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Individualized Music Improves Social Interaction of Women, But Not Men, With Dementia

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Cover Page Footnote

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INDIVIDUALIZED MUSIC IMPROVES SOCIAL INTERACTION OF WOMEN, BUT NOT MEN, WITH DEMENTIA

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Dementia is a neurodegenerative disease characterized by declines in memory, decision-making and judgment, and language skills (American Psychiatric Association, 2000). The corresponding emotional symptoms, including agitation, aggression, depression, and anxiety (Vasionyté & Madison, 2013; Solé, Mercadal-Brotons, Galati & De Castro, 2014), make treatment difficult for both professional caregivers and the patient's family members. According to the World Health Organization (2016), 29 million adults currently suffer from dementia, and the number of diagnosed cases is expected to increase. Thus, dementia is a growing public health concern.

There is no known cure for dementia, but beyond medications that may slow the progression of the disease, music therapy is one of several types of treatment that has proven to be valuable in combating symptoms (McDermott, Orgeta, Ridder & Orrell, 2014; Spiro, 2010; Vasionyté & Madison, 2013). Music therapy is a relatively new field of study. It was established as a profession in 1950 and is often used as an alternative to pharmacological treatments for dementia patients, since it tends to result in many fewer negative side effects than medications (Vasionyté & Madison, 2013). Solé and colleagues (2014) argue that although pharmacological treatment is important to reduce the effects of dementia, non-pharmacological therapeutic programs are critical to increase mood and improve quality of life in patients suffering from dementing disorders. Music therapy has also proven to increase alertness and enhance the well-being of dementia patients in several studies (McDermott, Orgeta, et al., 2014; Solé et al., 2014).

Music therapy can take two forms: passive (receptive) versus active. In passive therapy participants listen to music without actively contributing, whereas in active therapy the patient is required to participate by singing, playing musical instruments, or clapping (Blackburn & Bradshaw, 2014). Regardless of the type of music therapy, however, individualized music, music that is tailored to the tastes of the individual with dementia, is frequently utilized instead of classical music or calming sounds in order to stimulate reminiscence and emotional responses (Garland, Beer, Eppingstall & O'Connor, 2007; Gerdner & Swanson, 1993; Park,

2010). A study by Gerdner (2000) helped support the importance of utilizing individualized music in music interventions. Family members of patients selected music they believed the patient would enjoy, and music therapists selected relaxing classical music from an anthology. Gerdner divided her sample of 39 patients with Alzheimer's disease into two groups. The first group listened to individualized music for six weeks, followed by two weeks of no music and six weeks of classical music. The second group received the same protocol in reverse, receiving six weeks of classical music first, a two-week washout period, and then six weeks of individualized music. Agitation significantly decreased in both groups within the first 10 minutes of individualized music listening and lasted for approximately 30 minutes following the individualized music. In comparison, classical music did not result in a significant reduction in agitation in either group until 20 minutes into the intervention. Furthermore, improvements lasted only 10 minutes after the classical selections.

Like Gerdner's study (2000), many studies focused on the benefits of music have examined its impact on agitation. In 1993, Gerdner and Swanson investigated how individualized music listening would affect the agitation of five elderly patients by having family members select music for the patients to listen to for 30 minutes for two weeks. The results indicated a decrease in agitated behaviors in four of the five residents, although the magnitude of the reduction and the length of musical effects varied. Specifically, 47% of agitated behaviors decreased during the intervention, and the improvement was enhanced after the intervention with an 80% decrease in agitated behaviors one-hour post intervention.

A study conducted by Sakamoto, Ando, and Tsutou (2013) supports these findings but also indicates that the improved mood and behavior following passive music listening is a relatively short-term result. Patients with dementia listened to individualized music for half an hour once a week for 10 weeks. The music was selected after in-depth interviews with patients and their families. Five minutes before and after each intervention, behavioral and psychological symptoms of dementia were measured. The results indicated that patients were much less agitated after the intervention than before, but when retested two weeks later, the reduction in symptoms was no longer evident.

