



Students report more positive attitudes toward older adults following an interprofessional service-learning course

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ABSTRACT

The aim of this study was to assess undergraduate students' perceptions of older adults over the semester in an interprofessional service-learning course that implemented a health promotion program called Bingocize[®] at community facilities for older adults. Students were surveyed at the beginning of the semester, at midterm, and at the conclusion of the course. Quantitative and qualitative data were collected to assess the students' perceptions and experiences. Results suggest that a course on aging that includes interprofessional service-learning in geriatric settings is associated with a significant increase in positive perceptions of the older adult population. Further research, however, is warranted to validate the findings.

KEYWORDS

Service-learning; attitudes toward aging; undergraduate education

It is projected that by 2030, one in five Americans will be aged 65 years or older (Colby & Ortman, 2015). As the number of aging adults, including those with dementia, continues to rise, it is necessary to prepare a workforce to care for them. Snyder (2006) asserts that those who provide care and services to older adults need special training to counteract a natural fear of aging. Chen, Plake, Yehle, and Kiersma (2011) analyzed the perceptions of pharmacy students toward older adults over two decades and found that many students have negative feelings toward the geriatric population. However, they also noted more positive attitudes toward older adults following curriculum changes and the incorporation of geriatric studies in colleges and universities (Chen et al., 2011).

Courses in aging that include service-learning typically include directed intergenerational community engagement where students have the opportunity to reflect on their feelings and experiences. Service-learning is considered a high-impact educational strategy because students practice skills learned in class and gain an appreciation for populations served (Kruger & Pearl, 2016). Duke, Cohen, and Novack (2009) found that an intergenerational service-learning experience helped students to become better communicators with older adults. Augustin and Freshman (2016) and Obhi and Woodhead (2016) found that students were more interested in working with older adults after taking courses in aging and having real-life experiences with older adults. Courses that provide instruction about older adults through these real-life experiences may prove to be an optimal

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solution for promoting more positive attitudes toward older adults (Nochajski, Davis, Waldrop, Fabiano, & Goldberg, 2011) and interest in working with older adults. To mirror real-life professional experience, courses could also incorporate interprofessional teams of students interacting with older adults.

Interprofessional teams are viewed as an efficient and effective approach to the care of older adults (Eckstrom et al., 2016). Interprofessional education (IPE) is an activity that occurs when two or more professions learn about, from, and with each other to enable effective collaboration and improve outcomes for the individuals and families they serve (American Speech-Language Hearing Association, 2017). Similarly, interprofessional practice occurs when multiple service providers from different professional backgrounds provide comprehensive health care or educational services by working with individuals and their families, caregivers, and communities to deliver the highest quality of care across settings (American Speech-Language Hearing Association, 2017). Wallace (2017) found that students had increased understanding about roles, skills, collaboration, teamwork, and differing professional points of view 1 year following an IPE workshop that incorporated a case study review of a stroke survivor. Students' attitudes about older adults may become more positive following real-life experiences with interprofessional teams serving older adults. Furthermore, students may gain a better understanding of professional roles and responsibilities, interprofessional communication, and how to work in teams.

The purpose of this pilot investigation was to examine undergraduate students' perceptions of a geriatric population over the course of a 15-week service-learning project that included the implementation of a program called Bingocize[®], which involves a combination of Bingo, functional movement, and social engagement (Crandall, Fairman, & Anderson, 2015). The service-learning component of the courses included students administering a program called Bingocize[®] in the community to meet an important need of older adults, that is, to exercise more while engaging in a fun activity. In addition, students reflected on their experience in class discussions and written essays. Students worked in interprofessional teams to deliver Bingocize[®] in assisted living communities, day treatment centers, community centers, and long-term care facilities. We hypothesized that undergraduate students' attitudes toward older adults would become more positive throughout the interprofessional service-learning course.

Method

Participants

Participants were from two departments in a Health Professions College located in a University in the Mid-Southern United States. The participants were from two undergraduate courses on aging from two majors, Communication Disorders and Exercise Science. There were a total of 62 students, 16 males and 46 females, a mean age of 21.7, and a standard deviation (SD) of 1.31. All 62 students who were eligible for the study elected to participate. Results from students who did not attend class on the day surveys were administered were counted as missing for that data collection point. We did not provide an incentive for participating.

