Attitudes towards Physical Activity in Older Adults: An Examination of Cognitive Impairment Status, Caregiver Status, and Occupational Therapy Awareness

An Honors Thesis (PSYS 499)

By

Haylie M. Rebilas

Thesis Advisor

Dr. David Perkins

Signed

Ball State University

Muncie, Indiana

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Abstract

As the older adult population continues to grow, it is important for occupational therapists to have up-to-date research on their potential patients. Although occupational therapy is important to the recovery of many adults with cognitive impairment, there is little research focused on mental health concerns of aging adults. Physical and cognitive benefits of daily physical activity in older populations have been researched, but few studies have examined attitudes towards physical activity in relation to common variables associated with older persons. The current study used an established questionnaire measuring attitudes towards physical activity, along with additional survey items created. It was predicted that having any experience with cognitive impairment will be positively related to awareness of occupational therapy and to the presence of a caregiver, and negatively related to attitudes toward physical activity, and that presence of a caregiver will be positively correlated with prospects for recovery from stroke. Results indicated no association between cognitive impairment experience and occupational therapy awareness, an association between experience with cognitive impairment and the presence of a caregiver, differences between having a friend or family member with cognitive impairment and participants' attitudes towards physical activity, a positive relationship between the presence of a caregiver and participant prospects for stroke recovery. While this study did partially support the hypotheses, additional research is needed to gain a better understanding of how occupational therapists can better motivate their elderly patients.
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Attitudes towards Physical Activity in Older Adults: An Examination of Cognitive Impairment Status, Caregiver Status, and Occupational Therapy Awareness

According to the Bureau of Labor Statistics, the need for occupational therapy is dramatically increasing as more members of the baby boomer generation are reaching older adulthood (Occupational Outlook Handbook, 2014). As the older adult population continues to grow, it is important for occupational therapists to have up to date research on their potential patients and their various ailments. Although occupational therapy is important to the recovery of adults with cognitive impairment, there is relatively little occupational therapy research focused on cognitively-impaired aging adults (Gutman & Raphael-Greenfield, 2014). Over the past five years, The American Journal of Occupational Therapy has only published 31 research articles concerning mental health in relation to occupational therapy (Gutman & Raphael-Greenfield, 2014). Studies have attempted to understand the physical and cognitive benefits of daily physical activity in older populations, but few have examined attitudes of physical activity in relation to common variables associated with older persons such as caregiver status, cognitive impairment status, and awareness of occupational therapy services.

Physical Activity in Older Adulthood

Prevalence of impairment. With more adults reaching older adulthood, age-related diseases and impairments are becoming increasingly prevalent in our society. According to Cohn and Taylor (2010) every day for the next 19 years, approximately 10,000 individuals will turn 65. By the year 2030, it is estimated that 18 percent of the United States population will be made up of individuals aged 65 and older (Cohn & Taylor, 2010). This growing population creates a need for research to stay up-to-date in regards to the physical and cognitive deficiencies that characterize this developmental period. Mild cognitive impairment, dementia, and
Alzheimer’s disease are three progressive degenerative ailments of older adulthood that have begun to receive more attention.

Mild cognitive impairment refers to a decline in cognitive functioning that is apparent to the individual experiencing it as well as others, but does not interfere with daily functioning (Alzheimer’s Association, 2014). It is estimated that 10 to 20 percent of individuals over the age of 65 have some form of mild cognitive impairment (Alzheimer’s Association, 2014). While mild cognitive impairment is a functional condition, those living with it are more at risk for developing dementia, and later Alzheimer’s disease. Therefore, it is important to try to delay degeneration through proactive measures such as physical activity, cognitive stimulation, and social interaction.

Dementia, unlike mild cognitive impairment, describes the deterioration of cognition that disrupts daily function (Santrock, 2011). Dementia, as an umbrella term, covers a large range of symptoms and sub-types, including Alzheimer’s disease. It is estimated that by 2050, 1 in 85 individuals will have Alzheimer’s disease world-wide (Brookmeyer, Johnson, Ziegler-Graham, & Arrighi, 2007). Brookmeyer et al. (2007) estimated that a year-long intervention could delay the onset of Alzheimer’s disease and could lead to 9.2 million fewer cases of Alzheimer’s disease. An intervention, such as occupational therapy services that incorporate cognitive and physical exercises, could be a beneficial option for those with an increased risk of developing Alzheimer’s.

