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THE TEMPORAL ASSOCIATIONS BETWEEN AGITATION AND PASSIVITY IN
DEMENTIA IN ELDERLY NURSING HOME RESIDENTS

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ABSTRACT

Behavioral and psychological symptoms of dementia (BPSD) are highly prevalent in those suffering with dementia and increase over time with advancing cognitive decline. This project sought to examine the temporal relationships between agitation and passivity behaviors in elderly nursing home residents with dementia. As part of a randomized clinical trial, two twenty-minute observations, once in the morning and once in the afternoon, were video recorded for 128 participants to examine the presence or absence of agitated behaviors using the Cohen-Mansfield Agitation Inventory (CMAI) and passive behaviors using the Passivity in Dementia Scale (PDS). These observations were repeated five times over a five day period. Results showed a primarily female (77%) and Caucasian (88%) sample with a mean age of 86.11 (\pm 6.0) years with mild to moderate cognitive impairment (Mini-Mental State Examination (MMSE) score of 14.25 \pm 4.5). Across all days and times, with subject effect removed (subject mean values subtracted) the correlation between PDS and CMAI is 0.236, indicating that those with high agitation or passivity at one time point tend to show less agitation or passivity at the second time point and vice versa. No apparent gender differences were observed in agitated and passive behaviors in this sample. Understanding how these behavioral symptoms of agitation and passivity are related will help elucidate the behavioral patterns within an individual with dementia and perhaps lead to individualized care patient management strategies.

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Chapter 1

Introduction to Developing a Research Direction

Throughout my undergraduate studies, I have found myself drawn to the more clinical applications of biopsychosocial research. I appreciated the importance of examining all facets of a disease, condition, genetic predisposition, or lifestyle choice, and how these facets combine to affect a health outcome. In this way, interventions that promote healthy behavior changes can be tailored to a specific population to hopefully maximize its effect. After taking a course in neuroanatomy, where the professor discussed the neuroanatomical changes observed during the progression of Alzheimer's Disease, as well as seeing the first signs of dementia in my own grandmother, I decided that I wanted to focus my undergraduate thesis on the broad topic of dementia research.

From there I began my search for Penn State faculty members in the college of Health and Human Development who were studying dementia. This was the first area in which I came across some difficulty, as no researchers in the Department of Biobehavioral Health had specific dementia-related research interests that easily correlated to my own more biologically-driven Alzheimer's interest (at least at first). I met with multiple professors who were conducting research on gerontology to try and gain a picture of what data sets and research projects were available and found a good fit and very helpful guide in Dr. Linda Wray. Dr. Wray agreed to act as my honors thesis advisor and helped me begin the process of narrowing down my thinking to a specific research question by giving me access to the data set from the Aging, Demographics, and

Memory Study (ADAMS) in the Health and Retirement Study (HRS) of midlife and older in age in the United States.

At first when examining the ADAMS data, I felt extremely overwhelmed. As an undergraduate with only one statistics course under my belt, it was difficult to understand what kind of data I was looking at and what these results might show, let alone develop a research question from them. However, I was enrolled in a course on the gender differences observed in a multitude of biobehavioral health topics. I thought that this could be an interesting avenue to explore in relation to dementia that would help to narrow my research focus.

The next step in my research process was to start examining the body of literature regarding behavioral symptoms of dementia in general, as well as the presence or absence of gender differences in published research studies. From this initial search, I found that behavioral symptoms of dementia fit into two broad categories: the positive symptoms of agitation or aggression, and the negative symptoms of passivity or blunted affect. I also learned from this search that it was quite difficult to find studies that specifically correlated gender with types of behavioral symptoms, especially those examining passivity. When examining agitation, my initial thoughts on the topic from my previous knowledge observing dementia patients and from what I learned in my gender differences in health class, I expected men to be more physically agitated and women to be more verbally agitated. As I was completing this initial literature review, I simultaneously found myself being a caregiver for my grandmother who was beginning to show symptoms of mild to moderate dementia. On May 21st, 2012, my grandmother was admitted to the hospital for intense stomach pain that ended up being a severe bowel

perforation. Below is an excerpt from my own observations of this event during her stay in the hospital:

Grandma goes to ER for intense stomach pain. Diagnosed with a perforated bowel due to an obstruction and undergoes emergency surgery. Dr. Brown (an alias) was her surgeon and she came out of surgery with a colostomy bag and a wound approximately 5 inches in diameter. She remained in inpatient care at Harrisburg Hospital for 10 days for nutrition and post-surgical wound care.

Prior to hospitalization: Grandma had identifiable dementia symptoms. She would repeat stories and ask the same questions frequently. About half of the time she would realize that she had already asked that question or told us that story and she would move on. However, if someone pointed out the fact that she had forgotten something she would become noticeably upset saying things like “I really am losing it,” or “I’m going nuts,” or criticizing my grandfather for making her feel this way. I would categorize her as in a stage of mild cognitive decline. She was seeing a neurologist for her dementia symptoms, and was placed on the medication Aricept to aid her memory, but was never diagnosed with a particular form of dementia or Alzheimer’s.

During hospitalization: Symptoms escalated dramatically. Grandma did not know where she was or why she was there. She reported being in a garage in Sunbury, being in the house in which she grew up in Gowen City, and she thought my grandfather had just dropped her off and abandoned her there. These symptoms were most likely the result of delirium [a state of sudden severe confusion and rapid changes in brain function (APA, 2000)]. She was not allowed

to eat or drink any food to allow her bowels to rest, which caused her extreme distress and discomfort. She would cry if we told her she was not allowed to come home yet or that she could not have any water. She would continually ask nurses for water and get visibly upset when denied (crying, refusing to talk to family or staff, not cooperating with nurse's requests). She appeared to sundown – these behaviors worsened at night. When left alone she became very disoriented and repeatedly ripped out her IV lines, wound care supplies, and colostomy bag. A 24-hour nursing assistant was assigned to her room to prevent these behaviors and allow healing.

I kept detailed observations such as these, because she was the primary reason that I chose to study dementia for my undergraduate thesis and wanted to better understand her symptoms and maybe even find ways to help her and the rest of my family cope with them. She had continuing complications due to her wound care that required multiple hospitalizations over a 7 month period. I began to notice during the frequent times I was either visiting her in the hospital or at home to help with wound care, she had very different patterns of behavior. When she was at home, she often showed a lot of passivity. She wasn't attentive to conversations, requested that everything, including her toothbrush, be brought to her, rather than getting up to walk (which was advised by her doctor); and she rarely laughed or showed affection toward her caregivers. The only time she would show agitated behaviors at home, she was very verbal in expressing her frustrations in her mobility, in pain, and in being "crazy" when she realized she had a memory lapse. Just to contrast, my grandmother had always been extremely loving towards her husband, children, and grandchildren, was quick to speak

her mind or give words of praise, and found much purpose and joy in her role as the caretaker (and cook!) for her entire family. Therefore, these passive symptoms were clearly egodystonic to my grandmother.