The majority of the students reported their race as White (55), with others reporting two or more races (4), American Indian (1), Hispanic (1), and Pacific Islander (1). There were 3 juniors and 59 seniors. The majority of the Communication Disorders students planned to apply to graduate school in speech-language pathology. The Exercise Science students were either planning to apply to a Doctor of Physical Therapy program or a graduate program in Exercise Science, or seeking employment immediately following graduation. After approval from the Institutional Review Board (IRB# 844763-4), participants provided written consent to participate.

Measures

The revised edition of the aging semantic differential (ASD; Polizzi, 2003) was administered on the first day of the course (week 1), at midterm (week 9), and on the final day of the course (week 15). Participants received a paper form that directed them to read a list of 24 polar opposite adjective pairs on a 7-point scale and indicate their ratings.

The original version of the ASD (Rosencranz & McNevin, 1969) is one of the most widely used quantitative tools to assess the perceptions of students toward geriatric populations. Although the validity of this scale has been questioned, there are limited other assessments available to determine attitudes toward older adults (Gonzales, Tan, & Morrow-Howell, 2010). The ASD has been shown to have high levels of reliability, with Cronbach's alphas ranging from 0.85 to 0.97 (Obhi & Woodhead, 2016). The revised edition of ASD (Polizzi, 2003) was used in the current study and is composed of 24 opposite adjectives that are rated using a 7-point scale (1 being positive, 4 being neutral, and 7 being negative). Some example opposite adjectives used on the ASD include *nice-mean*, *kind-cruel*, and *friendly-unfriendly*. Scores over 96 indicate a general negative attitude toward older adults, whereas scores below this threshold indicate a generally positive attitude. ASD data obtained from participants at one time point (as opposed to repeated data collection points over time) has been subjected to factor analysis (Gonzales et al., 2010; Intrieri, Von Eye, & Kelly, 1995; Waldrop, Nochajski, Davis, & Goldberg, 2016) with inconsistent results. In the current study, similar to Merz, Stark, Morrow-Howell, and Carpenter (2018), each participant's total ASD score was compared over three time points in the semester. The ASD was found to be beneficial in measuring attitudes toward the older adult population among students in an introductory psychology course (Obhi & Woodhead, 2016) and among medical and nursing students (Brand, Miller, Saunders, & Dugmore, 2016).

Students were provided with a printed form to complete on the first day of class, at midterm, and at the end of the course. Only students who attended class on the day the forms were distributed completed a form. If they missed completing a form on one of the data collection days, they were not excluded from other opportunities later in the semester. The form included the ASD and two open-ended questions. Students were asked to write responses to the following open-ended questions:

- (1) What, if any, has your prior experience been with the geriatric population? If this will be your first time in an environment specializing in the care of older adults, please specify.

- (2) What is your general perception of the geriatric population? How do you feel in regard to working with them?

Procedures

In this study, instructors and students from two programs, one in Exercise Science and the other in Communication Disorders, worked collaboratively on the development of a service-learning component for each program's only course on aging. The courses were *Communication Disorders in Aging* and *Exercise and Aging*. Both courses on aging were required for graduation in their respective majors. There were three instructors, one for each section. The instructors were tenured or on tenure track. Over the course of 15 weeks, students attended lectures or discussion sessions on Tuesdays and implemented Bingocize® in interprofessional (Communication Disorders and Exercise Science) teams in assigned community sites on Thursdays.

The setting and agenda for the Tuesday classes varied, with some Tuesday classes held in a large auditorium with all of the students together, although others were divided by section and held in three different classrooms. Students were asked to sit with their interprofessional team members when all sections were combined in the large auditorium. The large meetings with all three sections included lectures drawing from topics such as hearing impairment in aging, exercise for older adults, working with individuals with dementia, and managing challenging behaviors. In some classes, the interprofessional teams were asked to meet in small groups to discuss problems encountered in their facility, then share observations with all of the students using a team spokesperson. On the days when classes met in sections, the students attended discipline-specific lectures, took quizzes and tests, and participated in an empathy exercise in which hearing loss (ear plugs), vision impairment (sunglasses and very small print), physical immobility (rubber gloves, taping of joints), and mild discomfort (popcorn kernels in shoes) were simulated.