Based on this literature, an inter-professional group of professors at Butler University, together with several outside consultants, implemented a study called Music First in collaboration with Harrison Terrace Nursing Home (Shiltz et al., 2016). This study used patient-selected music from their late teens to early twenties as a first treatment for agitation in dementia patients. Agitation was measured

through nurse and staff reports using the Cohen-Mansfield Agitation Inventory (Cohen-Mansfield, Marx & Rosenthal, 1989). Additional potential effects of music intervention were measured, including its impact on memory, attention, and language skills assessed with the Mini-Mental State Examination (Folstein, Folstein & McHugh, 1975), as well as its effect on hostility, depression, and anxiety, measured using a revised version of the Profile of Mood States (McNair, Lorr & Droppleman, 1992). One hundred and four out of 108 Harrison Terrace residents, all with mild to severe dementia, were enrolled in the study. The results indicated a significant interaction between antipsychotic exposure and music listening in influencing agitation across time. Patients who had been receiving an antipsychotic drug at baseline showed similar levels of agitation to those not on antipsychotics once music listening was added to their care. In contrast, patients who had been receiving an antipsychotic medication at baseline but who did not experience music during the study were significantly agitated across the five-month intervention. Together, these results support the hypothesis that individualized music listening may reduce agitation and suggest it may be an effective adjunct to treatment with medication.

The Music First study was similar to many past studies in its focus on the emotional and behavioral effects of listening to music on dementia patients. However, very little research has assessed the value of the music listening on dementia patients from other people's perspectives. In one such study, McDermott, Orrell, and Ridder (2014) interviewed four separate groups: care home residents with dementia and their families, day hospital clients with dementia, care home staff, and music therapists. McDermott asked the patients questions such as: "What does music mean to you?" She asked families, staff, and therapists questions like: "How do you know when music is meaningful to the person?" McDermott found that music helped preserve the self-identity of the patient, decrease the patient's feelings of loneliness, and connect the patient to other people. She also found that both staff and families welcomed the improved mood and increased alertness exhibited by patients after they listened to music.

Taken together, the results of past studies indicate that passive music listening can positively affect dementia patients by increasing their mood and decreasing agitation. Utilizing individualized music rather than general music selections for this intervention is most beneficial, and care providers and family members notice the positive responses residents with dementia have to music. However, the duration of the effects after music listening is typically short-lived. Thus, we have designed the current study to determine whether having residents

with dementia listen to music immediately prior to a visit with family members could positively affect the quality of their social interactions during the visit. This would result in a more fulfilling visit for both patients and their loved ones and could lead to the development of more formalized utilization of this inexpensive and simple intervention on a wide-scale basis.

Method

Participants

Twelve individuals (4 men, 8 women; age *M*=78.67, *SD*=12.09) participated in this study. All participants were residents at Harrison Terrace Nursing Home, a senior living community in Indianapolis that specializes in memory care, and all had been diagnosed with mild to severe dementia based on their scores on the Mini-Mental State Examination (MMSE: Folstein, et al., 1975; *M*=5.00, *SD*=7.25). The residents' healthcare proxies and all visiting family members and loved ones gave informed consent before the study began. Fourteen loved ones participated by completing a questionnaire at the conclusion of a visit. Participation was voluntary, and each family received $50 as a thank you at the conclusion of the study.

Materials

Mini-mental state examination (Folstein, et al., 1975). This dementia screening measure provides a baseline to determine the level of dementia severity in each participant. It consists of 30 questions that assess the cognitive abilities of patients, including learning and memory, orientation to time and place, language skills, constructional skills, and attention.

Visitation and listening log (see Appendix A). This log, created for the purposes of this study, recorded information about each visit, including the date, visitor name, length of visit, whether or not music preceded the visit, length of music, and any behaviors exhibited during the music listening. The 11 behaviors documented included, but were not limited to, opening and closing eyes, lifting the head, producing sounds, and moving the body.

