The Effect of a Personalized Playlist on Older Adults with Dementia

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Abstract

Dementia is a disease that corrodes one's cognitive abilities such as their memory, affecting around 5 million people in the United States. While there is currently no treatment available to cure dementia, music therapy was found effective to help reduce its symptoms. Based on the Music and Memory program, this study is aimed to examine the impact of listening to a personalized music playlist on observable behavior, memory, and mood of older adults with dementia. The Music and Memory program was applied to 6 older adults with dementia at a Retirement Center in Northwest Ohio. The findings indicated that listening to a personalized playlist had a positive outcome on improving moods and decreasing disruptive behavior of participants, with more increased eye contact, smiling, face relaxation, and responsiveness. This study suggests that personalized music is an effective intervention tool; therefore, social workers should take on the roles of educators, evaluators, brokers, and advocators in applying Music and Memory program to clients with dementia.

Keywords: Dementia, Music, Memory, Playlist, Therapy

Introduction

Dementia is a disease that deteriorates over 5 million people's memory severely enough to interfere with typical functioning in the United States (Choi et al., 2009; "Alzheimer's and Dementia," 2015). Depression, anxiety, and disruptive behaviors usually result when an older adult starts to struggle with dementia (Choi et al., 2009; Huei-Chuan & Chang, 2005). Medications and various therapy can help, but they have their limits and cannot touch the soul. However, the Music and Memory program allows older adults to listen to their favorite music on a personalized playlist. This was found to bring back positive memories linked to the music and reduce their depression and anxiety ("How your old Ipod," 2014; Huei-Chaun et al., 2006). Besides its effectiveness, treatment with a personalized playlist could be more natural, cost-effective, and easily implemented than medication; a true revolution in the field of dementia treatment (Huei-Chuan & Chang, 2005). The purpose of this study is to examine the effects of listening to a personalized music playlist on an older adult's observable behavior, memory, and mood. Our hypothesis is that listening to a personalized playlist will decrease disruptive behaviors, increase positive moods, and bring back positive memories.

Literature Review

Dementia

Dementia is a "disease with a syndrome of intellectual deterioration characterized by memory problems, loss of communication skills, and changes in personality severe enough to interfere with occupational or social performance", according to Choi et al. (2009, p. 472). In addition, those who have dementia show disruptive behaviors like confusion, aggression, and wandering (Huei-Chuan & Chang, 2005; Sambandham & Schirm, 1995). With the Baby Boomer generation getting older and living longer, the incidence of dementia is increasing drastically. According to the Alzheimer's Association, there are 5 million people with dementia or Alzheimer's today and 15 million caregivers for them ("Alzheimer's and Dementia,"2015). These numbers will continue to skyrocket as well over the next few decades. Ridder et al. (2013) found that 48 to 82% of residents in nursing homes with dementia show symptoms of agitation; more than half of everyone diagnosed with dementia is experiencing agitation which leads to difficulties

for their caregivers and increased medication. However, antipsychotic medications have serious effects like "decreased quality of life, accelerated cognitive decline, and even stroke and death", according to Ridder et al. (2013, p. 667). Current treatment of dementia includes sometimes therapeutic interventions as well as medications for problematic behaviors; however there is no cure (Kneafsey, 1997; Ridder et al., 2013). Alternatively, music therapy appears to be one form of therapy that has been found effective in reducing stress, aggression, and depression in people with dementia (Huei-Chuan et al., 2006; Cuddy & Duffin, 2005).