Thursday class periods were held at community sites. Students from Exercise Science were instructed to work with students in Communication Disorders in planning and implementing Bingocize®. Students were assigned to one of seven community sites located in a small city within a 5-mile radius of the university. The size of the teams varied based on the needs of the setting. Residents in some settings, such as a memory care unit, required more assistance. Additionally, the number of residents available for Bingocize® determined the number of students who were assigned to a particular setting. One adult day care had large numbers of participants and was therefore provided with a larger student team. Another community center had a relatively small space and smaller numbers of participants, so only seven students were placed there. All students arrived on site wearing a black polo shirt required for the course. Students were responsible for organizing and implementing the Bingocize® sessions.

In most settings, the facility staff arranged for participants to be seated in the room used for Bingocize® when the students arrived. One student, usually from the Exercise Science course, would begin the session by calling three letter–number combinations for Bingo, followed by demonstration of three exercises for the participants to follow. The Bingo calls were alternated with exercises. A second student would stand in the front with

the Bingo caller and demonstrate the exercise as well. The other three to thirteen students were scattered throughout the room, demonstrating the exercises and assisting the residents with the exercises and placement of Bingo chips. Participants completed 12–15 different exercises each session. Students from the two majors worked together to make accommodations for the residents, which improved the residents' participation in the sessions, as well as the students' ability to think critically about how to serve the residents. Some of the accommodations included repeating Bingo calls, checking that hearing aids were working, and using dry-erase white boards to write the Bingo letter–number calls.

The selected exercises focused on improving cardiovascular (CV) fitness, muscular strength and endurance, flexibility, and balance using the American College of Sports Medicine guidelines for older adults. Each CV exercise lasted between 30 and 60 seconds. The muscular strength and endurance exercises were selected to most closely resemble functional movements and targeted major muscle groups. See Crandall et al. (2015) for more details about exercises used in Bingocize®. The exertion level of the participants varied based on their abilities. Some participants who lived independently were encouraged to maintain a moderate level of exertion. Other participants had a severe level of cognitive impairment and/or were unable to stand from their wheelchair. For these participants, movement at a minimal level of exertion was the goal. In addition, some exercises that tapped familiar movements (e.g., swimming) and encouraged social interaction were included (e.g., pretend boxing and high fives). Although there is limited research on the benefits of movement in persons with severe dementia, it is assumed that any movement is preferable to immobility. Students were also told to facilitate engagement and communication throughout the session by calling participants by name, making small talk, getting on eye level, and repeating Bingo calls.

Assignments were developed by the instructors to encourage student engagement and reflection. The students were asked to rate each other's contribution using a rubric on aspects of teamwork, professionalism, and attitude. The rubrics were submitted to the professors at the end of the semester. The teams of students at each site were required to film, edit, and produce videos explaining their work and experience to receive an assignment grade for the course. The videos included footage of Bingocize® sessions, personal statements from the students, and, in some cases, interviews with employees of the facilities and family members. The videos were viewed and graded in the final combined classes of the semester.

Quantitative and qualitative measures were used to assess students' perceptions of the geriatric population. Each participant's response for each of the responses on the ASD was quantified, entered onto a spreadsheet, and analyzed using the Statistical Package for the Social Sciences (SPSS, Version 24). Repeated-measures ANOVA was used to examine changes in ASD scores from week 1 to week 9, week 9 to week 15, and week 1 to week 15. In addition, mean scores on the ASD according to section, each with a different instructor, were examined. Paired *t* tests were conducted to compare two points in time: week 1 and week 9, week 9 and week 15, and week 1 and week 15. The alpha was set at the 0.05 level. The calculated Cronbach's alpha for the ASD in the current study was 0.92.