When grandma was in the hospital, however, she was often very physically agitated. She would constantly move her legs, try to unhook her monitors, try to get out of bed by herself to the point where multiple alarms had to be hooked to her at all times, and ripped out over 30 IVs or picc lines during her hospital stays over the 7-month period. These symptoms appeared to be due to psychosis or delirium that was initiated by entering the hospital and leaving her familiar environment at home. She had many complications with her wound healing, but she was no longer able to reliably take her medicine or clean the wound herself, so frequent care from family members and home nurses was absolutely necessary. My grandmother showed different types of behavioral symptoms of dementia in different settings, and this strengthened my desire to look at the gender differences and see the behaviors of others at different levels of cognitive decline.

After discussing my preliminary findings with Dr. Wray, we consulted with Dr. Ann Kolanowski of the Pennsylvania State University School of Nursing, who had recently completed a randomized clinical trial examining theory-based activities for mitigating the behavioral symptoms of dementia. Some of her results from the clinical trial were published in the *Journal of the American Geriatrics Society*, and she agreed to act as a co-advisor and allow me access to some of her data sets to look at any gender differences that may initially jump out, or other aspects of the data that may spark my interest in examining another facet of the behavioral symptoms of dementia. With the help of Dr. Mark Litaker, we examined some preliminary descriptive statistics for the

items on the Cohen-Mansfield Agitation Inventory (CMAI) and the Passivity in Dementia Scale (PDS) broken down by gender.

When examining the preliminary descriptive statistics, the sample of 128 participants was over 75% female, which is representative of the populations of many nursing homes, however it also makes examining gender differences difficult. No seemingly significant differences appeared between men and women on either the CMAI or the PDS. For the PDS, the most passivity was seen in performing activities, interacting with the environment, and displaying emotions for both genders. These results were somewhat frustrating because they did not align with what I had originally expected, but also highly educational for that very reason during the course of this research project. The research question that I was originally interested in exploring did not seem to yield any obvious gender differences, so I learned the valuable lesson that every researcher will eventually learn – how to accept the findings for what they are. The lack of gender differences in this sample is also a valuable piece of information that demonstrates that perhaps men and women behave very similarly during periods of cognitive decline, and that the expectation of differing behaviors between the sexes could be attributed to other factors such as traditional gender roles or observed gender differences in other disease states, for example.

Along with the descriptive statistics broken down by gender, Dr. Litaker included the relationship between the CMAI and the PDS as broken up by observation days and times. The data yielded an overall correlation between the CMAI and PDS across all days and times of 0.236. This statistic appeared to be significant and demonstrated the fact that as agitated behaviors appeared to increase, so did the scores on the PDS (which indicates

a lower level of passivity). After seeing these results and consulting with Dr. Wray and Dr. Kolanowski, we decided that this correlation could be a very interesting avenue to pursue and I again dove into the body of literature to learn more on the subject of the temporal associations between agitation and dementia.

Surprisingly, another gap in the literature presented itself as I encountered more difficulty finding information specifically about this topic. This experience was again different from what I've encountered many times in my undergraduate career. I have written many research papers, and have relied on literature reviews for many project and designs for hypothetical interventions, however I always tend to pick a topic that is much broader and dealing with a major health issue. Rather than such a narrow focus of examining the temporal associations between agitation and passivity behaviors in individuals with dementia, I would be more likely to study the most effective treatments for Alzheimer's disease, of which there is a plethora of published research. Here again was a valuable lesson on the research process that got me excited about looking at an association that had only been examined a handful of times.

I did see some temporal associations between passivity and dementia in my own grandmother. She was normally most agitated during the night in hospital settings and when left alone (this is when she was most likely to remove her own picc line), however she also most likely experiencing delirium during her inpatient stays at the hospital, which is distinct from regular symptoms of dementia. However, when at home, she did show more passive behaviors when left alone in a particular part of house or with only one caretaker, but showed some verbal agitated behaviors when frustrated with multiple family members present. My grandmother ultimately passed away due to complications

of her wound healing on December 05, 2012, but as I stated before, she was the inspiration for me to study dementia in elderly populations, and this project would not have been nearly as significant of a learning experience without getting into the body of literature while simultaneously caring for her during her struggle with dementia.

In the following chapters I will take a more in depth look at the literature regarding BPSD, including any gender differences and temporal associations that have been studied. Next I will discuss the methods and results from the secondary analysis of the data collected by Dr. Kolanowski and her research team. Then I will discuss conclusions drawn from the data, including clinical applications and directions for future research. Finally, I will discuss my reflections on the project as a whole, including what I've learned about the research process, clinical implications for my future career, and what I've learned personally in completing this project.

Chapter 2

Literature Review

In relation to gender differences in behavioral and psychological symptoms of dementia (BPSD), there was some evidence that men showed more physical agitation (Beck, Frank, Chumbler, O'Sullivan, Vogelpohl, et al., 1998; Lovheim, Sandman, Karlsson, & Gustafson, 2009; Schreiner, 2001) and that females showed more verbal agitation (Cohen-Mansfield & Libin, 2005; Jackson, Drugovich, Fretwell, Spector, Sternberg & Bosenstein, 1989; Ott, Tate, Gordon, & Heindel, 1996). In one particular study by Jackson et al., abusiveness (11.6%) and noisiness (10.2%) were the two most prevalent disruptive behaviors, where noisiness was significantly higher in females and abusiveness significantly higher in males. There was no gender difference in regards to wandering (Jackson, Drugovich, Fretwell, Spector, Sternberg & Bosenstein, 1989).

In contrast, still other studies found no significant gender differences (Beck, Frank, Chumbler, O'Sullivan, Vogelpohl, et al., 1998; Ott, Tate, Gordon, & Heindel, 1996; Prado-Jean, Couratier, Druet-Cabanac, Nubukpo, Bernard-Bourzeix, et al., 2010; Schreiner, 2001). For example, in the study by Beck and colleagues, physically nonaggressive, vocally aggressive, and total disruptive behaviors were higher in men and there was no gender difference in vocally agitated behaviors (Beck, Frank, Chumbler, O'Sullivan, Vogelpohl, et al., 1998). There was an apparent gap in the literature regarding gender differences in behavioral symptoms of dementia, particularly passive or apathetic behaviors. Most of the information I did find was a secondary analysis, but gender research in nursing homes is difficult in itself because of the difficulty in

obtaining equal comparison groups due to the generally higher population of females in nursing homes.