Social interaction questionnaire (see Appendix B). At the conclusion of each visit, one member of the visiting family completed a 12-item questionnaire, also created for the purposes of this study, about the patient's behavior and emotional state during the visit. The questionnaire included nine behavioral descriptors such as how alert, engaged, talkative, and relaxed the resident was

during the meeting with their family, from the family member's perspective. Because the exact duration of the positive effects of music therapy is unknown (McDermott, Orgeta, et al., 2014; McDermott, Orrell, et al., 2014; Spaull, Leach & Frampton, 1998), this questionnaire requested ratings for the part of the visit when the patient was most interactive.

Personal playlist. Many participants already had individualized playlists from the Music First study (Shiltz et al., 2016). We created playlists for the remaining participants by playing hit songs from their late teens to early twenties on an iPad and downloading the songs that generated a behavioral reaction, such as head nodding or snapping. Two families also brought in personal CDs to add to their residents' playlists. At the conclusion of the process, each participant received their own iPod loaded with their personal playlist and a set of headphones.

Procedure

Data collection occurred from May 2015 to October 2015 at Harrison Terrace Nursing Home. Participants were recruited through collaboration with Omar Johnson, the Executive Director; Jeannie Keenan, RN, the former Director of Nursing Services; and Heather Johnson, LPN, the former Memory Care Specialist. Healthcare proxies of the participants granted consent on the participants' behalf. We administered the Mini-Mental State Examination (Folstein, et al., 1975) to all residents in the study to establish a baseline dementia severity. We quasi-randomly determined whether or not residents listened to music before each visit with family members by flipping a coin while assuring that no more than three consecutive visits were of the same type (music versus non-music visit). Families enrolled in the study notified us an hour in advance of their visit by phone or email so that we could administer the music or non-music session immediately before the visit without the families' knowledge.

All 12 participants experienced five music and five non-music visits, except for one resident who passed away after three music visits and four non-music visits. For music visits, we played selections from the patient's personal playlist for 15 minutes prior to the visit. For non-music visits, we spoke to the resident for approximately five minutes and then returned to the lobby. During all visits, we completed a Visitation Log in order to monitor the length of the visit, whether or not music was played, and any behavioral reactions the music generated. Family members did not know whether or not the residents heard music before the visit. This was to reduce the likelihood that expectancy effects would bias the results of the study. At the conclusion of each visit, one member of the visiting family

completed the 12-item Social Interaction Questionnaire. Residents' scores were averaged on each item of the Social Interaction Questionnaire separately for music and non-music visits.

Results

To determine the effect of music versus non-music visits on social interaction, we ran a series of repeated measures ANOVAs for each item on the Social Interaction Questionnaire. We analyzed ratings for each of the nine behavioral descriptors separately to determine which aspects of social interaction were affected by music. Due to the exploratory nature of this research, we treated each item on the Social Interaction Questionnaire as a stand-alone variable. None of the nine analyses yielded a significant difference between the music and non-music conditions, all *F*s $(1,11) < 2.07$, all *p*s $> .17$.

Because there were no significant results in the primary analysis, we decided to further explore the data by analyzing the effect of gender. This series of exploratory analyses involved nine 2 (Music: music vs. non-music) x 2 (Gender: male vs. female) mixed-model ANOVAs. Music was a within-subjects factor, whereas gender was a between-subjects factor. Table 1 summarizes the means and standard deviations for male and female residents under each music-listening condition, and Table 2 summarizes the results of these analyses. There were no significant main effects of gender on any of the nine behaviors. There were also no significant main effects of music, although the music main effect neared significance for appropriateness, $F(1,10)=4.46$, $p=.061$, $\eta_p^2=.308$.