The Power of Music

Music therapy means using music to help people heal physiologically, psychologically, and emotionally during the treatment of an illness or disease (Choi et al., 2009). In music therapy, a skilled music therapist plays music or involves the client in making music themselves with instruments (Kneafsey, 1997). Additionally, it allows for social interaction during the therapy (Sherratt et al., 2004). Kneafsey (1997) found that playing music could "reduce agitation and anxiety, create significant mood changes, facilitate communication, rebuild social links, decrease isolation, raise moral, enhance self-esteem, improve reality orientation, decrease pain, and improve mobility" as well as stimulate movement such as feet tapping, swaying, and clapping (p. 341). Mendes (2015) found that music evokes strong emotion and memories. Those effects of music are particularly important for elders with dementia because they are experiencing high levels of anxiety, agitation, depression, and loneliness (Choi et al., 2009; Huei-Chuan et al., 2006; Ridder et al., 2013). Music can bring a sense of familiarity and intimacy to an older adult with dementia who has lost their memories and feels like an alien in their environment (Mendes, 2015). While the left side of the brain deteriorates first because of dementia, music can still be just as impactful as it is to anyone else because it is linked to the right side of the brain (Mendes, 2015); this means that music can be used therapeutically during any stage of dementia, even the later stages.

However, music therapy has been proven to have mixed results when tested. A study found that playing music reduces agitation better than touch (stroking the participants' hands or back) or presenting familiar objects (Kneafsey, 1997; Sambandham & Schirm, 1995). Additionally, Ridder et al. (2013) found that music therapy significantly reduced agitation and the need for psychotropic medication. Locke and Mudford (2010) also discovered that listening to music was effective in reducing symptoms of a patient

who constantly babbled or chanted. While Kneafsey (1997), Sambandham and Schirm (1995), Ridder et al. (2013), and Lock and Mudford (2010) all found music therapy to be effective, Vink et al. (2013), Cooke et al. (2010) and Sherratt et al. (2004) did not discover the same supportive evidence. Vink et al. (2013) found that there was no difference between the effectiveness of music therapy and recreational activities, showing that both groups had just a short-term decrease in agitation. Building off of Vink et al. (2013), Cooke et al. (2010) also found that there was no difference in the decrease of agitation and anxiety between older adults' listening to music. Cooke et al. (2010) found no difference in someone listening to music or reading, indicating that both music and reading could be equally therapeutic or just participating in a group could also be therapeutic. Furthermore, in a study comparing live music to recorded music, Sherratt et al. (2004) found that there was no difference in the decrease of challenging behaviors and wandering, although the live music did allow for the opportunity for more social interaction. Though scientific evidence shows that music can be a powerful tool, music therapy is not something that works for everyone (Ridder et al., 2013). People are unique and in order to come up with the best way to help them, one must take into account all the factors that make them who they are.

The Solution

A personalized playlist of music takes into account people's uniqueness and still uses the power of music to help them, triggering memories tied to certain songs for older adults with dementia (Huei-Chuan et al., 2006). It is based off of a person-centered care approach. According to Clare (2014), person-centered practice has "an empathic view of human nature, places the person in the center, and sees each individual as truly unique". The Music and Memory program was started in 2006 by Dan Cohen, a social worker who understood the power of selected songs to help people with Alzheimer's. Wisconsin and North Carolina were the first states to get government funding to make the Music and Memory program available to clients ("How your old Ipod," 2014). The Music and Memory program utilizes an iPod which can hold thousands of songs and create a custom playlist. It was found that music therapy is a cost-effective, non-invasive, and easily executed intervention (Huei-Chuan et al., 2006; Kneafsey, 1997; Vink et al., 2013). Clare (2014) found that a personalized playlist had a soothing effect, creating pleasant moods and reduced noise levels. Moreover, music intervention based on an older adult's favorite songs may

trigger lost memories, reduce anxiety and agitation, and increase social engagement and quality of life ("How your old Ipod," 2014).

Methods

Sample

The participants of this research were residents with dementia at a Health Care and Retirement Center in Northwest Ohio. Initially, 2 males and 5 females participated in the study including one Mexican who spoke Spanish and six Caucasian Americans; however only 6 participants were included finally in this study, excluding one participant who passed away while we were working with them. The youngest was 67 and the oldest was 95 years old.