**Physical Benefits.** It is widely accepted that physical activity has many benefits for those in late adulthood. As adults age, body mass declines and approximately 6.6 pounds of muscle is lost each decade during late adulthood (Santrock, 2011). Mobility limitations resulting from diminished muscle strength in elderly adults can lead to many ailments such as
incontinence, pressure sores, pneumonia, constipation, and fatigue (Francese, Sorrell, & Butler, 1997). Because physical decline is common in older adulthood, many experimental studies have focused on the causal relationships between exercise and overall physical development. Francese et al. (1997) examined the effects of regular exercise on functional abilities and muscle strength and found that a regular exercise program can increase muscle strength in patients with dementia. Furthermore, Heyn, Beatriz, Abreu, and Ottenbacher (2004) compiled data in a meta-analysis of over 30 trials with a total of 2,202 participants examining exercise programs in persons over 65 years or older with cognitive impairment. Heyn et al. (2004) found a significant improvement in measures of strength in an experimental group of cognitively impaired older adults who participated in strengthening programs compared with a control group that did not participate in strengthening programs.

One of the greatest concerns for older adults with dementia is the risk of falling. Thirty percent of community-dwelling individuals over the age of 65 fall each year with ten percent sustaining serious injury (Anderson, Miniño, Fingerhut, Warner, & Heinen, 2006). Many of these fall victims become patients of occupational and physical therapists as they recover from hip replacements or dislocated shoulders. Allan et al. (2009) found that participants with dementia had a risk of falling eight to ten times higher than participants without dementia (as cited in Lautenschlager, Cox, & Kurz, 2010, p. 353). Participant physical activity level was identified as an important predictor of falls (Allen et al., 2009, as cited in Lautenschlager et al., 2010, p. 353). The high risk of falling during this developmental stage calls for preventative measures. Improvement in balance through muscle strength occupational therapy exercises can help reduce the risk of fall and prevent the need for expensive medical procedures.
Cardiac health also becomes a concern as an individual moves from middle to late adulthood. Cardiovascular disease is the leading cause of death in individuals 75 years of age and older, making cardiac health a priority in late adulthood (Santrock, 2011). Kemmler et al. (2010) studied older women in Germany who underwent an 18-month exercise program versus older women who were in a wellness control group. This study found that the experimental group showed improvement in coronary heart disease risk factors (as cited in Lautenschlager et al., 2010, p. 353). Similarly, a meta-analysis by Heyn et al. (2004) showed that participants who participated in strength training programs improved on cardiovascular fitness measures in comparison to the control group.

Aside from increasing muscle strength, functional ability, and overall health, participating in physical activity has not only been shown to increase older adults’ quality of life but their life expectancy as well. Sun et al. (2010) found a strong positive association between moderate physical activity, walking, and a life expectancy of age 70 or older (as cited in Lutenschlager et al., 2010, p. 353). This research suggests that physical activity in older adulthood is beneficial to increasing one’s overall physical health. While the physical benefits of exercise in older adulthood are evident, the cognitive benefits are just as compelling.

**Cognitive Benefits.** Two of the most commonly studied disorders related to old age are Alzheimer’s disease and dementia. Participating in physical activity increases blood flow and allows more oxygen to travel to the brain, promoting cognitive health (Santrock, 2011). Rolland, Pillard, Klapouszczak, et al. (2007) recruited participants with mild to severe Alzheimer’s disease and implemented a one hour exercise program twice a week with an occupational therapist. The researchers found that after 12 months, participants showed a significantly slower decline in functional status (Rolland et al., 2007). In a similar study, Arkin (2007) studied the
effects of physical fitness workouts such as aerobics, balance, and weight resistance training coupled with language and memory stimulation activities on participants with mild to moderate Alzheimer's disease from 1 to 4 years. Arkin (2007) found that participants who continued the experiment for more than two years exhibited slower Alzheimer's progression than participants with Alzheimer's disease who were apart of the control group.

The effects of physical activity on mild cognitive impairment have also been studied extensively as it may slow down the progression of dementia and Alzheimer's disease. Heyn et al. (2004) found that cognitively impaired participants who participated in exercise showed improvement in cognitive tasks as well as behavioral measures when compared with the control group. Lautenschlager, Cox, Flicker, et al. (2008) examined effects of an individualized walking program versus usual care on community dwelling participants with memory complaints. After 18 months, there was a significant difference in the number of steps taken by the two groups as well as a significant difference in the Alzheimer's Disease Assessment Scale Score (Lautenschlager et al., 2008). With the vast amount of research supporting physical activity's impact on cognitive well-being, one might assume individuals in older adulthood are motivated to exercise. However, when the population's attitudes towards physical activity are examined, there are discrepancies between attitudes and actual motivation.

