trait anxiety and neuroticism correlated with each other

MPA in adolescent musicians (Thomas & Nettelbeck, 2014)

Method

- Evaluation of MPA among adolescent music students
- Measure: Music Performance Anxiety Inventory for Adolescents, Junior Eysenck Personality Questionnaire Revised and others

Result

- Trait anxiety and neuroticism positively correlated with MPA
- Extraversion negatively correlated with MPA
- Unproductive coping strategies correlated positively with MPA

MPA and years of training (Sadler & Miller, 2010)

Method

- Participants were musicians
- Multidimensional Personality Questionnaire & experience sampling
- Self-reported years of musical training
- Anxiety measured just prior to musical performances

Result

- MPA associated with personality disposition was offset by years of formal training

Conclusion

Musicians who score highly on neurosis and have trait anxiety are more likely to experience MPA.

There is currently no clear evidence that other personality dimensions are related to MPA.

MPA is partially alleviated by musical training and performance experience.

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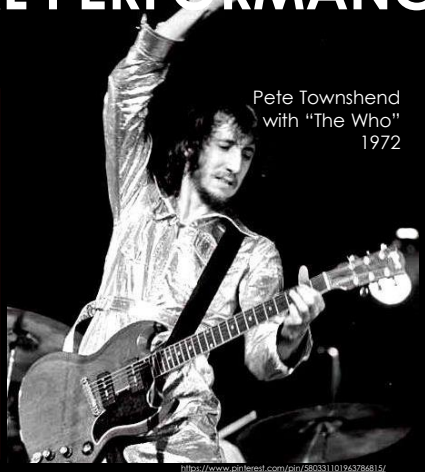
THE EMOTIONAL EFFECT OF SEEING A MUSICAL PERFORMANCE

by Florian Trummer

Introduction

Music evokes emotions. Seeing a live performance (including the performers body) can be more moving than just listening to it. Did the invention of recorded music diminish the musical experience? Does the appearance of a music performance affect its evaluation?



Pete Townshend with "The Who" 1972

https://www.pinterest.com/pin/580331101963786815/

Thesis

Seeing the performer makes music more emotional, i.e.:
The intensity of perceived emotion increases when the performer is visible.

Music consumerism changed with the invention of recordings

(Rasmussen, 2008)

- relationship between the experience of listening to popular music and the social process
- from a social event grounded live performance into a consumable recorded commodity
- Popular live music performances contain social obligations between the performer and the listener

Dimensions of emotions conveyed by music

(Vines, Krumhansl, Wanderley, Ioana & Levitin, 2005)

Method

- Participants rated emotion terms after seeing and/or hearing recordings of clarinet performances varying in expressive content

Results

- Visual experience was the primary channel through which variation in the performance intensions influenced the emotions of observers
- Changes in expressive intention influenced the observer's experience but not emotion
- Musical emotions can be simultaneously positive and negative

Stage behavior influences perception of musical quality

(Huang & Krumhansl, 2011)

- What are the effects of musical style, stage behavior, and audience expertise?

Method

- Pianist played pieces by three composers
- Pianist played every excerpt in three different manners ("projected", "deadpan", "exaggerated")
- 24 musically trained and 24 untrained participants rated either audio only or audivisual
- They selected two emotion terms from a list for each performance.

Results

- Non-musicians perceived differences across the three degrees of stage behavior in audiovisual but not audio-only conditions.
- Musicians perceived the differences under both conditions.
- A change in stage behavior caused a change in the evaluation of musical quality. Participants gave minimal stage behavior a low rating

Conclusion

- Seeing the performer changes the musical experience but not necessarily the emotion
- Live performances create a social connection between performer and listener

Huang, J., & Krumhansl, C. L. (2011). What does seeing the performer add? It depends on musical style, amount of stage behavior, and audience expertise. *Musicae Scientiae*, *15*(3), 343-364.

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Improved mood through sad music

Johanna Zuderell

Can listening to sad music alleviate negative mood?

INTRODUCTION

Sadness is regarded as unpleasant. Why would people want to listen to sad music? Does sad music evoke negative emotions, positive emotions, or both? Does sad music help people process negative experiences?

Some people feel sad after listening to sad music, some people feel positive emotions such as relief. There are countless studies and theories about how sad music can influence our mood. However, there is an assumption that can be found in most studies. The music that expresses sadness is enjoyed when the perceiver realizes that the stimulus is not a threat (Sachs, Damasio & Habibi, 2015). But whether this really improves the mood has not been clarified yet.

The ambivalence of sad music

(Kawakami, Furukawa, Katahira & Okanoya, 2013)

Why do people enjoy listening to sad music?

Method

- Participants listen to one (unknown) musical excerpt four times → four constellations with these parameters: excerpt in major/minor, rating own feelings/perceived feelings
- Measure of mood (ratings of 62 adjectives or phrases using a scale for each)

Result

Sad music simultaneously evoked sad and pleasant emotions in the participants. Can this explain why people use sad music to regular mood?

THESIS

Listening to sad music can alleviate negative mood.

For

- ✓ Listening to sad music alleviates deep sad mood (Matsumoto, 2002)
- ✓ listening to sad music can help people cope with difficult (Garrido & Schubert 2015)
- ✓ sad music evokes both sad and pleasant emotions (Kawakami, Furukawa, Katahira & Okanoya, 2013)

Against

- × Participants with tendency to depression experience no improved mood after listening to sad music. (Garrido & Schubert 2015)

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Does sad music really improve sad mood?

(Garrido & Schubert 2015)

How do people feel after listening to sad music and are they aware of the effects?

Method

- Questions about the effects of hearing sad music
- Measure of mood (ratings of adjectives using a scale)
- Participants listen to self-selected sad music
- Repeat measure of mood

Results

- Most participants report that they enjoy the emotions they experience when they listen to sad music (see questions about the effects).
- Participants with tendency to depression experience no improved mood after listening to sad music.
- healthy (not depressed) listeners maybe use sad music as a coping ability

Positive effect of sad music on mood

(Matsumoto, 2002)

How does sad music influence sad mood?

Method

- Subjects were put into a sad mood by writing down a sad past event
- Afterwards they evaluated their **sad** mood on a scale
- The participants listened to sad and bright music & completed a math task
- Repeat measure of mood

Result

Sad music brings out positive effects on participants in deep sad mood

CONCLUSION

In summary, it can be said that there are more arguments for the thesis than against it. If this is really true, sad music in the form of mood regulation could be useful for treating people with tendencies towards depression. Probably many people intuitively know what they need and listen to sad music to improve their mood, like a kind of soul therapy. Maybe without sad music there would be many more people suffering from depression.