Behavioral and psychological symptoms of dementia (BPSD) are highly prevalent in those suffering with dementia and increase over time with advancing cognitive decline (Lovheim, Sandman, Karlsson, & Gustafson, 2009; Pieroni, 2009). Behavioral symptoms include physical aggression, screaming, agitation, and wandering, whereas psychological symptoms include anxiety, depression, delusions, and apathy (Pieroni, 2009). The presence of BPSD is associated with placement in an institution, faster cognitive decline, high caregiver burden, and an overall lower quality of life (Pieroni, 2009). The initiative to optimize care for those suffering with dementia is a national health care priority (AHCPR, 1996; Chen, Borson, & Scanlan, 2000; Department of Health and Human Services, 2012), and therefore it is important to better understand the behavioral patterns within an individual to provide effective patient care.

Agitation is a highly prevalent BPSD that can include specific symptoms such as general restlessness, kicking, pushing, wandering, and hurting oneself (Cohen-Mansfield, 2009). In this study, agitation was measured using the Cohen-Mansfield Agitation Inventory in four five-minute intervals. The twenty-minute observation was completed once in the morning and once in the afternoon. Passivity or apathy in dementia was found to be the most prevalent behavioral symptom of dementia in the Cache County Study (Berman, Brodaty, Withall & Seeher, 2012; Steinberg, Corcoran, Tschanz, Huber, Welsh-Bohmer, K., et al., 2006), yet it is often understudied and left untreated (Berman, Brodaty, Withall & Seeher, 2012). Understanding how these behavioral symptoms of agitation and passivity are related will help elucidate the behavioral patterns within an

individual with dementia and perhaps lead to individualized care patient management strategies.

Previous research on the temporal patterns of agitation and passivity suggests that the most agitated behaviors will occur during afternoon hours, however the minority of participants will show significantly higher agitation in the afternoon observation (Bliwise et al., 1993; Cohen-Mansfield, 2007; Cohen-Mansfield et al., 1989; Cohen-Mansfield et al., 2010; Gerdner, Buckwalter, & Hall, 2005; Martin et al., 2000; McCann et al., 2004). Going along with this observation, those with the highest levels of agitation overall are most likely to be more agitated in the later observation time (Cohen-Mansfield, 2007). However, one study by Bliwise et al. (1993) found two peaks in agitated behaviors occurring between 10 a.m. and 12 a.m. and 2 p.m. and 4 p.m., which help to illustrate the variability in temporal patterning results.

The concept of “sundowning,” or higher levels of agitation that occurs during the evening was often not supported in the literature, and some authors postulate that higher agitation levels in the afternoon may not only be due to factors within the individual with dementia, but also related to staff fatigue or change of shift (Bliwise et al., 1993; Cohen-Mansfield, 2007). In a systematic review by Yevchak, Steis, and Evans (2012), the research, based on 44 published articles, supports sundown syndrome as a clinically and scientifically valid construct. Based on 12 articles that provide prevalence data, the prevalence of sundown syndrome occurs in between 2.4% and 67.5% of older adults, however there are limitations to these findings including sample size and sample selection inconsistencies. The authors also stress the importance of researching commonalities between the behavioral symptoms in sundown syndrome and other forms

of cognitive impairment (like the delirium seen in some nursing home patients I observed and my own grandmother) to help distinguish sundown syndrome as its own separate entity (Yevchak, Steis, & Evans, 2012).

In relation to passivity, one study by Colling (1999) suggests that the highest passivity (indicated by the lowest score on the PDS) will be seen during periods of lowest activity and interaction with others. From this information, it can be conjectured that highest agitation will be observed during periods of higher interaction and activity, if it is observed at all. There was a gap in the literature relating measures of agitation and passivity, indicating that this data we are examining is a new area of research that could help to elucidate the link between positive and negative symptoms of dementia within an individual patient.

The purpose of this study is to examine the gender differences and the temporal associations between agitation and passivity in elderly nursing home residents with dementia through a secondary analysis of data from a randomized clinical trial (Kolanowski, Litaker, et al, 2011). It is hypothesized that women will show more vocally agitated behaviors, while men will show more physically agitated behaviors as was demonstrated in some of the literature and from my own past experience with elderly people with dementia (Beck, Frank, Chumbler, O'Sullivan, Vogelpohl, et al., 1998; Lovheim, Sandman, Karlsson, & Gustafson, 2009; Schreiner, 2001; Cohen-Mansfield & Libin, 2005; Jackson, Drugovich, Fretwell, Spector, Sternberg & Bosenstein, 1989; Ott, Tate, Gordon, & Heindel, 1996). In regards to temporal associations, it is hypothesized that the most agitated behaviors will occur during afternoon hours, however the minority of participants will show significantly higher agitation in the afternoon observation

(Bliwise et al., 1993; Cohen-Mansfield, 2007; Cohen-Mansfield et al., 1989; Cohen-Mansfield et al., 2010; Gerdner, Buckwalter, & Hall, 2005; Martin et al., 2000; McCann et al., 2004).

Chapter 3

Methods and Findings

This study was a secondary analysis of data from a randomized clinical trial that tested the efficacy of individualized activities for responding to the behavioral symptoms of dementia collected by Dr. Kolanowski and her research team (Kolanowski, Litaker, et al, 2011). Baseline data were used to address the research questions: Are there any gender differences in agitated and passive behaviors in elderly nursing home patients with dementia and what are the temporal associations between these agitated and passive behaviors?

Study Setting and Participants

The sample was elderly people (age 65 or older) with dementia recruited from nine nursing homes in Central and Northeast Pennsylvania. Each nursing home provided researchers with contact information for residents who agreed to allow contact to their legally authorized representatives. For the residents where consent was obtained, a research nurse and the project director determined eligibility with the inclusion criteria of: 65 years of age or older, dementia diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders IV, a Mini-Mental State Examination (MMSE) score between 8 and 24, indicating some form of cognitive impairment, no new use of psychoactive drugs, and the presence of behavioral symptoms as reported by staff. Exclusions criteria included delirium, unstable illness, Parkinson's disease, Huntington's

disease, seizure disorder, stroke, alcoholism, drug abuse, head trauma that involved loss of consciousness, or any type of psychiatric illness preceding memory loss (Kolanowski, Litaker, Buettner, Moeller, & Costa, 2011).