Attitudes

While many studies have examined the benefits, both physical and cognitive, of physical activity in older adulthood, few studies have examined the attitudes of this population. The small portion of studies that have been conducted regarding attitudes towards physical activity have relied heavily on health service professionals as well as caregivers rather than the population in question. There have been very few studies that have utilized the late adulthood
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population, and they have numerous methodological shortcomings including small sample sizes and lack of quantitative data.

In order to understand patient experience, it is important to recognize how health care employees view their patients' experience of cognitive impairment. According to Gutman and Raphael-Greenfield (2014), a lack of mental health occupational therapy research has led to barriers such as frustration and lack of motivation in health service professionals and patients with cognitive decline. Evidence for this disengagement has been found by researchers such as Kahana et al. (1996) who used health care professionals to gain a better understanding of this patient-provider relationship. This research assessed the attitudes of 143 nursing home employees towards healthy elderly persons, physically ill elderly persons, and elderly persons with Alzheimer's disease. Elderly persons with Alzheimer's disease received less positive evaluations than the other two groups (Kahana et al. 1996). Stigmas associated with mental health and a lack of research to reverse negative perspectives towards individuals with conditions such as Alzheimer's disease have resulted in poor patient-provider relationships.

Caregivers are just as important as health service professionals to the aging adult. Caregivers such as a family member, spouse, friend, etc. assume major responsibility for an individual in older adulthood, especially those with some form of cognitive impairment. In regards to physical activity, caregivers typically assume the responsibility of taking their older adult to physical or occupational therapy appointments and motivating them to complete exercises at home. O'Connell, Bello-Haas, Crossley, and Morgan (2014) examined attitudes towards physical activity in both caregivers and memory clinic patients. Researchers found that caregivers were more likely to rate importance of physical activity and exercise higher than the memory clinic patients. It was also found that caregivers' attitudes towards high intensity
exercises predicted patients’ participation in physical activity (O’Connell et al., 2014).

Caregivers’ attitudes as a predictor for physical activity involvement emphasize that caregivers play an influential role in older adults’ motivation to exercise.

Research regarding older adults’ attitudes toward physical activity is a relatively new venture. Although these studies are limited, they offer valuable results. Janssen and Stube’s (2013) qualitative study interviewed 15 community dwelling older adults and questioned them about their patterns of physical activity across their lifespan. Results suggested that older adults continue their individual patterns of physical activity as long as they have support for their physical and cognitive decline in later adulthood (Janssen & Stube, 2013). The small sample size of this study and the qualitative methodology limits its generalizability; however, this research supports the concept that caregivers and awareness of health service options are important in the promotion of physical activity. O’Connell et al. (2014) examined 51 memory clinic patients’ attitude towards physical activity and found that participant’s attitudes did not predict participation in physical activity. This study is one of the first to utilize both caregiver and patient quantitative data, but should be replicated and revised for validity. Overall, past research has indicated a need for further investigation of older adults’ attitudes towards physical activity and suggests that many factors could be related to this population’s involvement in physical activity.

**Current Study**

The current study examined later adulthood participants’ attitudes towards physical activity in conjunction with their experience (if any) with cognitive impairment, caregiver status, and awareness of occupational therapy as a viable health service option. Little research has been done in regards to older adults’ attitudes towards physical activity, and the research that has been
conducted has used a very small sample, reducing generalizability. This study increased
generalizability by using a larger, national sample. This study also supplemented past research
by expanding upon existing measures to gain a better understanding of the relationships between
physical activity and common variables in older adulthood: cognitive impairment experience,
caregiver status, and occupational therapy awareness. Cognitive impairment, caregivers, and
health services are common variables in older adulthood that were hypothesized to be related to
physical activity attitudes. Although many individuals in older adulthood have experience with
these variables, they are ignored or absent in the literature. In order for health service providers,
particularly occupational therapists, to improve their patients' quality of life, variables that may
influence attitude must be considered.

The current study used a previously established questionnaire, the Older Person’s
Attitudes towards Physical Activity and Exercise Questionnaire (OPAPAEQ), along with
additional survey items created to supplement previous research. This novel research evaluated
the relationships of variables such as caregiver status, cognitive impairment status, and
awareness of occupational therapy services. Specifically, the study hypothesizes that having any
experience with cognitive impairment will be positively related to awareness of occupational
therapy and to the presence of a caregiver, and negatively related to attitudes toward physical
activity. It is also hypothesized that presence of a caregiver will be positively correlated with
prospects for recovery from stroke. The current study will build upon the limited existing
research concerning occupational therapy as well as open the door for future research.
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Method

Participants

Participants consisted of 197 individuals over the age of 60 (*Mean age* = 60 – 65) that were recruited voluntarily via Amazon Mechanical Turk (2014). Participants were primarily white (*n* = 158) with 48.2% male and 50.8% female. An incentive of $0.50 was offered.