Although the main effects failed to reach significance, there was a significant interaction effect between music and gender for alertness ($F(1,10)=5.41$, $p=.042$, $\eta_p^2=.351$) and happiness, $F(1,10)=5.16$, $p=.046$, $\eta_p^2=.341$. Near significant interactions with moderate effect sizes additionally emerged for engagement ($F(1,10)=3.30$, $p=.099$, $\eta_p^2=.248$) and appropriateness, $F(1,10)=3.41$, $p=.094$, $\eta_p^2=.254$. (See Table 2.) Figure 1 illustrates the significant and near significant results. Across all of these behaviors, after music visits, female residents' social interactions were rated more positively, but male residents' social interactions were rated more negatively.

To determine whether residents' reaction to music while they were listening to it predicted the quality of the social interaction that followed, we calculated correlations between the number of observed behaviors during music listening and total scores on the Social Interaction Questionnaire associated with that visit. Table

3 shows the resulting correlation coefficients. Although these correlations were not significant for the first four visits, at the fifth music visit, a significant correlation emerged between residents' behavioral response to music-listening before the visit (e.g., dancing, singing, straightening body/head) and their social interaction during the visit, r=.65, p<.05.

Discussion

The primary goal of this study was to determine whether individualized music listening would increase the social interactions of dementia patients as perceived by their visitors. We hypothesized that residents who listened to individualized music prior to visits would be rated as more socially interactive than residents who did not listen to music prior to visits. The initial analysis indicated there were no significant differences in the nine behavioral descriptors between the music and non-music conditions. However, further analysis of the interaction between music and gender indicated women with dementia demonstrated significantly more happiness and alertness in their social interactions after listening to music than during non-music visits, which supports our hypothesis, but only for female residents. These improvements in the women in our study are consistent with past research that indicates music listening can result in positive changes in mood and behavior (Gerdner, 2000; Gerdner & Swanson, 1993; McDermott, Orgeta, et al., 2014; McDermott, Orrell, et al., 2014; Sakamoto, et al., 2013; Vink, Birks, Bruinsma & Scholten, 2013). Our results help to support the use of passive music therapy as a means to enhance social relationships in female dementia residents.

In contrast to the improvements we observed in women, loved ones rated male residents' social interactions more negatively after music than non-music visits, which was unexpected. One possible explanation for this finding is that men showed better social interaction than women in the non-music condition, possibly giving them less room for improvement when music preceded the visit. This may be due to the control condition involving social interactions with the researchers. Even though both researchers made a conscious attempt to keep the interaction short and basic in the control condition, greeting the residents may have produced a positive response and alerted the residents that a family visit was imminent. If this was truer for men than women in the study, this could explain the difference in the findings across the two groups. Additionally, our sample only included four men (half the number of female residents), which likely limited our ability to document significant differences in the social interactions of men, but not women.

Like past research, our study utilized individualized music in treating dementia patients. Past studies by Garland et al. (2007), Gerdner and Swanson (1993), Gerdner (2000), and Ragneskog, Asplund, Kihlgren and Norberg (2001) demonstrate that utilizing individualized music affects dementia patients' mood and behavior more positively than classical or relaxing music. Our study applied individualized music listening toward improving social interactions and suggests that this approach can also have a positive effect on nursing home residents' interactions with others. Although past studies have shown that the effects of music listening are temporary (Sakamoto et al., 2013), our study shows that the positive effects of the music may last long enough to influence the social interactions that follow.

Because patients with dementia can have varying reactions to the music, we also wanted to determine if their response to music before each visit predicted the quality of their subsequent social interactions. Although there were no significant correlations for the first four visits, at the fifth visit a significant correlation emerged between residents' behavioral responses to the music and the following social interactions. This result suggests that behavioral changes due to music listening may have a cumulative effect over time, although further research is warranted. A study conducted by Solé et al. (2014) supports these findings. In this study, the researchers measured quality of life in patients and found that over the course of 12 weekly music therapy sessions there was a significant improvement in median subscale scores for emotional well-being from pre-test to post-test. This suggests multiple sessions of music therapy may be necessary to elicit behavioral or emotional changes in patients. Although other studies also report that the effects of music listening emerge after four to twelve sessions (Garland, Beer, Eppingstall & O'Connor, 2007; Gerdner, 2000; Park, 2010; Sakamoto et al., 2013; Sung, Chang & Lee, 2010), no past studies have examined changes in response to music listening on a trial-by-trial basis. The results of our study point to potential cumulative effects over the course of music listening sessions, which could be examined in more depth in future studies.