Procedures

The project director met with potential subjects and conducted a screen to establish eligibility, including demographics and the MMSE to confirm cognitive impairment. Eligible participants were approached for consent. Consented participants were entered into a 5 day baseline period. Two twenty-minute observations, once in the morning and once in the afternoon, for each participant were video-recorded over a 5 day period. Later, trained research assistants coded the videos by observing and recording behaviors in five-minute increments on the observer form for the Cohen-Mansfield Agitation Inventory (CMAI) and the Passivity in Dementia Scale (PDS). The outcome variables were the presence of agitated behaviors and the presence of passive behaviors. Since this study was not an intervention study, there was no need to group participants. All data from each participant was compiled and overall temporal trends between agitation and passivity were measured across all subjects, days, and times.

Measures

Agitation was measured by coders evaluating recordings of participants using the CMAI, which yielded the presence or absence of 29 behaviors where higher scores indicate higher agitation. Passivity was measured by the same coders and in the same recordings using the PDS, which will yield the presence or absence of 40 different

behaviors (11 items scored in the negative, 29 in the positive) where a lower score indicates greater passivity (Kolanowski, Litaker, Buettner, Moeller, & Costa, 2011).

Analysis

When analyzing the data, the correlation between the CMAI and the PDS was measured first across all subjects, all days, and all times using the MEANS procedure and a Pearson correlation method to determine an r-value. Then the data across all subjects were broken down by day and by time again using Pearson correlations. The null hypothesis is that there will be no significant correlation between the CMAI and the PDS across time, while the alternative hypothesis is that there will be a significant correlation between the CMAI and the PDS across time. As a secondary analysis, the data were also examined by gender to examine any significant differences in the types of agitated or passive behaviors (e.g. verbal vs. physical aggression).

Results

The mean age of the 128 participants in this sample was 86.11 (\pm 6.0) years. The participants were predominantly female (77%), and mostly Caucasian (88%), which is representative of the nursing home populations in Central and Northeast Pennsylvania. Collectively, the participants had moderate to severe cognitive decline with an average MMSE score of 14.25 (\pm 4.5) and an average 12.26 (\pm 3.1) years of education. All participants were English speaking and a dementia diagnosis as assessed by a research nurse or project director via chart review.

The behaviors seen most often on the CMAI for both genders were the same: general restlessness, repetitious mannerisms, and pacing/aimless wandering, as shown below in Table 1-1.

Table 3-1: Mean values for most frequent agitated behaviors by gender

<i>Behavior</i>	<i>Female Mean</i>	<i>Male Mean</i>
General Restlessness	0.9729 (\pm 1.5117)	0.7454 (\pm 1.4126)
Repetitious Mannerisms	0.4579 (\pm 0.4579)	0.3271 (\pm 0.9835)
Pacing/Aimless Wandering	0.3233 (\pm 0.9745)	0.1487 (\pm 0.6804)

The three most common behaviors for both genders as seen on the CMAI were general restlessness, repetitious mannerisms, and pacing/aimless wandering. Females had higher means overall but also constituted 77% of the sample.

In relation to passivity, both genders showed the same general trend: the most passivity was shown in activities, followed by interacting with the environment, emotions, thinking, and the least amount of passivity in interacting with people. Mean values for each behavior are shown in Table 3-2 below:

Table 3-2: Mean values for most frequent passive behaviors by gender

<i>Behavior</i>	<i>Female Mean</i>	<i>Male Mean</i>
Activities	1.1305 (\pm 3.0388)	1.1185 (\pm 3.0742)
Interacting with the environment	1.3886 (\pm 1.6446)	1.2222 (\pm 1.5790)
Emotions	3.3505 (\pm 3.8565)	3.0148 (\pm 3.3417)
Thinking	4.6680 (\pm 3.6653)	4.5111 (\pm 3.3292)
Interacting with people	6.3233 (\pm 4.4875)	6.6926 (\pm 4.7563)

Both genders showed the same general trend with the most passivity (lowest score on PDS) in activities and the least passivity (highest score on PDS) when interacting with people.

The intraclass correlation for the PDS across both times was 0.4401 and 0.4325 for the CMAI. Intraclass correlations for each time measurement are shown below in Table 3-3.

Table 3-3: Intraclass correlations of the PDS and CMAI across time

<i>Measure</i>	<i>Time 1</i>	<i>Time 2</i>	<i>Across both times</i>
PDS	0.5189	0.4409	0.4401
CMAI	0.3830	0.4945	0.4325

Intraclass correlations for both the PDS and CMAI appear to have fair agreement across time.

Across all days and times, with subject effect removed (subject mean values subtracted) the correlation between PDS and CMAI is 0.236. The p values for the correlation between the PDS and CMAI are displayed in Table 3-1. There is a significant effect at the $p = 0.05$ level between PDS and CMAI by time of observation. Separately by day, the correlations between PDS and CMAI are $r = 0.180$, 0.308 , 0.274 , 0.211 , and 0.213 . When separating the correlation between PDS and CMAI by time, the correlations are $r = 0.234$ for time 1 (morning) and $r = 0.228$ for time 2 (afternoon). The correlation between time 1 and time 2 values for PDS is $r = -0.227$ and for CMAI, $r = -0.134$. There were no significant gender differences in both CMAI and PDS items.

Table 3-4: P-values for correlation between CMAI and PDS

	<i>Day</i>	<i>Time</i>	<i>Day*Time</i>
Full sample	0.2366	0.0294	0.3291
Zero inflated Poisson	0.2333	0.0317	0.2943
Excluding subjects with all CMAI = 0	0.2333	0.0317	0.2934

There appears to be a significant effect at the $p = 0.05$ level between PDS and CMAI by time of observation. If an individual is showing high passivity in the morning observation, they are likely to display higher agitation in the afternoon observation.

Chapter 4

Conclusions and Future Directions

It is important to note that this study was not designed specifically to examine the temporal association between passivity and agitation, nor gender differences in such behaviors. There were only two time periods throughout the day being measured, once in the morning and once in the afternoon, preventing a look at sundown syndrome in this sample. Also, there were significantly more females (77%) than males in the sample, making analyses of gender differences less than ideal. However, some interesting results and clinical implications were gained from these analyses.