Materials

**Older Persons Attitudes towards Physical Activity and Exercise Questionnaire (OPAPAEQ).** Participants were given a 14-item survey asking information about participant attitudes towards physical activity. Attitudes were measured using a 5-point Likert scale (1 = *Strongly Agree*, 5 = *Strongly disagree*). Four factors were used in scoring: tension release, health promotion, vigorous exercise, and social benefits (Terry, Biddle, Chatzisarantis, & Bell, 1997). By performing exploratory factor analysis, one and two sample confirmatory factor analyses and internal reliability analysis, Terry et al. (1997) determined the OPAPAEQ to have construct validity and reliability, and that the four-factor model is appropriate. Pappous et. al (2006) found that the OPAPAEQ also has predictive reliability in that OPAPAEQ scores were positively associated with adherence to exercise programming in 182 older adults (as cited in O'Connell, Bello-Haas, Crossley, & Morgan, 2014). More recently, O’Connell et. al (2014) OPAPEQ provided further evidence for predictive reliability in that the vigorous exercise factor was a significant predictor of physical activity and exercise. For full survey, refer to Appendix A.

**Additional Survey Items.** Participants were given an additional 11-item survey regarding participant experience with cognitive impairment, caregiver status, awareness of occupational therapy services, and demographic information. Participants were asked to indicate their lifestyle in regards to physical activity, their experience (if any) of cognitive impairment,
and if they have a caregiver to help them with their daily needs. Participant awareness of occupational therapy service and the importance of caregiver support were assessed through the manipulation of a short narrative describing a potential stroke patient: a control without the presence of a caregiver, and an experimental version with the presence of a caregiver. Due to technical errors, participant conditions were not recorded. Occupational therapy awareness was still documented while importance of caregiver support was unable to be examined. Participants were asked to rate how beneficial various health services would be in regards to the situation described in the narrative on a 5-point Likert Scale ($1 = \text{Very beneficial}$, $5 = \text{Not at all beneficial}$). Participants were also asked to rate the importance of various factors on the patient's recovery, such as the presence of a caregiver, on a 5-point Likert Scale ($1 = \text{Very important}$, $5 = \text{Not at all important}$). A question about the likelihood of patient’s successful recovery was administered via a 5-point Likert Scale ($1 = \text{Very likely}$, $2 = \text{Very unlikely}$). Additional items can be found in Appendix B.

**Procedure**

Participants logged on to the Amazon Mechanical Turk webpage and voluntarily selected the study if they were 60 years of age or older (see Appendix C). They were then given a form of consent (see Appendix D). After agreeing to participate in the study, participants were given a link to the survey through Qualtrics. A between-subjects design was implemented in which one version of the survey was distributed with two different versions of a narrative: one with a caregiver and one without, however; conditions were unable to be documented. The survey took approximately 10-15 minutes to complete. After completion of the survey, participants were instructed on how they were to claim their incentive.
Descriptive Statistics

Fewer than half of the participants reported having no experience with cognitive impairment (40.6%), 33.5% had a family member who experienced cognitive impairment, 17.8% had a friend who experienced cognitive impairment, 7.6% of participants had experienced cognitive impairment themselves, and 0.5% reported other. Approximately 85% of participants said that they do not have a caregiver, 8.6% reported having a caregiver, and 5.6% of participants reported that they have had one in the past but not currently. A majority of participants reported their overall lifestyle as moderately active (46.2%), followed by active (31.5%), rarely active (11.7%), and very active (9.6%), with inactive being reported the least (1.0%).

Hypotheses Analysis

A chi-square analysis indicated a significant association between cognitive impairment experience and the presence or absence of a caregiver, $\chi^2 (2, N = 197) = 12.05, p < .01$. This finding indicates that participants who had any type of experience with cognitive impairment, either personal or by association, were more likely than chance to have a caregiver. A one-way ANOVA indicated that there was a significant difference between participants who knew someone who has experienced cognitive impairment and those who have no experience with cognitive impairment in regards to their OPAPAEQ score $F(2, 154) = 3.290, p < .05$. A post hoc LSD comparison test indicated the OPAPAEQ sum score for those who had known someone with cognitive impairment ($M = 56.08, SD = 6.97$) was significantly lower than those with no experience of cognitive impairment ($M = 59.03, SD = 8.20$). Means are shown in Figure 1.
**Figure 1.** Differences among types of cognitive impairment experience in regards to their mean OPAPAEQ scores ($p < .05$).