Procedures

This study was approved by the Institutional Review Board at a local university in Northwest Ohio. Informed consents were gathered from all necessary parties with explanation about research. After they signed the consent forms, their family filled out a personalized music playlist form, which helped us create a playlist of favorite songs of the participant. When there is little information for their favorite songs in the playlist form, the activity director used some discretion with selecting songs which she thought they would like. After the playlist was set up, participants would be asked if they wanted to listen to their music. If they said yes, the assessor would ask if they would like to help us out and be a part of some research. If they answered yes to both questions, then the data would be collected. Participant could listen to the music for as long as they wanted. Thus data collection times ranged from 20 minutes to an hour and a half. Some participants would listen to the music for several hours at a time, while others listened to just a few songs and were done. The location where the resident listened to the music was up to them. Most of the sessions took place in the hallway or lounge, because that is where the participants spent most of their free time. The research utilized a person-centered approach. The participants could choose to listen to their own music when they wanted, where they wanted. Data was gathered by a researcher observing the resident in person and filling out a form adapted from the Music and Memory program on how they responded.

Data Collection

There are two sections to the modified Music and Memory form. The first section consisted of various types of responses rated on a 1 to 10 scale with 1 being the least and 10 being the most. We rated responses of the participants before and after music intervention. The types of behavioral responses were eye contact, vocal responses, resistance to care, sundowning behavior, responsiveness, tapping, swaying to music, and dancing. Types of emotional responses and mood changes were measured by categories such as smiling, facial relaxation, agitation, pain, and joy. Eye contact was measured by how often the participant looked at the assessor or other individuals. A low score indicated that they were not looking at others who were interacting with them, while a high score indicates the opposite. For smiling, a high score indicates that they smiled a lot while listening to the music, while a low score indicates a lesser number of grins or no smiling. A low score for facial relaxation represented grimacing and tense muscles, while a high score represented loose muscles. Vocal responses included singing, humming, muttering, or talking, while a low score was tied to silence. Responsiveness was measured by the number of times a participant answered when someone talked to them or if they noticed people coming and going in their general area. A high score for responsiveness is exemplified by the participant waving to someone as they walked by and saying 'hi'. Additionally, tapping, rocking, or dancing was measured by the amount of movement the participant was performing. Agitation was measured by tight facial muscles, tension, and anger. Joy was measured by combinations of open body language, smiling, crinkling of skin around the eyes, crying, and positive remarks, for example, "pretty music!" Resistance to care was measured by how they reacted to the nurses and cooperation. High levels of resistance were indicated by refusing to listen when the nurses asked them to do something such as take their medication, while low levels of resistance were indicated by being agreeable and listening to the nurses. The level of pain was measured from their response when asked how they were doing today. High levels of pain were measured by comments made by the participant about them being in pain. Sundowning behavior was measured by the number of times an individual tried to escape the facility or expressed confusion. The second section was for any additional notes that the researcher felt weren't captured by the first section of the form. These were mainly observations or quotes of what the participants said. These forms were then inputted into an excel document to make them easier to read, compare, and later analyzed.

Results

For the first section, this study showed that listening to a personalized playlist does increase eye contact, joy, relaxation, and makes people more responsive. Specifically, for eye contact, participants' scores increased 1.6 on average on our scale after intervention. Statistical analysis with paired sample t-test showed there is a significant mean difference before and after music intervention in Case 1 ($p < .001$) (see Table 1-1 and 2). For smiling, the scores increased 2.5 on average after intervention. Statistical analysis indicated that there were significant mean differences in Case 1 ($p<.01$), Case 2 ($p< .05$), and Case 5 ($p<.05$) (see Table 1-1 and 2). For facial relaxation, the score showed an average increase of 2.6 among participants. Statistical analysis indicated that there were significant mean differences before and after music intervention in Case 1 ($p<.01$) and Case 3 ($p<.05$) (see Table 1-1 and 2). For responsiveness, the average increase in score was 2.15 among participants. Statistical analysis indicated that there were significant mean differences before and after music intervention in Case 1 ($p<.001$) and Case 5 ($p<.001$). However, there were no significant mean differences in scores of vocal responses before and after music intervention.