While interpreting this data, some limitations should be acknowledged. Our sample size was modest; only 12 out of 108 residents at Harrison Terrace participated. We might have been able to detect more changes in social interactions with a larger sample. Additionally, one of the residents passed away during the study, so we did not have data from as many visits for that participant. Due to the small sample size, we also took an exploratory approach to our analyses. Therefore, we did not correct for multiple comparisons when examining each item on the

Social Interaction Questionnaire. As such, our Type 1 error rate may be inflated. Future research with larger samples and a more rigorous statistical approach could verify the findings from our study.

Since gender played a primary role in music's effect on happiness and alertness, it is important to acknowledge that there were twice as many women as men enrolled in the study (8 women, 4 men). As previously mentioned, this ratio may have affected the findings that music was an effective treatment for women but not men with dementia. With more men in the sample, we could determine whether the decreased ratings following music listening in men was a robust or a chance finding.

A variety of factors may have influenced the accuracy of reported behaviors. The Social Interaction Questionnaire was developed for the purposes of this study and was therefore not a standardized measurement of social interaction. Also, visitation times varied across visitors so that they completed the questionnaire at different times of the day. Since the behavior of patients with dementia is variable and often dependent on external factors such as meals or sleep, this variation in timing may have affected behavioral ratings (Smith, Gerdner, Hall & Buckwalter, 2004). Individual differences and expectancy effects in visitors who completed the questionnaire may have also affected their behavioral ratings, although we attempted to minimize these by blinding family members to the residents' condition.

The scope of this study was limited since only residents who had frequent and consistent visitors could participate. Future studies could analyze the effects of individualized music listening on all residents displaying agitation, not just those with frequent visitors. Measuring social interaction at various times of the day would help determine when music listening is most beneficial, and monitoring social interactions with other groups of individuals, such as other residents or staff, could evaluate the generalizability of these results. Further research should also assess the optimal length of music listening. For this study residents listened for 15 minutes, but longer listening sessions might have led to larger effects on social interactions. Finally, because some residents displayed irritation after just a few minutes of listening, particularly due to the discomfort of using headphones, sometimes residents listened to music without headphones. Future studies could target the best method to utilize for individualized music listening.

In conclusion, this study is one of the first to examine the effects of gender on individualized music listening, so further investigation into this phenomenon is necessary. However, these results support using individualized music listening to

improve the social interactions of at least some individuals with dementia and suggest that music listening may be a simple and inexpensive way to improve the social relationships women with dementia share with others.

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Appendix A

Visitation and Listening Log

Participant ID Number: _____

Visit # Time in/out	Date	Visitor Name	Length of Visit	Music Yes or No?	Length of Music	Please circle and note any changes in behavior while listening to music*					
1 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
2 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
3 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
4 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
5 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
6 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
7 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
8 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
9 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											
10 In:						**O**	**L**	**V**	**NV**	**MA**	
						C	**S**	**SW**	**SNW**	**ML**	**D**
Out:											

*Notes Key for behavior changes while listening to music – if more than these are observed, please indicate

Eyes	*Un-coiling*	*Sounds*	*Body Movement*
O = Opens	**L** = Lifts Head	**V** = Verbal	**MA** = Moves Arms
C = Closes	**S** = Straightens upper torso	**NV** = NonVerbal	**ML** = Moves Legs
		SW = Singing w/ intelligible Words	**D** = Dancing (in any position)
		SNW = Singing/humming w/o Words	

Appendix B

Social Interaction Questionnaire

Patient Number: _____

Visit Number: _____

Date: _____

1. How long was your visit? Approximately _____ minutes

2. Based upon the visit you just concluded, how would you say the resident's social interactions with you changed over the course of the meeting?

worsened		remained the same		improved
1	2	3	4	5

3. Based on the time you just spent with the resident, please indicate the amount of that time the resident was at his or her "best" during your visit.