There was an apparent lack of gender differences in this sample. Both genders shared the three most often seen agitated behaviors: general restlessness, repetitious mannerisms, and pacing/aimless wandering. All of these behaviors would be classified as physical agitation rather than verbal, which does not support the initial hypothesis that women would show more verbal agitation and men more physical agitation. These results are similar to the findings of the study by Ott and colleagues, who found that there was not a significant gender difference in agitated behaviors, but instead found that men were significantly more likely to display apathy/vegetative behaviors and women to display reclusiveness/emotional lability (Ott, Tate, Gordon, & Heindel, 1996). It was also interesting to note that there were many behaviors not seen on the CMAI, including constant unwarranted request for attention or help, hitting, kicking, throwing things, and making physical sexual advances. This observation agrees with the work of Cohen-Mansfield (2008), who found the least frequently seen behaviors fell into the physically

aggressive category, which includes behaviors like biting, grabbing, hitting, and physical sexual advances. These behaviors are more severe forms of agitation, which helps to elucidate what types of behaviors are likely to be seen among those with mild to moderate cognitive decline in a nursing home setting, even if the behaviors are not likely to differ based on gender.

In relation to passivity, both genders showed the same trend, with the most passivity (lowest score on PDS) in activities and the least passivity (highest score on PDS) when interacting with people. Passive behaviors are often overlooked in nursing home settings due to their relative lack of disruption (Colling, 1999). Though these behaviors may be extremely troubling to the individual with dementia or his or her family, they can simply go unnoticed to caregivers responding to multiple residents in a nursing home. Though no apparent gender differences were seen in the PDS measure, this finding is important in a clinical sense. If men and women are both displaying relatively similar trends in passive behaviors, then perhaps this trend will translate to all people with mild to moderate cognitive decline. Nursing homes can prevent some excessive passivity by developing initiatives to engage residents with activities where they must interact with each other, for example. However, Ott and colleagues, as discussed previously, found that men were more likely to show apathy/vegetative behaviors, indicating that this area of gender research in dementia is in need of future research to determine overall gender differences in passivity (Ott, Tate, Gordon, & Heindel, 1996).

The intraclass correlations for the PDS and CMAI indicate fair agreement of the measures across time. The PDS and CMAI are measures with many different indices of passive and agitated behavior, making it difficult to note every single behavior, which may have contributed to the fair ICC. Also, there is some ambiguity in certain items, like making strange noises or generosity, for example, that leave room for interpretation among raters. The overall correlation between the PDS and CMAI across all days and times of 0.236 indicates that a higher score on the CMAI (more agitation) is associated with a higher score on the PDS (low passivity). There is an apparent gap in the literature relating agitation and passivity throughout the day, therefore understanding this complementary relationship in future research will help to create a more encompassing picture of BPSD and how they interact with one another, rather than looking at only one dimension of such symptoms (agitation vs. passivity or positive vs. negative symptoms).

The negative correlations between the time 1 and time 2 variables for both the CMAI and PDS indicate that if an individual shows a high value for either agitated or passive behaviors, they tend to settle down and have a lower score in the other observation period. This finding has the potential for clinical significance; future research in understanding an individual's pattern of agitated and passive behaviors as it cycles throughout the day can help caregivers (whether in a nursing home or community setting) develop individualized patient care strategies to help alleviate behavioral and psychological symptoms. For example, if an individual tends to how high passivity and low agitation in the morning observations, and higher agitation and lower passivity in the afternoon, strategies can be put in place to try and engage that individual with pleasurable activities in the morning hours and perhaps a time of individual free time in the afternoon

hours to help alleviate BPSD. More specifically, in a study by Cohen-Mansfield and colleagues, the researchers sought to study methods of engaging nursing home residents with dementia in activities such as coloring with markers, folding towels, arranging flowers, or playing with building blocks. They found that engagement was significantly higher in the afternoon hours of 2 to 5 p.m. than in the morning hours, which helps to merge clinical intervention with understanding patterns of highest BPSD or engagement (Cohen-Mansfield, Thein, Dakheel-Ali, & Marx, 2010).

Chapter 5

Reflections

This project has been eye opening in many ways from start to finish. Now that I am at the end of the process it is clear to me that I've gained a lot of useful tools about health research, particularly in elderly populations. At first it seemed extremely daunting to start the process of exploring a large body of literature about dementia in general. Normally when I go into a research project assigned in one of my classes, I have a particular research area to focus on, but this was the first time I was really tailoring my literature review down to a very narrow focus on a specific research question of my choosing, something that I had never done before. I also gained experience in working with faculty as they gave me advice to guide me to these research questions and a project design.

Quantitatively, I learned relevant health statistics commonly used in biobehavioral health research and how to correctly interpret them, something that will no doubt help in the future when reading current clinical research as a physician assistant. Qualitatively, I was able to view an assessment procedure in a nursing home to better understand how participants were selected and evaluated throughout the intervention by Dr. Kolanowski and her research team. This experience definitely helped me to see firsthand the manifestations of some of the agitated and passive behaviors in those suffering from dementia in the nursing home. Also, it helped me to see cases of delirium (as I frequently

saw in my own grandmother) and distinguish these more exaggerated behaviors from the BPSD studied in the literature.

I have been unable to observe an intervention up to this point due to the lack of intervention subjects in the area and a period of restriction during the height of flu season due to patient and my own immunocompromisation. I hope to observe an intervention subject before graduation as I think it will help give me a view of the research design as it is being implemented since I was focused on secondary analyses and did not participate directly in data collection. I did learn, however, some of the inherent challenges in completing this type of intervention research. It can be difficult to obtain informed consent from those with dementia and often involves an authorized third party to gain appropriate consent. Also, those in nursing homes with dementia often have comorbid chronic medical conditions that may cause them to refuse intervention on any given day when they are not feeling well, which occurred on one occasion when I visited a nursing home in State College.

Clinically, I would say I learned a great deal about the behavioral side of dementia in nursing homes and with my own grandmother. I had never heard of the term delirium until talking with Dr. Kolanowski and completing the literature review. I often observed the exaggerated symptoms of delirium in my own grandmother when she was in a clinical setting, and those symptoms shaped my previous view of what behavioral symptoms of dementia looked like. I learned that BPSD were more stable, long-term, and cyclical, which helped direct the research question toward temporal associations between passivity and agitation. Also, understanding the gender differences (or lack thereof) and the relationship between passive and active behaviors allows individualized patient care

strategies to be developed, something that will be extremely important when treating patients with dementia in my future career as a physician assistant. There is clinical significance for stress reduction of both caregivers and the patients themselves in strategies to alleviate BPSD, such as determining when the most agitated and passive behaviors are likely to occur throughout the day and developing activities to either engage the individual with dementia in pleasurable social activity, or allowing alone time and rest when it is likely to be needed the most.