For agitation, the scores decreased 2.52 on average among participants. Statistical analysis indicated that there were significant mean differences before and after music intervention in Case 3 ($p<.05$) (see Table 1-2 and 2). For joy, there was an increase of 2.69 in scores on average for participants. Statistical analysis indicated that there were significant mean differences in Case 1 ($p<.01$) and Case 5 ($p<.001$) (see Table 1-2 and 2). Resistance to care and sundowning behavior were also measured, but there were no instances where examples of either were seen during the sessions except case 3, however, which had no statistical mean difference.

For tapping, swaying to music, and dancing, there were no measurements before music intervention because those usually come from responses to musical rhythms. For tapping of the fingers and feet in beat with the music, the scores increased on average 3.4 among participants, showing the great average increase among measured variables. There was the greatest score increase in case 6 while case 5 had the smallest increase (see Table 1-3). Rocking or swaying to the music had an average increase of 2.45 with a maximum increase seen in case 7 (see Table 1-3). Dancing to the music had an average increase of 2.4. The largest measure increase was case 7 (see Table 1-3).

For the second section, recording anything else the researcher felt was important, there were several differences in reactions of participants to the music which were not captured by the first section. For example, Case 1 was not very responsive at first. She wandered around the facility muttering incoherently to herself and when she wasn't wandering she would be slumped over in her wheelchair, half-asleep. She responded to questions in one word answers. However, when she listened to her music she lit up. The nurses stated that they had never seen her smile so much. She would sing or hum along to the music. Statistical analysis also showed significant mean differences in eye contact, smiling, face relaxation, responsiveness, and joy before and after the music intervention in this study (see Table 1-1, 1-2, and 2). Case 5 would clap and ask me to dance when she was listening to the music. She would also ask me to sing. Case 5 would become more responsive when listening to the music. She would pay attention to what was going on around her instead of staring at the ground. She would want to talk and interact with others. Statistical analysis for Case 5 showed significant mean differences in smiling, responsiveness, and joy (see Table 1-1, 1-2, and 2). Case 3 was normally more aggressive and would scream often. However, listening to music calmed him down. His response to music was surprising to those around him. Recognizing the effectiveness of music, the nurses at the facility would make him listen to music for a half-an-hour before they did anything with him so that he would be more cooperative. Statistical analysis showed significant mean differences in face relaxation and agitation before and after the music intervention in this study (see Table 1-1, 1-2, and 2). Case 6 reacted differently. She was more aware of her surroundings and could carry on a conversation. Case 6 showed a greater increase in dancing to the music while she already had high ratings for things like eye contact and responsiveness before the music intervention, leading to no significant mean differences (see Table 2). In every case in this study, music decreased isolation of participants, making them more social and responsive while listening to music.

Discussion

Listening to a personalized playlist does increase eye contact, joy, relaxation, and responsiveness. These results indicate that music intervention based on personal favorite songs may increase positive mood and decrease disruptive behaviors, which is consistent partly with those of previous studies ("How your old Ipod,"2014; Ridder et al., 2013). However, this study found no statistical evidence that listening to a personalized playlist brings back positive memories. The important findings in this study are that

participants reacted differently to the music intervention. The music seemed to awaken Case 1 and Case 5 making them sing, dance, and interact with others. However, with case 3, it would calm him down and make him less agitated. Furthermore, the effects were so clear for observers that the nurses in the facility started instituting it into participants' daily care. For example, the nurses encouraged case 3 to listen to music for 30 minutes before they worked with him. Moreover, several residents who were not participants in this study told the author about the changes of participants they saw in their peers after listening to the music. There were apparent changes in mood and behaviors of participants which the statistics cannot capture in painting the whole picture of the effect of a personalized playlist. These findings indicate that music intervention, when tailored to the client's needs, is an effective form of therapy for dementia.

