

Musical Engagement and the Progression of Neurodegenerative Diseases

Introduction

- ❖ Neurodegenerative disease - progressive loss of neurons in specific networks
- ❖ **Examples of memory-affecting neurodegenerative diseases (NDD):** dementias (Alzheimer's disease), Parkinson's disease
- ❖ Different dementias associated with different pathological proteins, symptoms depend on affected networks
- ❖ **Symptoms:** episodic memory loss, sensory processing, language impairment, poor attention, depression, anxiety
- ❖ Music as a memory aid is intact despite cognitive decline ¹
- ❖ Music interventions to increase engagement in those with Alzheimer's Disease ¹
- ❖ Music shown to help improve mood and happiness ²

Method

- ❖ Music and Brain Health Program - demedicalized interactions, program not for therapy purposes
- ❖ Quintet - 3 UC students, person with NDD (PwNDD), caregiver (wife)
- ❖ 1 session per week for 8 weeks on Zoom or MS Teams
- ❖ Week 0 not recorded, introducing each other to the group
- ❖ Sessions used musical and arts-based activities
 - **Check-in:** Talk about our week or current emotions
 - Rose/Thorn/Bud - 1 good & bad thing, something to look forward to
 - Emotion as a Weather/Sound
 - **Co-regulation:** Clapping, swaying to a familiar song
 - "More Today Than Yesterday," wedding song
 - "Happy Together"
 - **Co-creation:** Group creates a song or musical piece
 - Utilized Chrome Music Lab to make a melody
 - Chose a theme and came up with related words
 - Picked certain words for lyrics and sang to melody
 - **Mindfulness:** (Guided) Meditation
 - Used Headspace
- ❖ **PwNDD information:**
 - 60 y/o male, Early Onset Alzheimer's Disease (EOSAD)
- ❖ **Student information:**
 - 2 UC Medical School students
 - 1 undergraduate Neuroscience student

Experimental Procedure

- ❖ Watched 7 quartet session videos from Fall 2021
- ❖ Engagement - counted the occurrence of: smiling, laughing, reactions/comments, looking at wife
- ❖ Normalized data to 30 minutes
- ❖ **Hypothesis 1:** As the number of sessions increase, the engagement will be lower due to the progression of AD
- ❖ **Hypothesis 2:** Despite cognitive decline affecting unstructured activities, structured activities can still engage the PwNDD

Week	Total Session Time (minutes)	Check-in	Co-Regulation	Co-Creation	Mindfulness
0					
1	34	✓	✓		✓
2	32	✓	✓		✓
3	32	✓	✓		✓
4	47	✓	✓	✓	✓
5	48	✓	✓	✓	✓
6	49	✓	✓	✓	✓
7	32	✓	✓	✓	✓

Table 1. Breakdown of activities conducted each week, total session time (minutes) per week

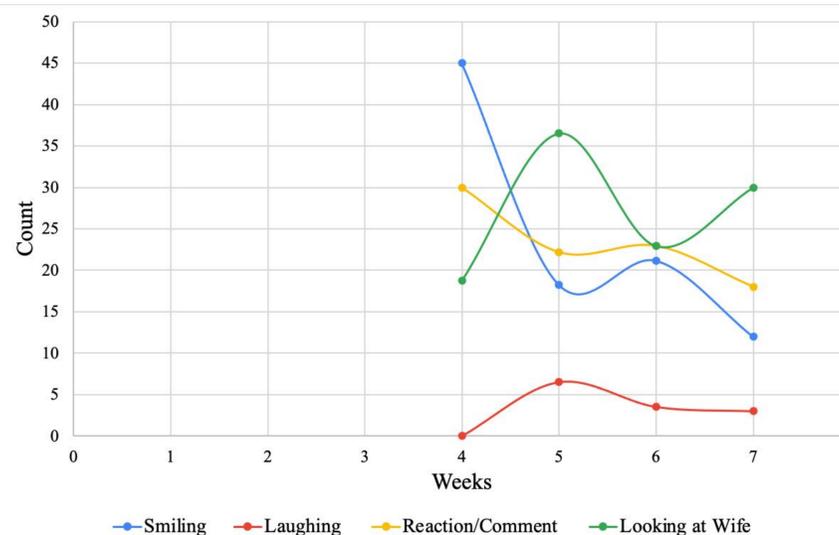


Figure 1. The occurrence of each factor: smiling, laughing, reactions/comments, looking at wife.

Results

- ❖ Overall decline in smiling, laughing, reactions/comments
- ❖ PwNDD loved to storytell and reminisce
- ❖ PwNDD would look at wife when he was uncomfortable, needed prompts, and during co-regulation



Figure 2. Screenshot of session.

Conclusion

- ❖ Less engagement over time observed
- ❖ Abilities decline due to NDD, but PwNDD can engage with structured activities (Co-Creation)
- ❖ **Limitations:**
 - Zoom may not have recorded everyone's videos, only recorded videos when the person spoke (Week 1 & 4)
 - Different activities done in the sessions could have affected the engagement levels
- ❖ Analyzing more quartet videos with this and other groups may help us understand the effect of the NDD throughout these sessions

References

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2. de la Rubia Ortí, J. E., Pardo, M. P., Benlloch, M., Drehmer, E., Platero, J. L., Sancho, D., & Rodriguez, M. M. L. (2019). Music therapy decreases sadness and increases happiness in Alzheimer patients: a Pilot Study. *Neuropsychiatry*, 9(1), 2013-2020.

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