A positive correlation was found between occupational therapy awareness and the likelihood of a successful recovery from a stroke, $r(196) = .159$, $p < .05$. This finding suggests that participant awareness of occupational therapy's benefits is related to participants' anticipation of a successful recovery from a stroke. A chi-square analysis indicated no significant association between cognitive impairment experience and occupational therapy awareness $\chi^2 (8, N = 196) = .912, p > .05$.

**Exploratory Analysis**

A one-way ANOVA indicated that there were small but significant differences between participants who had reported their overall lifestyle as active and those participants who had reported their overall lifestyle as inactive as well as between participants who reported their lifestyle as very active and those who reported their overall lifestyle as inactive in regards to
participants’ OPAPAEQ score $F(4, 152) = 2.035, p < .05$. This finding indicates that the higher the OPAPAEQ score, the higher participants’ self-reported activity level. A post hoc LSD comparison test indicated that the OPAPAEQ score for participants who reported having an overall active lifestyle ($M = 59.10, SD = 7.51$) was significantly higher than participants who reported having an overall inactive lifestyle ($M = 47.00, SD = 2.83$). Similarly, a post hoc LSD comparison test indicated that the OPAPAEQ score for participants who reported having a very active overall lifestyle ($M = 58.56, SD = 8.89$) was significantly higher than participants who reported having an overall inactive lifestyle ($M = 47.00, SD = 2.83$). This was a minimal finding in that only two participants reported having an overall inactive lifestyle.

A one-way ANOVA revealed significant differences between participants who reported having an annual income of 30,000-50,000 dollars and participants who have an annual income of less than 30,000 dollars as well as participants who have an annual income of 30,000-50,000 dollars and participants who have an annual income of 70,000-100,000 dollars in regards to their OPAPAEQ scores $F(4, 151) = 2.157, p < .05$. A post hoc LSD comparison test found that the OPAPAEQ score for participants who have an annual income of 30,000-50,000 dollars ($M = 55.75, SD = 7.71$) was significantly lower than participants who have an annual income of less than 30,000 dollars ($M = 58.92, SD = 6.90$). A post hoc LSD comparison test also found that the OPAPAEQ score for participants who have an annual income of 30,000-50,000 dollars ($M = 55.75, SD = 7.71$) was significantly lower than participants who reported having an annual income of 70,000-100,000 dollars ($M = 60.69, SD = 6.82$).

No significant differences were found between participants’ awareness of occupational therapy and their OPAPAEQ score $F(4, 152) = 2.23, p > .05$. There is no apparent difference between participants’ perception of occupational therapy and their attitudes towards physical
activity. An independent-samples t-test found no significant difference between the presence of a caregiver and participants' OPAPAEQ score $t(155) = .617, p > .05$.

**Discussion**

The purpose of this study was to gain a better understanding of older adults' attitudes towards physical activity in relation to their experience with cognitive impairment, caregivers, and occupational therapy. While multiple studies have made strides in understanding the physical, mental, and emotional benefits of physical activity in late adulthood, such as the exercises performed in occupational therapy, little to no research has focused on this populations' perspective on physical activity itself. O'Connell et al. (2014) attempted to advance this area of research, but they only utilized a small population and failed to account for variables that would affect attitudes towards physical activity. Little to no research has discussed possible connections between attitudes towards physical activity and cognitive impairment which generated the concept of the current study.

Given a lack of previous research (Gutman & Raphael-Greenfield, 2014), this study sought to bridge the gap between occupational therapy services and cognitive health research. The increasing number of older adults calls for an expansion of research on this population in all areas, including attitudes, cognitive health, the influence of caregivers, and awareness of health services (Cohn & Taylor, 2010). Along with the onset of late adulthood, cognitive health becomes extremely important in regards to dementia, Alzheimer's, and stroke prevention and recovery. Understanding how cognitive impairment is associated with perceptions of physical activity is vital in motivating cognitively impaired older adults; otherwise, health service providers may not know how to motivate the cognitively impaired to maintain their physical health.
Findings and Implications

Four hypotheses were tested to determine whether or not there were any connections between attitudes towards physical activity in older adults, experience with cognitive impairment, experience with a caregiver, and occupational therapy awareness. The first hypothesis was that any experience with cognitive impairment would be positively related to the awareness of occupational therapy. Because of the categorical nature of the variable, participants’ responses were coded into three categories: personal experience, experience with family and friends, or no experience. No significant association was found and the hypothesis was not supported. According to this finding, there seems to be no connection between having cognitive impairment experience and one’s awareness of occupational therapy services, which may mean that physical impairment may be a better indicator of occupational therapy awareness. This implies that occupational therapy services could better serve the population in question if occupational therapists were more inclusive of those suffering from cognitive impairment.