   Approximately _____ minutes

Based on the time when the resident was *most interactive* during your visit, please circle your answer for the following questions.

4. How alert was the resident?

not alert at all		somewhat alert		very alert
1	2	3	4	5

5. How engaged was the resident?

not engaged at all		somewhat engaged		very engaged
1	2	3	4	5

6. How talkative was the resident?

not talkative		somewhat		very

at all		talkative		talkative
1	2	3	4	5

7. How appropriately did the resident respond to comments during conversation?

not appropriately at all		somewhat appropriately		very appropriately
1	2	3	4	5

8. How physically responsive (eye contact, head and body movement) was the resident?

not responsive at all		somewhat responsive		very responsive
1	2	3	4	5

9. How relaxed was the resident?

not relaxed at all		somewhat relaxed		very relaxed
1	2	3	4	5

10. How happy was the resident?

not happy at all		somewhat happy		very happy
1	2	3	4	5

11. How agitated was the resident?

not agitated at all		somewhat agitated		very agitated
1	2	3	4	5

12. To what extent did the resident's repetitive behaviors or thoughts interfere with your interaction?

not at all		somewhat		very much
1	2	3	4	5

Table 1

Social Interaction Ratings for Men and Women with Dementia for Visits Not Preceded by (No Music) or Preceded by (Music) Music

Behavioral Descriptors	Males		Females	
	No Music	Music	No Music	Music
Alert[a]	3.95 (.30)	3.60 (.23)	3.40 (.51)	3.84 (.72)
Engaged[b]	3.75 (.30)	3.35 (.25)	3.20 (.71)	3.48 (.54)
Talkative	3.20 (.78)	2.90 (.90)	2.78 (1.30)	3.12 (.83)
Appropriate[b]	3.55 (.60)	3.05 (.84)	3.30 (.44)	3.27 (.59)
Physically Responsive	3.70 (.62)	3.55 (.19)	3.34 (.72)	3.45 (.91)
Relaxed	3.85 (.30)	3.70 (.35)	3.58 (.57)	3.91 (.78)
Happy[a]	3.95 (.30)	3.65 (.19)	3.18 (.80)	3.64 (.71)
Agitated	1.90 (.38)	1.80 (.16)	1.95 (.75)	1.85 (.87)
Repetitive	1.85 (.84)	2.15 (.50)	2.06 (.40)	2.04 (.52)

[a]The Gender x Music interaction was significant ($p<.05$).

[b]The Gender x Music interaction neared significance ($p<.1$).

Table 2

Music Main Effect, Gender Main Effect, and Music x Gender Interaction for Each Item on the Social Interaction Questionnaire

Behavioral Descriptors	Music Main Effect			Gender Main Effect			Music x Gender Interaction		
	F (1, 10)	*p*	η_p^2	*F* (1, 10)	*p*	η_p^2	*F* (1, 10)	*p*	η_p^2
Alert	.07	.793	.01	.29	.600	.03	5.41	.042	.35
Engaged	.10	.763	.01	.56	.470	.05	3.30	.099	.25
Talkative	.02	.903	.00	.03	.870	.00	2.65	.135	.21
Appropriate	4.46	.061	.31	.00	.962	.00	3.41	.094	.25
Physically Responsive	.01	.938	.00	.37	.557	.04	.31	.589	.03
Relaxed	.28	.607	.03	.01	.920	.00	1.96	.192	.16
Happy	.24	.632	.02	1.21	.298	.11	5.16	.046	.34
Agitated	.36	.564	.03	.02	.901	.00	.00	.100	.00
Repetitive	.46	.514	.04	.04	.846	.00	.60	.455	.06

Table 3

Correlations Between Behaviors During Music Listening and Scores on the Social Interaction Questionnaire at Each Visit