Two trained student reviewers independently rated the individual students' written response #1 as indicating *experience*, *little experience*, and *no experience with older adults*. In addition, reviewers rated written response #2 as *positive*, *mixed*, or *negative perceptions of older adults* at each point in time. One of the two student reviewers had previously participated in the class and the other did not have class experience. The responses were

categorized independently point by point with 86% agreement. In addition, a faculty member reviewed the categorization of the responses where there was a disagreement between raters and determined the final rating of the written response.

Results

We hypothesized that undergraduate students' attitudes toward older adults would become more positive throughout the interprofessional service-learning course. Data analysis included quantitative data from the ASD scale and qualitative ratings of written responses to open-ended questions. The descriptive statistics are found in Table 1. Lower scores on the ASD indicate more positive attitudes about older adults. Scores significantly decreased throughout the semester. ASD surveys not completed were considered missing data. Our response rate varied from 86% to 95% ($n = 62$). Three students did not complete the ASD at the beginning of the course, eight students at mid-term, and nine students at the final administration. All students completed two or all three ASD measures over time (e.g., midterm and final).

A repeated-measures ANOVA with a Greenhouse–Geisser correction showed that the mean ASD scores differed significantly between time points, $F(1.85, 83.43) = 39.13, p = 0.001$.¹ Paired t tests revealed a statistically significant reduction in ASD scores comparing week 1 ($M = 74.04, SD = 17.56$) to week 9 ($M = 66.93, SD = 18.16$), $t(51) = 3.14, p = 0.003$. There was also a statistically significant reduction in ASD scores comparing week 9 ($M = 66.32, SD = 18.49$) to week 15 ($M = 53.16, SD = 18.40$), $t(47) = 6.88 < 0.001$; and comparing week 1 ($M = 73.45, SD = 18.13$) to week 15 ($M = 54.12, SD = 18.89$), $t(50) = 8.19, p < 0.001$.² The greatest paired difference occurred when comparing week 1 to week 15 (19.33). There were no group differences according to instructor or section ($p = 0.53$). In other words, each of the student sections showed the same trend in a more positive attitude toward the elderly regardless of their section or which instructor they had.

Students were asked to fill out a qualitative survey that included two open-ended questions. Of the 62 respondents, 1 student completed a qualitative survey at only 1 point in time, 12 students at 2 points in time, and 49 students at all 3 points in time.

Responses to Question 1 regarding experience with older adults were only analyzed for week 1. Responses to Question 2 regarding attitudes toward older adults were analyzed for week 1, week 9, and week 15. Thirty-six of the students indicated they had little or no experience with older adults at the beginning of the semester. About 86% ($n = 31$) of the

Table 1. Descriptive statistics from the aging semantic differential.

	<i>N</i>	Range	Minimum	Maximum	Mean	SD
Pre	59	81	33	114	74.07	17.24
Mid	54	72	24	96	66.64	17.90
Post	53	72	24	96	53.92	18.56

¹ANOVA repeated measures included 46 student ASD scores due to missing data at one of the three data collection points.

²Paired t -tests included 52 student ASD scores comparing week 1 and week 9, 48 scores comparing week 9 and week 15, and 51 cases comparing 1 and 15 because of missing data at one of the two data collection points.

students who reported no experience with older adults at the beginning of the semester expressed positive attitudes toward older adults at the end of the semester. Closer examination revealed that seven students with no experience, who reported mixed perceptions of older adults, had positive perceptions at the end of the course. Six students reporting negative perceptions had positive perceptions at the end of the course. The remaining students with little or no experience maintained positive perceptions after gaining experience.