The second hypothesis was that any experience with cognitive impairment would be positively related to the presence of a caregiver. A significant association was found between the two variables and the hypothesis was supported. This finding is unsurprising; it is reasonable that someone who has some sort of cognitive impairment would be more likely to have a caregiver helping them with their daily needs than someone who does not have any experience with cognitive impairment. Older adults who know someone with a caregiver may be more likely to have a caregiver themselves, as their spouses may be the ones impaired and a child or relative serves as a caregiver.

It was then posed that any experience with cognitive impairment would be negatively related to attitudes towards physical activity. A significant difference was found between a
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participant who knew someone who has experienced cognitive impairment and those who have no experience with cognitive impairment in regards to their attitudes towards physical activity (their OPAPAEQ score). Participants who knew someone with cognitive impairment had lower scores than those who had no experience with cognitive impairment. Those who knew someone with cognitive impairment have more negative attitudes towards physical activity than those without any experience with cognitive impairment. This finding implies that those who are surrounded by someone trying to recover from cognitive impairment witness all of their frustrations and relapses, which would most likely result in a negative outlook towards physical activity. No significant differences were found between participants who had personal experience with cognitive impairment and those who had no experience. This may be due to the fact that there were only 15 participants who had indicated that they have had personal experience with cognitive impairment.

The final hypothesis was that the presence of a caregiver would be positively related to participants’ prospect for the recovery of a stroke patient. This hypothesis was intended to be tested through a between-subjects design of a narrative of a stroke patient who either had a caregiver or did not. Due to a technical error in the questionnaire, this data became unavailable. This hypothesis can neither be supported nor rejected.

**Strengths and Limitations**

This novel study was the first to gather quantitative information about the relationships among cognitive impairment, attitudes toward physical activity, and awareness of occupational therapy on a relatively large population of older adults. Using Amazon Mechanical Turk (2014) allowed the survey to reach a large national population within a short period of time. By using a national population of individuals over the age of 60, the current results can be better generalized
than those of previous studies. However, a limitation of using Amazon Mechanical Turk is that a majority of workers on Amazon Mechanical Turk are from India, so issues of self-report nationality may have occurred (Schneider, 2015).

Another limitation of the study was the lack of diversity in participants. While in terms of gender, participants were equally distributed; a majority of participants were between the ages of 60 and 65, Caucasian, and did not have personal experience with cognitive impairment. Results may have differed if the sample included participants in later stages of late adulthood who are more likely to have had experienced cognitive impairment and be less mobile.

A major limitation of the current study was the missing data in the between-subjects narrative design. A technical error occurred in which participant conditions (narrative with or without a caregiver) were not recorded; therefore, that data could not be used. This error made it impossible to test the hypothesis of whether or not the presence of a caregiver would be related to the prospect of recovery from stroke. Knowing the result of this would have implied how much importance participants place on caregivers in the recovery process.

Future Research

While this study has improved and expanded upon further research in using a national sample and including previously ignored variables, much more research needs to be done to gain a better understanding of the reasoning behind these results. Understanding why there is a difference between those who have had experience with cognitive impairment and those who have not in regards to attitudes towards physical activity would allow health service workers, such as occupational therapists, develop new ways to motivate their patients. With the multiple physical and cognitive benefits that can be obtained through physical activity, occupational
therapy has a great potential to help those suffering from cognitive impairment to live more functional lives.
References


Appendix A

Physical Activity Questionnaire

This questionnaire assesses attitude toward physical activity. Indicate whether you strongly agree (SA), agree (A), feel neutral (N), disagree (D), or strongly disagree (SD) with each statement. There are no right or wrong answers. Please be honest and work quickly.

1. Exercising with other people in the same age range is socially beneficial

2. Physical exercise, undertaken with common sense and good judgment is essential to good health

3. Exercise helps to work off emotional tensions and anxieties

4. Associating with others in physical activity is fun

5. Regular vigorous exercise is necessary for good health.

6. Developing one’s physical skills leads to mental relaxation and relief from tension

7. Physical exercise is important in helping a person gain and maintain all-around health

8. Participation in physical recreation is a satisfying and enriching use of leisure time

9. Vigorous daily exercise is not necessary to maintain one’s general health

10. Physical activity in some form is an excellent remedy for tense, irritable, and anxious person

11. Physical exercise is beneficial to the human body

12. Physical activity releases the tension of the of the individual participant

13. Regular physical activity makes one feel better

14. Vigorous exercise is necessary to maintain one’s general health
Appendix B

Additional Survey Items

1. How would you describe your overall lifestyle in regards to physical activity?
   - Very active
   - Active
   - Moderately active
   - Rarely active
   - Inactive