Limitations

In spite of the astonishing findings of the personalized music intervention, there are some study limitations. In this study, there was a difficulty in selecting favorite songs of participants because most of them had trouble communicating and sometimes their family did not know what songs their participants liked. Even though the activity director helped create a playlist of favorite songs for each participant, adding songs which their generation may like, it was still hard to find the right songs that were linked to strong positive impacts on their moods and memories. In addition, authors encountered no behaviors matching several sections like level of pain, sundowning behavior, or resistance to care. Though it is doubtful that the patients never experience pain or resistance to care, what is more likely is that we were not around when it occurred and therefore couldn't draw conclusions about the effect that a personalized playlist can have on those areas. Another limitation is the small number of sessions that were held with some residents. During the 8 weeks of the study, one participant passed away unexpectedly and two participants were added to the study half way through as replacements. They both only had two sessions due to the lack of time. More sessions would have provided more reliable and generalizable results. Another limitation was the location of where the residents listened to their music. The hallway was very noisy and there were always people walking around. This would decrease the participant's ability to focus on the music. However, the bird room and front porch were more quiet secluded places. Thus the environment played a role in affecting the consistency of the results. Something else that was limiting to the study was that after a resident woke up from a nap or right before they took a nap, they were more

tired, less responsive, and were not as likely to dance or sing along. Several times a participant would fall asleep while listening to their music, thus making it difficult to judge how the music is affecting them. Moreover, some of the participants could not communicate if it did. Better communication would have allowed more insight into the effects of a personalized playlist. Future research will need more long-term studies over a year with a greater number of sessions.

Implications

This study has an important implication for social workers in gerontology and geriatric settings understanding how music can help those suffering from dementia. It is very valuable to recognize the possibilities of music intervention in reducing their clients' anxiety, aggression, depression, and problem behaviors without the use of medication. Furthermore, the Music and Memory program is based on the person-centered dementia care instead of traditional biomedical and task-oriented approaches to dementia care. People with dementia should be treated as individuals with rights to therapeutically listen to the music they love whenever and wherever they want to. Respecting personal needs can empower a group of people who have lost so much of their former freedom. Having this perspective is crucial to any therapy that a practitioner might use and implies that person-centered care should be the foundational perspective when working with older adults with dementia.

Conclusions

This study showed that listening to a personalized playlist had a positive effect on improving moods and decreasing disruptive behavior of participants. Therefore, this program should be included in therapy options for older adults whether they are in an institution or their own home. Additionally, a person-centered care perspective should be used when working with this population. To protect the right of a person with dementia and to advance the music intervention programs, social workers should be educators, evaluators, brokers, and advocates for older adults with dementia.

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About the Author(s)

Elizabeth Wagner is expected to receive her BSW degree from Bowling Green State University in May 2015. She plans on going to Master School in fall 2016 and is interested in the mental health field. Elizabeth's research focuses on older adults and dementia.

Dr. Lee received her Ph.D. in social work from the University of South Carolina and joined Bowling Green State University in 2011. Her research interests include coping strategies, resilience, QOL, health and sexual communication issue among cross-cultural older adults, and veteran's reintegration. She teaches courses in social work practice with older adults, HBSE II, social welfare institutions, and diversity and injustice for undergraduate students. She serves as the faculty advisor for undergraduate students.

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APPENDIX:

Table 1-1 Impact of Music (Pre and Post Test, Mean/SD)

Case/ sessions	Eye Contact		Smiling		Face Relaxation		Vocal Responses		Responsiveness	
	pre	post	pre	post	pre	post	pre	post	pre	post
Case 1 /9	3.55/ 2.06	5.89/ 2.31	2.22/1.39	6.11/ 2.26	4.55/ .52	7.0/ .06	5.44/ 2.92	7.33/2.87	3.33/ 2.06	6.11/ 2.02
Case 2 /4	5.75/2.21	6.50/ 3.10	2.0/ 1.15	4.25/ .95	3.75/ 1.70	8.75/ 1.89	4.50/ 1.73	4.50/1.73	3.50/ 1.29	4.75/ 1.25
Case 3 /5	1.40/ .89	2.40/ 1.94	1.0/ .00	2.60/ 1.81	2.80/ 1.48	7.0/ 2.44	1.60/ 1.34	4.40/3.36	1.40/ .89	4.0/ 3.53
Case 5 /4	3.25/2.06	6.75/ 4.27	2.50/1.29	5.50/ 1.73	4.75/ 1.25	6.75/ 2.75	4.50/ 3.00	7.0/ .24	3.0/ 1.82	7.25/ 2.21
Case 6 /2	8.0/ 1.41	9.50/ .70	5.0/ .00	7.0/ .00	6.50/ .70	7.50/ 2.12	8.0/ 1.41	10.0/ .00	8.0/ .00	9.0/ 1.41
Case 7 /2	10.0/ .00	10.0/ .00	8.0/ 1.41	10.0/ .00	8.50/ .70	10.0/ .00	9.0/ 1.41	10.0/ .00	9.0/ 1.41	10.0/ .00