Personally, this project was a major undertaking, but one that I'm very excited to have completed. Throughout this process I have not only been helping to provide care for my grandmother's illness and eventual passing but also coping with my own illness of aplastic anemia. I was diagnosed at the start of my junior year of college, when I was beginning to work with Dr. Wray about developing my research direction, but I was eventually able to find the balance between putting my health first and thriving academically. I have gained confidence in my research abilities, writing abilities, and working alongside my superiors on completing a long-term research project. I have also gained confidence in being able to treat patients with dementia later in my career by understanding some of the behavioral and psychological symptoms, which are often the most troubling to an individual and his or her family. Perhaps I will be able to provide some advice to help treat the entire person, not just his or her acute medical conditions in the doctor's office. I am proud of the work that I have accomplished and will be able to accomplish in the future through the experience I've gained with much help from those wiser than myself, which was my ultimate goal through the course of this project.

Appendix A

Descriptive Statistics, across Subjects, Days, and Times: Entire Sample

Variable	N	Mean	Std Dev	Minimum	Maximum
cmai	1135	1.9489	3.0091	0.0000	14.0000
q1_sum	1135	0.2819	0.9161	0.0000	4.0000
q2_sum	1135	0.0018	0.0420	0.0000	1.0000
q3_sum	1135	0.0026	0.0890	0.0000	3.0000
q4_sum	1135	0.0273	0.2215	0.0000	4.0000
q5_sum	1135	0.0000	0.0000	0.0000	0.0000
q6_sum	1135	0.0229	0.2355	0.0000	4.0000
q7_sum	1135	0.0000	0.0000	0.0000	0.0000
q8_sum	1135	0.0000	0.0000	0.0000	0.0000
q9_sum	1135	0.0044	0.0663	0.0000	1.0000
q10_sum	1135	0.0035	0.0593	0.0000	1.0000
q11_sum	1135	0.0000	0.0000	0.0000	0.0000
q12_sum	1135	0.0278	0.2491	0.0000	4.0000
q13_sum	1135	0.0018	0.0420	0.0000	1.0000
q14_sum	1135	0.0000	0.0000	0.0000	0.0000
q15_sum	1135	0.0053	0.1327	0.0000	4.0000
q16_sum	1135	0.0344	0.3166	0.0000	4.0000
q17_sum	1135	0.0018	0.0594	0.0000	2.0000
q18_sum	1135	0.0991	0.4592	0.0000	4.0000
q19_sum	1135	0.0815	0.4181	0.0000	4.0000
q20_sum	1135	0.0000	0.0000	0.0000	0.0000
q21_sum	1135	0.0000	0.0000	0.0000	0.0000
q22_sum	1135	0.0070	0.1026	0.0000	2.0000
q23_sum	1135	0.0000	0.0000	0.0000	0.0000
q24_sum	1135	0.0000	0.0000	0.0000	0.0000
q25_sum	1135	0.0000	0.0000	0.0000	0.0000
q26_sum	1135	0.4269	1.1073	0.0000	4.0000
q27_sum	1135	0.0000	0.0000	0.0000	0.0000
q28_sum	1135	0.0000	0.0000	0.0000	0.0000
q29_sum	1135	0.9189	1.4913	0.0000	4.0000
pds	1136	16.7892	13.1629	-5.0000	47.0000
Thinking	1136	4.6307	3.5875	0.0000	20.0000
Emotions	1136	3.2707	3.7419	-6.0000	16.0000
Int_Environ	1136	1.3490	1.6301	-4.0000	8.0000
Int_People	1136	6.4111	4.5534	0.0000	17.0000
Activities	1136	1.1276	3.0459	-4.0000	4.0000

Appendix B

Descriptive Statistics, across Subjects, Days, and Times: Separately by Gender

FEMALE

Variable	N	Mean	Std Dev	Minimum	Maximum
cmai	866	2.0520	3.0323	0.0000	14.0000
q1_sum	866	0.3233	0.9745	0.0000	4.0000
q2_sum	866	0.0023	0.0480	0.0000	1.0000
q3_sum	866	0.0035	0.1019	0.0000	3.0000
q4_sum	866	0.0167	0.1666	0.0000	3.0000
q5_sum	866	0.0000	0.0000	0.0000	0.0000
q6_sum	866	0.0254	0.2520	0.0000	4.0000
q7_sum	866	0.0000	0.0000	0.0000	0.0000
q8_sum	866	0.0000	0.0000	0.0000	0.0000
q9_sum	866	0.0058	0.0758	0.0000	1.0000
q10_sum	866	0.0046	0.0678	0.0000	1.0000
q11_sum	866	0.0000	0.0000	0.0000	0.0000
q12_sum	866	0.0341	0.2767	0.0000	4.0000
q13_sum	866	0.0023	0.0480	0.0000	1.0000
q14_sum	866	0.0000	0.0000	0.0000	0.0000
q15_sum	866	0.0000	0.0000	0.0000	0.0000
q16_sum	866	0.0162	0.1792	0.0000	3.0000
q17_sum	866	0.0000	0.0000	0.0000	0.0000
q18_sum	866	0.1022	0.4602	0.0000	4.0000
q19_sum	866	0.0779	0.3987	0.0000	4.0000
q20_sum	866	0.0000	0.0000	0.0000	0.0000
q21_sum	866	0.0000	0.0000	0.0000	0.0000
q22_sum	866	0.0069	0.0959	0.0000	2.0000
q23_sum	866	0.0000	0.0000	0.0000	0.0000
q24_sum	866	0.0000	0.0000	0.0000	0.0000
q25_sum	866	0.0000	0.0000	0.0000	0.0000
q26_sum	866	0.4579	1.1418	0.0000	4.0000
q27_sum	866	0.0000	0.0000	0.0000	0.0000
q28_sum	866	0.0000	0.0000	0.0000	0.0000
q29_sum	866	0.9729	1.5117	0.0000	4.0000
pds	866	16.8609	13.2466	-5.0000	47.0000
Thinking	866	4.6680	3.6653	0.0000	20.0000
Emotions	866	3.3505	3.8565	-4.0000	16.0000
Int_Environ	866	1.3886	1.6446	-2.0000	8.0000
Int_People	866	6.3233	4.4875	0.0000	17.0000
Activities	866	1.1305	3.0388	-4.0000	4.0000