2. Which of the following best describes your experience with cognitive impairment (e.g. as a result of stroke, an accident, or a side effect of dementia or Alzheimer’s disease, etc.).
   - I have experienced cognitive impairment
   - A family member has experienced cognitive impairment
   - A friend has experienced cognitive impairment
   - I have no experience with cognitive impairment
   - Other (please specify) ________________

3. Is there a caregiver (e.g. a spouse, relative, a home health worker, etc.) helping you with your daily needs?
   - Yes
   - No
   - I have had one in the past, but not currently

Please read the following narrative and answer the questions that follow:
Mary-Jo is a 76 year old widow who had a minor stroke within the past 3 months. Before her stroke, Mary-Jo’s lifestyle was easygoing and she was a self-sufficient individual who participated in many clubs and contributed to her community. Since her stroke, Mary-Jo has had trouble with her hand-eye coordination resulting in difficulty driving. While Mary-Jo is still able to take her morning walk with her dog, she has difficulty with fine motor movements such as gripping her dog’s leash. In addition, she has frequently forgotten to attend scheduled appointments, has had trouble completing tasks such as doing the dishes, and has experienced increased anxiety and distress over the loss of these functional abilities.

OR

Mary-Jo is a 76 year old widow who had a minor stroke within the past 3 months. Mary-Jo’s 45 year old son lives nearby and visits her daily. Before her stroke, Mary-Jo’s lifestyle was easygoing and she was a self-sufficient individual who participated in many clubs and contributed to her community. Since her stroke, Mary-Jo has had trouble with her hand-eye coordination resulting in difficulty driving. While Mary-Jo is still able to take her morning walk with her dog, she has difficulty with fine motor movements such as gripping her dog’s leash. In addition, she has frequently forgotten to attend scheduled appointments, has had trouble completing tasks such as doing the dishes, and has experienced increased anxiety and distress over the loss of these functional abilities. Mary-Jo’s son is troubled by his mother’s current functional state and has begun helping her with her daily tasks.

4. To what extent would Mary-Jo benefit from each of the services?

- Physical Therapy
  - Very beneficial
  - Somewhat Beneficial
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- Not sure
- Not very beneficial
- Not at all beneficial

- Psychotherapy
  - Very beneficial
  - Somewhat Beneficial
  - Not sure
  - Not very beneficial
  - Not at all beneficial

- Medication
  - Very beneficial
  - Somewhat Beneficial
  - Not sure
  - Not very beneficial
  - Not at all beneficial

- Occupational Therapy
  - Very beneficial
  - Somewhat Beneficial
  - Not sure
  - Not very beneficial
  - Not at all beneficial

- A Residential Facility
  - Very beneficial
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- Somewhat beneficial
- Not sure
- Not very beneficial
- Not at all beneficial

5. Rate the importance of each factor in regards to Mary-Jo’s recovery?

- Her age
  - Very important
  - Somewhat important
  - Not sure
  - Not very important
  - Not at all important

- The presence or absence of a caregiver
  - Very important
  - Somewhat important
  - Not sure
  - Not very important
  - Not at all important

- Her lifestyle before the stroke
  - Very important
  - Somewhat important
  - Not sure
  - Not very important
  - Not at all important
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- The presence or absence of a pet
  - Very important
  - Somewhat important
  - Not sure
  - Not very important
  - Not at all important

6. How likely is it for Mary-Jo to have a successful recovery?
  - Very likely
  - Likely
  - Not sure
  - Unlikely
  - Very unlikely

7. Are there any other factors you think would be important in Mary-Jo’s recovery? If so, please indicate in the space provided:

Please indicate the following:

8. Age:
  - 60-65
  - 65-70
  - 70-75
  - 75-80
  - 80 and up

9. Sex:
  - Male
10. Race:
   - White
   - Black
   - Hispanic
   - Asian
   - Other (please indicate) ________________

11. Annual income:
   - less than 30,000
   - 30-50,000
   - 50-70,000
   - 70,000-100,000
   - greater than 100,000
Appendix C

Amazon Mechanical Turk Recruitment

Description: 10-15 minute questionnaire on assessing attitudes on physical activity.

Qualifications: Must be aged 60 and over and live in the United States.

Reward: $0.50

For this study, you will be asked to complete a questionnaire regarding your attitudes towards physical activity, your experience with cognitive impairment (if any), caregivers, and awareness of health services.

