Implications for Understanding Theory of Mind, Feelings of Connectedness, and Flow via Music Improvisation

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Introduction
Why Do This Study?

- Music as Communication
- Music Therapy Implications
- Social Interactions Resemble Improvisation
- Social Communication
Overview

- Dolan et. al (2013) Study
- Literature Review
- Methods
- Results
- Discussion
- Conclusion
Defining the Elements
Improvisation

- **Music Improvisation**
  - Individual or Group effort
  - Can have limitations or boundaries imposed
    - Example: The improvisation must last for 3 minutes
  - May have no boundaries imposed
Flow

- 9 different dimensions according to Csikszentmihalyi
- Group flow according to Sawyer
- Flow State Scale developed by Jackson & Marsh

Theory of Mind

- “Ability to understand people as mental beings” - Astington & Baird
- Empathy
- Perspective


Feelings of Connectedness

- Music releases endorphins which promotes social bonding
- Identify emotion through music

Research Questions
Improvisation

- A) In a group improvisation, how will a person’s experience with music improvisation impact their perception of the performance?
- B) How will a person’s comfort level with music improvisation impact their perception of the performance?
Improvisation - Hypothesis

- Alternative: Both (listeners and performers) will report that experience and comfort levels impact performance perception
- Null: Neither will report that experience and comfort levels impact performance perception
Flow

In a group improvisation, will flow occur for both the musicians actively engaged as well as listeners who are passively engaged?
Flow - Hypothesis

- Alternative: While engaged in music improvisation experiences, participants in both active and passive roles will experience a state of flow equally.

- Null: Neither will report flow when engaged in music improvisation experiences.
Theory of Mind

Interpreted in a Theory of Mind context during an instrumental group improvisation experience, what is the level of agreement between performer and listener regarding the cognitive content of the improvisation?
Theory of Mind - Hypothesis

- Alternative: Passive listeners and active improvisers will report similar levels of cognitive content during improvisations.

- Null: There will be a low level of agreement in the reports of cognitive content of an improvisation between an active performer and passive listener.
Feelings of Connectedness

During a group improvisation, what is the level of agreement between performer and listener regarding the emotional content of the improvisation?
Feelings of Connectedness - Hypothesis

- Alternative: Passive listeners and active improvisers will report similar levels of emotional content during improvisations.

- Null: There will be a low level of agreement in the reports of emotional content of an improvisation between an active performer and passive listener.
Method
Participants

- 17 Undergraduate Students at Western Michigan University (WMU)
- Enrolled in a classical musicians improvisation course
- Stratified in four groups based on major
Consent and Enrollment

- Course instructor approval
- HSIRB Approval through WMU
- Consent form
- Anonymous
Settings and Materials

- **Setting**
  - Music course in Dalton Center on WMU’s campus
  - Improvisation Class

- **Materials**
  - Performer and Audience Survey on printed paper
  - Manilla Envelopes
  - Timer
**Audience Survey**

1. How much experience would you say you have with listening to live music improvisation?
   - No Experience
   - Minimal Experience
   - Some Experience
   - Moderately Experienced
   - Experienced
   - Very Experienced

2. What is your comfort level with listening to improvised music?
   - Not Comfortable
   - Minimal Comfort
   - Some Comfort
   - Moderately Comfortable
   - Comfortable
   - Very Comfortable

3. I listened to the music spontaneously and automatically without having to think
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

4. It felt like time stopped when I was listening to this performance
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

5. I felt that I could detect the emotions of the performer(s) while they were performing.
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

6. During the performance, the performer(s) appeared anxious.
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

7. During the performance, did you feel an emotional connection to the performer(s)?
   - Not Connected
   - Minimally Connected
   - Somewhat Connected
   - Moderately Connected
   - Connected
   - Very Connected

8. How engaging do you think the performers were during the performance?
   - Not Engaging
   - Minimally Engaging
   - Somewhat Engaging
   - Moderately Engaging
   - Engaging
   - Very Engaging

**Performer Survey**

How much experience would you say you have with music improvisation with your major instrument?

- No Experience
- Minimal Experience
- Some Experience
- Moderately Experienced
- Experienced
- Very Experienced

What is your comfort level with performing improvised music?

- Not Comfortable
- Minimal Comfort
- Some Comfort
- Moderately Comfortable
- Comfortable
- Very Comfortable

I performed spontaneously and automatically without having to think.