Examples for student responses indicating no experience included: “This is my first time working with older adults.” Examples of student responses indicating negative perceptions included: “It’s hard to see their frustration in not being able to do things with the ease that they once could” and “I feel the geriatric population has a lot in common with the teenage population. They’re stubborn and sarcastic.” Examples of student responses indicating positive perceptions included: “My perception of the geriatric population is that they put forth a lot of effort in Bingocize®. They may not be able to do all the reps but they do not give up” and “When I first began this class working with the geriatric population intimidated me. After working with them I have become more comfortable.” We determined the number of positive, mixed, and negative comments at each point in time using the method described in the qualitative analysis section. The majority (61/62) of the participants completed written responses at 2 or 3 points in time. Figure 1 shows that over time, students who made positive comments about older adults increased from the beginning of the semester (35) to the final class meeting (52). Students who made negative comments (7) decreased from the beginning of the semester to the mid-term (1), but then increased by one student to two students at the final assessment where negative comments represented a small proportion of comments overall.

Discussion

The results of our study supported our hypothesis that undergraduate students’ attitudes toward older adults would significantly improve in positive ratings and written

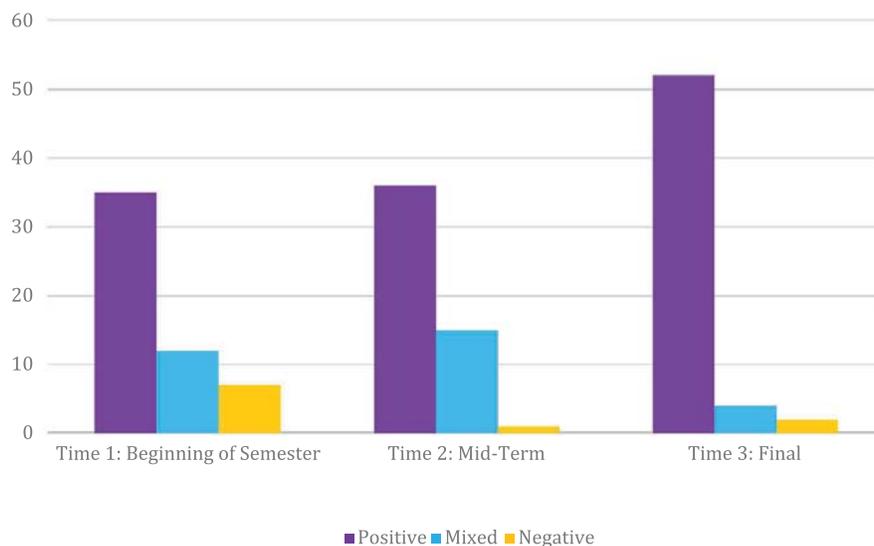


Figure 1. Number of positive, mixed, and negative student observations by time of semester.

descriptions throughout the interprofessional service-learning course. Participants completed the modified ASD (Polizzi, 2003) and reported significantly more positive attitudes when comparing mean scores from week 1 to week 9, from week 9 to week 15, and from week 1 to 15. In addition, an ANOVA revealed no significant difference in ASD scores between the three sections of students (each taught by a different instructor in two different disciplines) at the beginning of the course, at the midterm, and at the final assessment. In other words, students in all three sections of the aging courses reported more positive attitudes with greater experience. Snyder (2006) compared the impact of three college courses on students' attitudes toward older adults and found that only a course on aging that included small group discussion, problem-solving activities, participation in an aging awareness simulation activity, an interview with an older adult, and lectures about aging resulted in a significant change in student attitudes on aging. Hayslip, Caballero, Ward-Pinson, and Riddle (2013) also found that interviewing older adults helped undergraduate students understand and change their biases toward older adults. Although students had initially recorded negative perceptions in a written assignment, students found that negative expectations were not met following an interview (Hayslip et al., 2013). Merz et al. (2018) employed classroom techniques using interprofessional lectures given by professors from the departments of psychology, social work, and occupational therapy. Students were given a choice of assignments and not every student was required to work one-on-one with an older adult. Merz et al. (2018) found that some aspects of attitudes toward the older adults changed, although others did not. One common factor among Snyder (2006), Hayslip et al. (2013) and the present study is that students had face-to-face interactions with older adults. Although Snyder (2006) and Hayslip et al. (2013) incorporated an interview with an older adult, the present study included interactions between interprofessional teams of students and older adult participants in a combined exercise and Bingo game conducted weekly over the course of the semester. In our study, students were encouraged to ask the older adults about their past experiences and assist them with exercises and Bingo. The positive feedback expressed through the survey results further indicates that providing exposure to and experience with older adults can effectively enhance the participants' desire to engage with this population again in the future. Our results were consistent with previous findings of Vowels and Crandall (2014) that a service-learning course is an effective way to provide undergraduates with experiences with older adults. Service-learning also provides practical and real-life experience in the field of choice, thereby equipping students with tools needed to perform in the world outside of academia (Boswell & Swaner, 2009).