Social Interaction Questionnaire Score at Each Visit	Number of Observed Responses to Music Prior to Each Visit				
	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Visit 1	.12 (p=.70)				
Visit 2		.17 (p=.57)			
Visit 3			.00 (p=.99)		
Visit 4				.31 (p=.36)	
Visit 5					.65 (p=.03)

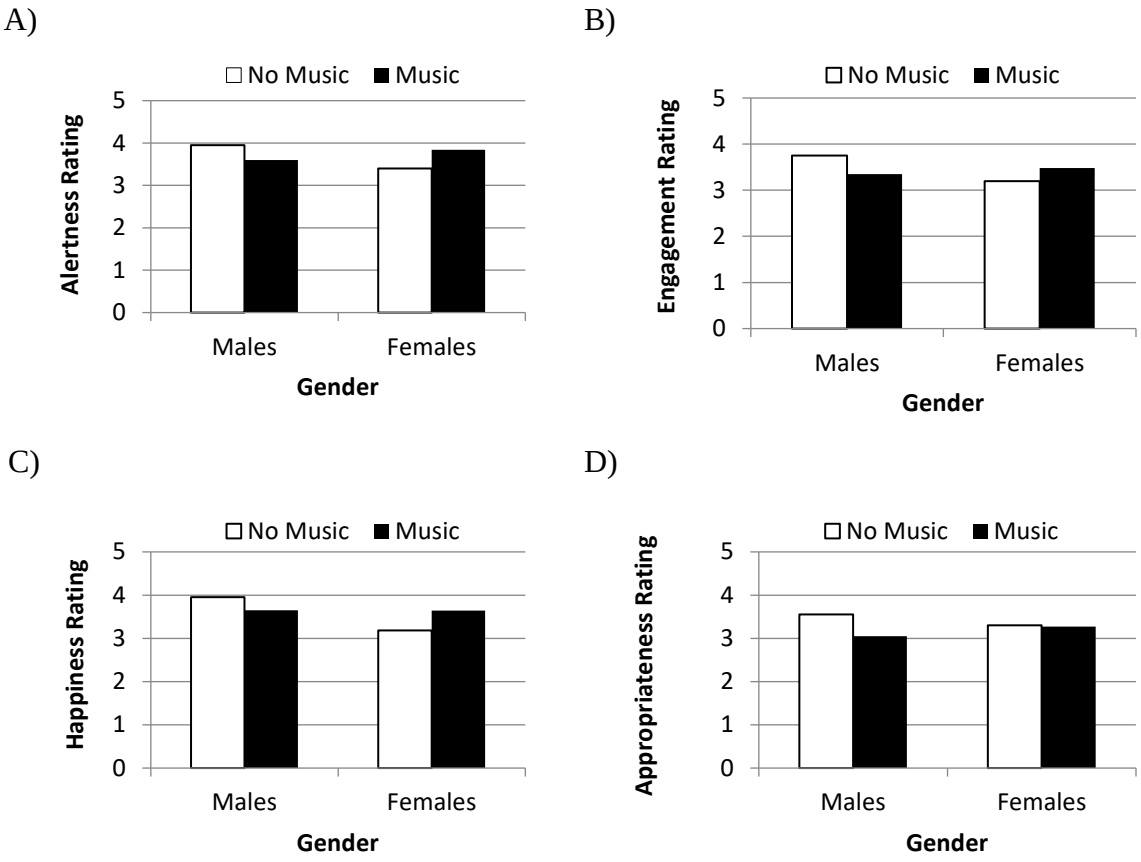

Figure 1. Differences in social interactions of dementia patients as measured during visits not preceded by (No Music) or preceded by (Music) music. Behavioral descriptors were measured using the Social Interaction Questionnaire, which used a Likert-type scale ranging from 1 (not at all) to 5 (very). The Gender x Music interaction was significant for alertness (p=.042) and happiness (p=.046) and neared significance for engagement (p=.099) and appropriateness (p=.094).