MALE

Variable	N	Mean	Std Dev	Minimum	Maximum
cmai	269	1.6171	2.9139	0.0000	12.0000
q1_sum	269	0.1487	0.6804	0.0000	4.0000
q2_sum	269	0.0000	0.0000	0.0000	0.0000
q3_sum	269	0.0000	0.0000	0.0000	0.0000
q4_sum	269	0.0613	0.3414	0.0000	4.0000
q5_sum	269	0.0000	0.0000	0.0000	0.0000
q6_sum	269	0.0149	0.1721	0.0000	2.0000
q7_sum	269	0.0000	0.0000	0.0000	0.0000
q8_sum	269	0.0000	0.0000	0.0000	0.0000
q9_sum	269	0.0000	0.0000	0.0000	0.0000
q10_sum	269	0.0000	0.0000	0.0000	0.0000
q11_sum	269	0.0000	0.0000	0.0000	0.0000
q12_sum	269	0.0074	0.1219	0.0000	2.0000
q13_sum	269	0.0000	0.0000	0.0000	0.0000
q14_sum	269	0.0000	0.0000	0.0000	0.0000
q15_sum	269	0.0223	0.2723	0.0000	4.0000
q16_sum	269	0.0929	0.5621	0.0000	4.0000
q17_sum	269	0.0074	0.1219	0.0000	2.0000
q18_sum	269	0.0892	0.4565	0.0000	4.0000
q19_sum	269	0.0929	0.4758	0.0000	3.0000
q20_sum	269	0.0000	0.0000	0.0000	0.0000
q21_sum	269	0.0000	0.0000	0.0000	0.0000
q22_sum	269	0.0074	0.1219	0.0000	2.0000
q23_sum	269	0.0000	0.0000	0.0000	0.0000
q24_sum	269	0.0000	0.0000	0.0000	0.0000
q25_sum	269	0.0000	0.0000	0.0000	0.0000
q26_sum	269	0.3271	0.9835	0.0000	4.0000
q27_sum	269	0.0000	0.0000	0.0000	0.0000
q28_sum	269	0.0000	0.0000	0.0000	0.0000
q29_sum	269	0.7454	1.4126	0.0000	4.0000
pds	270	16.5593	12.9124	-5.0000	41.0000
Thinking	270	4.5111	3.3292	0.0000	15.0000
Emotions	270	3.0148	3.3417	-6.0000	15.0000
Int_Environ	270	1.2222	1.5790	-4.0000	7.0000
Int_People	270	6.6926	4.7563	0.0000	16.0000
Activities	270	1.1185	3.0742	-4.0000	4.0000

BIBLIOGRAPHY

1. Agency for Health Care Policy: Recognition and Initial Assessment of Alzheimer's Disease and Related Dementias, Clinical Practice Guideline No. 19. Rockville, MD, U.S. Dept. of Health and Human Services, Publication No. 97-0703, 1996
2. Allen-Burge, R., Stevens, A. B., & Burgio, L. D. (1999). Effective behavioral interventions for decreasing dementia-related challenging behavior in nursing homes. *International Journal Of Geriatric Psychiatry*, 14(3), 213-228.
3. American Psychiatric Association. (2000). Delirium. In *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.).
4. Barrick, A., Sloane, P. D., Williams, C. S., Mitchell, C., Connell, B., Wood, W., & ... Zimmerman, S. (2010). Impact of ambient bright light on agitation in dementia. *International Journal Of Geriatric Psychiatry*, 25(10), 1013-1021.
5. Beck, C., Frank, L., Chumbler, N. R., O'Sullivan, P., Vogelpohl, T. S., et al. (1998). Correlates of disruptive behavior in severely cognitively impaired nursing home residents. *The Gerontologist*, 38(2), pages 189-198.
6. Berman, K. Brodaty, H., Withall, A., & Seeher, K. (2012). Pharmacological treatment of apathy in dementia. *The American Journal of Geriatric Psychiatry*, 20(2), 104-122.

7. Bliwise, B. L., Carroll, J. S., Lee, K. A., Nekich, J. C., Dement, W. C. (1993). Sleep and “sundowning” in nursing home patients with dementia. *Psychiatry Research, 48*, 211-292.
8. Buchanan, R. J., Wang, S., Hyunsu, J., & Graber, D. (2004). Analyses of gender differences in profiles of nursing home residents with Alzheimer’s disease. *Gender Medicine, 1*(1), pages 48-59.
9. Buckwalter, J. G., Sobel, E., Dunn, M. E., Diz, M. M., & Henderson, V. W. (1993). Gender differences on a brief measure of cognitive functioning in Alzheimer’s disease. *Archives of Nuerology, 50*, pages 757-760.
10. Burgio, L. D., Scilley, K., Hardin, J. M., & Hsu, C. (2001). Temporal patterns of disruptive vocalization in elderly nursing home residents. *International Journal of Geriatric Psychiatry, 16*(4), 378-386.
11. Chen, J. C., Borson, S., & Scanlan, J. M. (2000). Stage-specific prevalence of behavioral symptoms in Alzheimer’s disease in a multi-ethnic community sample. *American Journal of Geriatric Psychiatry, 8*(2), pages 123-133.
12. Cohen-Mansfield, J. (2007). Temporal pattern of agitation in dementia. *American Journal of Geriatric Psychiatry, 15*(5), 395-405.
13. Cohen-Mansfield, J. (2009). Agitated behavior in persons with dementia: The relationship between type of behavior, its frequency, and its disruptiveness. *Journal of Psychiatric Research, 43*, 64-69.
14. Cohen-Mansfield, J. & Libin, A. (2005). Verbal and physical non-aggressive agitated behaviors in elderly persons with dementia robustness of syndromes. *Journal of Psychiatric Research, 39*(3), pages 325-332.

15. Cohen-Mansfield, J., Thein, K., Dakheel-Ali, M., & Marx, M. S. (2010). Engaging nursing home residents with dementia in activities: The effects of modeling, presentation order, time of day, and setting characteristics. *Aging and Mental Health, 14*(4), 471-480.
16. Cohen-Mansfield, J., Watson, V., Meade, W., Gordon, M., Leatherman, J., & Emor, C. (1989). Does sundowning occur in residents of an Alzheimer's unit? *International Journal of Geriatric Psychiatry, 4*(5), 293-298.
17. Colling, K. B. (1999). Passive behaviors in dementia: Clinical application of the need-driven dementia-compromised behavior model. *Journal of Gerontological Nursing, 25*(9), 27-32.
18. Department of Health and Human Services (2012). Obama administration presents national plan to fight Alzheimer's disease. Retrieved from <http://www.hhs.gov/news/press/2012pres/05/20120515a.html>
19. Dyck, G. (1997). Management of geriatric behavior problems. *The Psychiatric Clinics of North America, 20*(1), 165-180.
20. Gauthier, S., Cummings, J., Ballard, C., Brodaty, H., Grossberg, G. et al. (2010). Management of behavioral problems in Alzheimer's disease. *International Psychogeriatrics, 22*(3), Pages 346-372.
21. Gerdner, L. A., Buckwalter, K. C., & Hall, G. R. (2005). Temporal patterning of agitation and stressors associated with agitation: Case profiles to illustrate the progressively lowered stress threshold model. *Journal of the American Psychiatric Nurses Association, 11*(4), 215-222.