In the present study, students gained experience working with the geriatric population through team and interprofessional training that replicated the real-life work environment seen in today's society (Smith, 2013). Undergraduates from Exercise Science and Communication Disorders worked side by side planning and implementing Bingocize® at community sites and documenting their experience in a narrated video. The students in Communication Disorders learned about health and exercise of older adults and the students in Exercise Science learned about communication strategies for engaging and providing direction to older adults. Informally, we observed Exercise Science students moving from the perimeter of the room to one-on-one interactions with the older adult participants over time and more Communication Disorders students demonstrating and

assisting with exercises as the semester progressed. In congruence with the interprofessional approach to Bingocize®, Stamp, Tan-Wilson, and Silva (2015) found that undergraduate science students who participated in interdisciplinary research benefitted from group activities where students from diverse disciplines were asked to draw on their knowledge and experience to solve problems.

Limitations

The current study did not include a control group. All of the students majoring in Communication Disorders and Exercise Science participated in the interprofessional service-learning course. Aspects of the study that we were unaware of may have influenced students' positive attitudes across the semester. The same measures could be administered to students in Communication Disorders and Exercise Science at other similar universities where an interprofessional, service-learning course is not offered. A second limitation of the current study is that we did not formally document students' quality of interactions with older adults and how those interactions changed with more experience. In addition to requiring a specific amount of time spent with the older adults, instructors might also routinely assess the quality of interaction with older adults throughout the service-learning project (Obhi & Woodhead, 2016). Another limitation is that we did not specifically probe the students' views in working with students from another professional area of study other than their own. Finally, although several students spontaneously mentioned a greater interest in working with older adults in the future, we did not specifically ask students about the impact of the course on work-related interests. Obhi and Woodhead (2016) found that experience variables such as coursework on aging, volunteering with older adults, and providing care to an older adult were associated with significantly increased interest in a career working with older adults. Although they used a one-item measure, they suggested a more comprehensive measure of intentions to work with this population. Future research should include observation of students' interactions with older adults and how the experience of working in interprofessional teams shapes students' understanding and comfort level in working with other professionals. In addition, we recommend including a measure of interest in working with older adults in the student surveys.

The results provide a basis for further study; however, further research is needed to determine generalizability of the findings. For example, we do not know the role of instructor. All three instructors in the current study were tenure track or tenured. It would be interesting to see if the same results are obtained with professors of different ranks and level of experience from other universities. In addition, the current study involved primarily seniors. We do not know whether the same outcomes would be obtained with students who are earlier in their college career. Future research may also include replication of the current study followed by a randomized control study where some students either do not participate in the service-learning aspect of the course or on interprofessional teams.

Conclusions

In an attempt to provide real-life learning opportunities in service and research, undergraduate students from Communication Disorders (speech-language pathology) and

Exercise Science participated in a 15-week service-learning project called Bingocize® at community sites that provided activities for older adults. Aspects of the service-learning course that appear to merit further study based on our results and other published research include involving two or more disciplines, implementing the Bingocize® program; surveying the students in the course at the beginning, at midterm and during finals; and identifying sites that are as close to campus as possible to facilitate student scheduling. In addition, students appear to benefit from multiple opportunities to provide written and verbal reflection and team problem solving throughout the course. Bingocize® may work well because of its simplicity, its low cost, and because it met a need for the residents, who have limited opportunity to exercise and socialize. Universities should continue to study the effects of an IPE service-learning course like the one presented here for undergraduates, who will soon become the world's workforce. Developing the minds and abilities of undergraduate students is key to generating the skilled health care professionals needed in older adult facilities now and in the future.

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