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Somewhat Agree
- Agree
- Strongly Agree

It felt like time stopped when I was performing.

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Somewhat Agree
- Agree
- Strongly Agree

I felt that I could detect the emotions of the audience while I was performing.

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Somewhat Agree
- Agree
- Strongly Agree

During the performance, I felt anxious.

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Somewhat Agree
- Agree
- Strongly Agree

During the performance, did you feel an emotional connection with the audience?

- Not Connected
- Minimally Connected
- Somewhat Connected
- Moderately Connected
- Connected
- Very Connected

Do you feel your performance was engaging for the audience members?

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Somewhat Agree
- Agree
- Strongly Agree
Audience Survey Questions - Improvisation and Flow

1. How much experience would you say you have with listening to live music improvisation?
2. What is your comfort level with listening to improvised music?
3. I listened to the music spontaneously and automatically without having to think.
4. It felt like time stopped when I was listening to this performance.
Audience Survey Questions-ToM and Connectedness

5. I felt that I could detect the emotions of the performer(s) while they were performing.
6. During the performance, the performer(s) appeared anxious.
7. During the performance, did you feel an emotional connection to the performers?
8. How engaging do you think the performers were during the performance?
Performer Survey Question - Improvisation and Flow

1. How much experience would you say you have with music improvisation with your major instrument?
2. What is you comfort level with performing improvised music?
3. I performed spontaneously and automatically without having to think.
4. It felt like time stopped when I was performing.
Performer Survey Questions-ToM and Connectedness

5. I felt that I could detect the emotions of the audience while I was performing.
6. During the performance, I felt anxious.
7. During the performance, did you feel an emotional connection with the audience?
8. Do you feel your performance was engaging for the audience members?
Procedures

1. Handed out consent form
2. Read consent form and directions
3. Collected signed consent form
4. Handed out envelopes
5. Group #1 performed
6. Handed out first survey
7. Placed completed survey in individual envelope
8. Steps 5-7 repeated 3 times
Improvisation Guidelines and Groups

- Structured Improvisation
- Grouped by major
- Group size: 3-5
- Varying lengths
Improvisation Example
Results
Improvisation
**Table 1, Mean Preport for Levels of Experience**

<table>
<thead>
<tr>
<th>Group</th>
<th>Experience with listening to Imp. Music: Audience Mean</th>
<th>Experience with performing Imp. Music: Performer Mean</th>
<th>Difference between Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>2.69</td>
<td>1.75</td>
<td>0.94</td>
</tr>
<tr>
<td>Group 2</td>
<td>3.17</td>
<td>2.20</td>
<td>0.97</td>
</tr>
<tr>
<td>Group 3</td>
<td>2.92</td>
<td>3.20</td>
<td>-0.28</td>
</tr>
<tr>
<td>Group 4</td>
<td>2.86</td>
<td>3.00</td>
<td>-0.14</td>
</tr>
<tr>
<td>Grand Mean</td>
<td>2.91</td>
<td>2.53</td>
<td>0.38</td>
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</tbody>
</table>
Table 2, Mean Report for Levels of Comfort

<table>
<thead>
<tr>
<th>Group</th>
<th>Comfort with Listening to Imp. Music: Audience Mean</th>
<th>Comfort with performing Imp. Music: Performer Mean</th>
<th>Difference between Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>4.69</td>
<td>3.50</td>
<td>1.19</td>
</tr>
<tr>
<td>Group 2</td>
<td>4.33</td>
<td>2.60</td>
<td>1.73</td>
</tr>
<tr>
<td>Group 3</td>
<td>4.50</td>
<td>3.60</td>
<td>0.90</td>
</tr>
<tr>
<td>Group 4</td>
<td>4.43</td>
<td>2.33</td>
<td>2.10</td>
</tr>
<tr>
<td>Grand Mean</td>
<td>4.48</td>
<td>3.00</td>
<td>1.48</td>
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</tbody>
</table>
Flow
Table 3, Mean Report of Acting Spontaneously and Automatically