22. Hirono, N., Mori, E., Yasuda, M., Ikejiri, Y., Imamura, T., et al. (1998). Factors associated with psychotic symptoms in Alzheimer's disease. *Journal of Neurology, Neurosurgery, and Psychiatry*, *64*, pages 648-652.
23. Jackson, M. E., Drugovich, M. L., Fretwell, M. D., Spector, W. D., Sternberg, J. & Bosenstein, R. B. (1989). Prevalence and correlates of disruptive behavior in the nursing home. *Aging Health*, *1*(3), pages 349-369.
24. Kolanowski, A. & Litaker, M. (2006). Social interaction, premorbid personality, and agitation in nursing home residents with dementia. *Archives of Psychiatric Nursing*, *20*(1), 12-20.
25. Lam, C. L., Chan, W. C., Mok, C. C. M., Li, S. W., & Lam, L. C. W. (2006). Validation of the Chinese Challenging Behaviour Scale: clinical correlates of challenging behaviours in nursing home residents with dementia. *International Journal of Geriatric Psychiatry*, *21*, pages 792-799.
26. Lovheim, H., Sandman, P. O., Karlsson, S., & Gustafson, Y. (2009). Sex differences in the prevalence of behavioral and psychological symptoms of dementia. *International Psychogeriatrics*, *21*(3), pages 469-475.
27. Martin, J., Marler, M., Shochat, T., & Ancoli-Israel, S. (2000). Circadian rhythms of agitation in institutionalized patients with Alzheimer's disease. *Chronobiology International: The Journal Of Biological & Medical Rhythm Research*, *17*(3), 405-418.
28. McCann, J. J., Gilley, D. W., Bienias, J. L., Beckett, L. A., & Evans, D. A. (2004). Temporal patterns of negative and positive behavior among nursing home residents with Alzheimer's disease. *Psychology and Aging*, *19*(2), 336-345.

29. Pieroni, S. (2009). Behavioural and psychological symptoms of dementia. *Prescriber*, 17(22), pages 58-64.
30. Prado-Jean, A., Couratier, P., Druet-Cabanac, M., Nubukpo, P., Bernard-Bourzeix, L., et al. (2010). Specific psychological and behavioral symptoms of depression in patients with dementia. *International Journal of Geriatric Psychiatry*, 25, pages 1065-1072.
31. Ott, B. R., Tate, C. A., Gordon, N. M., Heindel, W. C. (1996). Gender differences in the behavioral manifestations of Alzheimer's disease. *Journal of the American Geriatrics Society*, 44(5), pages 583-587.
32. Schreiner, A. S. (2001). Aggressive behaviors among demented nursing home residents in Japan. *International Journal of Geriatric Psychiatry*, 16, pages 209-215.
33. Smith, M., Gerdner, L. A., Hall, G. R., & Buckwalter, K. C. (2004). History, development, and future of the progressively lowered stress threshold: A conceptual model for dementia care. *Journal of the American Geriatrics Society*, 52(10), 1755-1760.
34. Steinberg, M., Corcoran, C., Tschanz, J. T., Huber, C., Welsh-Bohmer, K., et al. (2006). Risk factors for neuropsychiatric symptoms in dementia: The Cache County Study. *International Journal of Geriatric Psychiatry*, 21, pages 824-830.
35. Testad, I. I., Aasland, A. M., & Aarsland, D. D. (2007). Prevalence and correlates of disruptive behavior in patients in Norwegian nursing homes. *International Journal Of Geriatric Psychiatry*, 22(9), 916-921.

36. Woods, D. L., Kim, H., & Yefimova, M. (2011). Morning cortisol in relation to behavioral symptoms of nursing home residents with dementia. *Biological Research for Nursing, 13*(2), 196-203.
37. Yevchak, A. M., Steis, M. R., & Evans, L. K. (2012). Sundown Syndrome: A systematic review of the literature. *Research in Gerontological Nursing, 5*(4), 294-303.
38. Yu, F., Kolanowski, A. M., & Litaker, M. (2006). The association of physical function with agitation and passivity in nursing home residents with dementia. *Journal of Gerontological Nursing, 32*(12), 30-36.
39. Yury, C. A. & Fisher, J. E. (2007). Preventing excess disability in an elderly person with Alzheimer's disease. *Clinical Case Studies, 6*(4), 295-306.
40. Zhu, X., Casadesus, G., Webber, K. M., Atwood, C. S., Bowen, R. L., et al. (2008). Parallels between neurodevelopment and neurodegeneration: A case study of Alzheimer's disease. *Handbook of Neurochemistry and Molecular Neurobiology*, Pages 147-155.
41. Zuidema, S. U., de Jonghe, J. F. M., Verhey, F. R. J., & Koopmans, R. T. C. M. (2006). Agitation in dutch institutionalized patients with dementia: Factor analysis of the dutch version of the cohen-mansfield agitation inventory. *Dementia and Geriatric Cognitive Disorders, 23*(1), 35-41.

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Honors and Awards

- Debono Memorial Scholarship, AA&MDS Association, August 2012
- Honor Society Inductee, Golden Key International Honour Society, October 2011
- Student Leadership Scholarship, Pennsylvania State University, January 2010, 2011
- Dean's List, Pennsylvania State University, 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012
- Honor Scholarship, HHD Alumni Board, August 2009, 2010, 2011, 2012
- Bayles Memorial Scholarship, Schreyer Honors College, August 2009, 2010, 2011, 2012

Leadership

Area Administrator for Young Life Centre County – September 2010 – Present

- Plan and organize leadership training, fundraising, fellowship, and other events
- Serve as the president of Young Life at Penn State

Professional Experience

- Unit Assistant, West Shore Surgery Center, 645 hours, May 2011 – December 2012
- Shadow/Injury Clinic Assistant, Orthopedic Institute of Pennsylvania, 137 hours,
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- Emergency Room Volunteer, Community General Osteopathic Hospital, 34 hours, June
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- Inpatient Rehabilitation Volunteer, Community General Osteopathic Hospital, 61 hours,
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Research Interests

Generally, I have interests in dementia and gerontological research, particularly the behavioral and psychological symptoms seen with advancing decline. Specifically, I am interested in looking at how agitation and passivity behaviors interact and how these symptoms differ by gender.