The survey will take less than 20 minutes to complete. All information will be completely anonymous.

You are eligible to participate in this study if you are aged 60 years and over and you live in the United States.

If you fit the eligibility criteria and wish to participate in this study, please click on the link below or copy and paste the like into your web browsing window.

After you have completed the survey, please enter your payment code in the box below.

Thank you!
Appendix D

Informed Consent

Study Title  Attitudes in Older Adults

Study Purpose and Rationale

My goal is to understand better how to motivate those who have had any sort of experience with cognitive impairment (themselves, a family member, friend, etc.) to participate in physical activity in order to increase their quality of life. Specifically I will examine how attitudes towards physical activity are related to common experiences in older adulthood.

Subjects Inclusion Criteria:

Subjects MUST:

Be at least 60 years of age

Subjects Exclusion Criteria:

Subjects CANNOT:

Be under 60 years of age

Participation Procedures and Duration

For this study, you will be asked to complete a questionnaire regarding your attitudes towards physical activity, your experience with cognitive impairment (if any), caregivers, and awareness of health services. The survey will take less than 20 minutes to complete. All information will be completely anonymous.

Data Confidentiality or Anonymity

All data will be maintained as anonymous and no identifying information such as names will appear in any publication or presentation of the data.

Storage of Data
The data will be entered into a software program and stored on the researcher's password-protected computer. Data will then be deleted after one year.

**Risks and Benefits**

There are no foreseeable risks or benefits for participating in this study.

**Incentive**

An incentive of $0.50 will be offered for completion of the questionnaire.

**Voluntary Participation**

Your participation in this study is completely voluntary and you are free to withdraw your permission at anytime for any reason without penalty or prejudice from the investigator. Please feel free to ask any questions of the investigator before signing this form and at any time during the study.

**IRB Contact Information**

For one's rights as a research subject, you may contact the following: the Office of Research Integrity, Ball State University, Muncie, IN 47306, (765) 285-5070 or at irb@bsu.edu.

Principal Investigator

Haylie Rebilas

Department of Psychological Science

Ball State University

HRRebilas@bsu.edu

Faculty Advisor

Dr. David Perkins

Department of Psychological Science

Ball State University

DPerkins@bsu.edu
Date: December 12, 2014

To: Haylie Rebilas, B.S.

From: Ball State University IRB

Re: IRB protocol # 691520-1

Title: Attitudes in Older Adults

Submission Type: New Project

Action: APPROVED

Decision Date: December 12, 2014

Review Type: EXEMPT

The Institutional Review Board reviewed your protocol on December 12, 2014 and has determined the procedures you have proposed are appropriate for exemption under the federal regulations. As such, there will be no further review of your protocol, and you are cleared to proceed with the procedures outlined in your protocol. As an exempt study, there is no requirement for continuing review. Your protocol will remain on file with the IRB as a matter of record.

Exempt Categories:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1:</td>
<td>Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.</td>
</tr>
<tr>
<td>X Category 2:</td>
<td>Research involving the use of educational test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior</td>
</tr>
<tr>
<td>Category 3:</td>
<td>Research involving the use of educational test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under category 2, if: (i) the human subjects are elected or appointed officials or candidates for public office, or (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.</td>
</tr>
<tr>
<td>Category 4:</td>
<td>Research involving the collection of study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.</td>
</tr>
<tr>
<td>Category 5: Research and demonstration projects which are conducted by or subject to the approval of Department or agency heads, and which are designed to study, evaluate or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in methods or levels of payment for benefits or services under these programs.</td>
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<td>Category 6: Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed which contains a food ingredient at or below the level and for a use found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.</td>
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</tbody>
</table>

**Editorial Notes:**

1. Approved- Exempt

While your project does not require continuing review, it is the responsibility of the P.I. (and, if applicable, faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. Any procedural modifications must be evaluated by the IRB before being implemented, as some modifications may change the review status of this project. Please contact (ORI Staff) if you are unsure whether your proposed modification requires review or have any questions. Proposed modifications should be addressed in writing and submitted electronically to the IRB (http://www.bsu.edu/irb) for review. Please reference the above IRB protocol number in any communication to the IRB regarding this project.

**Reminder:** Even though your study is exempt from the relevant federal regulations of the Common Rule (45 CFR 46, subpart A), you and your research team are not exempt from ethical research practices and should therefore employ all protections for your participants and their data which are appropriate to your project.

Bryan Byers, PhD/Chair  
Institutional Review Board  
Christopher Mangelli, JD, MS, MEd, CIPI/Director  
Office of Research Integrity