<table>
<thead>
<tr>
<th></th>
<th>Listening Spontaneously: Audience</th>
<th>Performing Spontaneously: Performer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>4.54</td>
<td>4.25</td>
</tr>
<tr>
<td>Group 2</td>
<td>4.10</td>
<td>2.80</td>
</tr>
<tr>
<td>Group 3</td>
<td>4.58</td>
<td>3.80</td>
</tr>
<tr>
<td>Group 4</td>
<td>4.29</td>
<td>4.00</td>
</tr>
<tr>
<td>Grand Mean</td>
<td>4.37</td>
<td>3.71</td>
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</tbody>
</table>
Table 4, Mean Report for Feeling as Though Time Stopped

<table>
<thead>
<tr>
<th></th>
<th>Feeling Like Time Stopped: Audience</th>
<th>Feeling Like Time Stopped: Performers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>4.10</td>
<td>4.50</td>
</tr>
<tr>
<td>Group 2</td>
<td>3.00</td>
<td>3.40</td>
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<tr>
<td>Group 3</td>
<td>3.75</td>
<td>4.80</td>
</tr>
<tr>
<td>Group 4</td>
<td>4.29</td>
<td>4.67</td>
</tr>
<tr>
<td>Grand Mean</td>
<td>3.77</td>
<td>4.34</td>
</tr>
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</table>
Theory of Mind
Table 5, Mean Level of Emotional Detection of Audience and Performers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Group 1</td>
<td>4.69</td>
<td>4.00</td>
<td>0.69</td>
</tr>
<tr>
<td>Group 2</td>
<td>3.00</td>
<td>2.60</td>
<td>0.40</td>
</tr>
<tr>
<td>Group 3</td>
<td>3.67</td>
<td>2.20</td>
<td>1.47</td>
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<tr>
<td>Group 4</td>
<td>4.71</td>
<td>2.83</td>
<td>1.88</td>
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Table 6, Mean Level of Perceived and Reported Anxiety of Performers

<table>
<thead>
<tr>
<th>Group</th>
<th>Perceived Anxiety: Performers</th>
<th>Reported Anxiety: Performers</th>
<th>Difference between Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>3.00</td>
<td>3.00</td>
<td>0.00</td>
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<tr>
<td>Group 2</td>
<td>4.42</td>
<td>2.60</td>
<td>1.82</td>
</tr>
<tr>
<td>Group 3</td>
<td>2.58</td>
<td>3.20</td>
<td>-0.62</td>
</tr>
<tr>
<td>Group 4</td>
<td>2.86</td>
<td>4.17</td>
<td>-1.31</td>
</tr>
</tbody>
</table>
Connectedness
Table 7, Level of Emotion Connection Between Performer and Audience

<table>
<thead>
<tr>
<th>Group</th>
<th>Level of Emotional Connection: Audience Mean</th>
<th>Level of Emotional Connection: Performer Mean</th>
<th>Difference between Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>4.08</td>
<td>3.75</td>
<td>0.33</td>
</tr>
<tr>
<td>Group 2</td>
<td>2.75</td>
<td>1.80</td>
<td>0.95</td>
</tr>
<tr>
<td>Group 3</td>
<td>3.58</td>
<td>2.00</td>
<td>1.58</td>
</tr>
<tr>
<td>Group 4</td>
<td>4.21</td>
<td>3.33</td>
<td>0.88</td>
</tr>
</tbody>
</table>
Table 8, Engagement Level of Performance

<table>
<thead>
<tr>
<th>Group</th>
<th>Engagement Level of Performance: Audience Mean</th>
<th>Engagement Level of Performance: Performer Mean</th>
<th>Difference Between Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>4.38</td>
<td>4.50</td>
<td>-0.12</td>
</tr>
<tr>
<td>Group 2</td>
<td>3.25</td>
<td>3.50</td>
<td>-0.25</td>
</tr>
<tr>
<td>Group 3</td>
<td>4.33</td>
<td>4.00</td>
<td>0.33</td>
</tr>
<tr>
<td>Group 4</td>
<td>4.43</td>
<td>4.67</td>
<td>-0.24</td>
</tr>
</tbody>
</table>
Discussion
Limitations

- Structured Improvisation
- Time Results
- Group Creation & Organization
- Classroom Setting
Limitations Continued

- Circling Multiple Answers
- Survey Knowledge
- Group Discussions
Conclusion
Implications for Clinical Settings

- Connection
- Communication
- Rapport
Implications for Everyday Life

- Social Communication
- Interactions

https://www.google.com/search?q=improvisation&tbm=isch
Acknowledgements
References