Table 1-2 Impact of Music (Pre and Post Test, Mean/SD)

Case/ sessions	Agitation		Joy		Resistance to Care		Sundowning		Pain	
	pre	post	pre	post	pre	post	pre	post	pre	post
Case 1 /9	2.33/ 2.17	1.11/ .33	3.66/ 1.65	6.88/ 2.57	1.33/ .57	1.33/ .57	1.0/ .00	1.0/ .00	1.66/ 1.41	1.33/ 1.00
Case 2 /4	3.25/ 2.62	1.25/ .50	2.75/ .95	4.75/ 2.21	1.33/ .57	1.0/ .00	1.0/ .00	1.0/ .00	2.75/ 2.36	1.25/ .50
Case 3 /5	6.80/ 3.34	2.40/ 1.67	1.80/ 1.78	4.40/ 3.64	6.0/ 3.36	2.0/ 1.15	1.0/ .00	1.0/ .00	3.20/ 1.30	2.20/ 1.09
Case 5 /4	2.75/ 2.36	1.50/ 1.00	3.50/ 2.08	6.75/ 2.06	1.0/ .00	1.0/ .00	1.0/ .00	1.0/ .00	3.50/ 3.00	3.25/ 2.87
Case 6 /2	1.50/ .70	1.0/ .00	5.50/ 2.12	8.0/ 2.82	1.0/ .00	1.0 .00	1.0/ .00	1.0/ .00	1.0/ .00	1.0/ .00
Case 7 /2	1.0/ .00	1.0/ .00	7.50/ .70	10.0/ .00	1.0/ .00	1.0/ .00	1.0/ .00	1.0/ .00	3.50/ 3.53	2.50/ 2.12

Table 1-3 Impact of Music (Post Test, Mean/SD)

Case /sessions	Tapping (M/SD)	Rocking (M/SD)	Dancing (M/SD)
Case 1 /9	3.55/2.78	2.22/1.98	2.33/2.06
Case 2 /4	2.50/1.73	4.00/3.82	3.00/4.00
Case 3 /5	1.60/1.34	1.00/ .00	1.00/ .00
Case 5 /4	1.50/1.00	1.00/ .00	1.00/ .00
Case 6 /2	6.00/ .00	1.00/ .00	2.00/1.41
Case 7 /2	5.50/6.36	5.50/6.36	5.00/1.41

Table 2 Paired Sample Test

Case	Response	95% Confidence Interval of the Difference			t (p value)
		Lower	Upper	Differences	
Case 1	Eye Contact	-3.19	-1.47	1.72	6.261***
	Smiling	-5.82	-1.95	3.87	4.626**
	Face Relaxation	-4.21	- .67	3.53	3.192**
	Responsiveness	-4.03	-1.51	2.52	5.077***
	Joy	-5.01	-1.42	3.59	4.143**
Case 2	Smiling	-4.25	- .24	4.01	3.576*
Case 3	Face Relaxation	-7.96	- .43	7.53	3.096*
	Agitation	.71	8.08	7.37	3.317*
Case 5	Smiling	-4.83	-1.16	3.67	5.196*
	Responsiveness	-5.04	-3.45	1.59	17.000***
	Joy	-4.04	-2.45	1.59	13.000***

Note: ***p < .001, **p < .01, *p < .05