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Psychometric evaluation of a proposed, Alzheimer's aggression scale

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PSYCHOMETRIC EVALUATION OF A PROPOSED, ALZHEIMER'S AGGRESSION
SCALE

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Social Work

in

The School of Social Work

by
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Abstract

Aggressive behavior is a common symptom of mid- to late-stage Alzheimer's disease, causing unique challenges for caregivers and healthcare professionals. In previous research, aggressive behavior related to dementia was linked to higher caregiver distress and burden. The purpose of this study was to examine the psychometric properties of an aggressive behavior subscale of the Revised Memory and Behavior Problem Checklist (RMBPC) among Alzheimer's disease caregivers. The subscale measures the frequency of aggressive behavior and the caregiver's reaction. The sample consisted of 419 caregivers reporting some frequency of aggressive behavior by the care recipient. Exploratory factor analysis was favorable. Convergent validity for the aggressive behavior subscale was established through its correlations with caregiver burden, caregiver coping style, and caregiver resilience. The association of these factors was theoretically demonstrated through the Pearlin Stress Process Model. In the current study, aggressive behavior was shown to be associated with a significant increase in caregiver burden and the use of emotion- and avoidance-focused coping techniques, and significant decrease in caregiver resilience. The scale was shown to be reliable, with significant inter-item correlations. The results concluded an aggressive behavior subscale of the RMBPC is a valid and reliable measure for Alzheimer's disease caregivers.

Chapter 1: Introduction

In the United States, one in eight individuals over 65 years of age suffers from Alzheimer's disease (AD) (Alzheimer's Association [AA], 2011). According to the Alzheimer's Association, once a person reaches 85 years of age the risk increases to a one in two chance of getting the disease. As the nation's population ages, experts predict that by 2050 there will be one million new cases of AD each year. There is no cure for AD, which is a terminal illness, and treatment options are few and short-term at best (AA, 2010a). In the United States, it is estimated that approximately 70% - 89% of individuals with AD live at home, with varying percentages in urban and rural settings (Alzheimer's Disease International [ADI], 2010). Such a high percentage indicates that most day-to-day AD care is provided by informal, unpaid caregivers such as the children, spouses, siblings, grandchildren, and friends of individuals with AD (AD, 2010a). About half of AD individuals living at home exhibit aggressive behavior, creating greater challenges for their informal caregivers (Eastley & Wilcock, 1997; Eustace et al., 2002; Hart et al., 2003). The following thesis is a psychometric study of a scale measuring the frequency of and caregiver response to aggressive behavior related to AD.

Aggressive behavior is part of wide array of disruptive behavior common to AD, and is more likely to occur in the middle to late stages of the disease (Khachaturian & Radebaugh, 1996). Other types of disruptive behavior are wandering, nighttime restlessness, and repetitive verbal or non-verbal behavior (Miyamoto et al., 2002; Teri et al., 1992). Along with disruptive behavior, memory loss and emotional symptoms such as depression and anxiety are the most common characteristics of AD (Teri et al.).

Caregiver burden is an important factor when considering AD aggression, especially as so many individuals with AD are living at home and being cared for by loved ones (ADI, 2010).

Caregiver burden is characterized by the psychological, emotional, social, physical, and financial strain resulting from one's role of caring for someone else (AA, National Alliance for Caregiving [NAC], 2004; Casado, 2008; Phillips et al., 2009; Shultz et al., 1997). Caregivers of individuals with AD face unique challenges. These caregivers are faced not only with the declining physical and cognitive ability of their loved one, but also with the management of difficult symptoms such as those mentioned previously (Khatchaturian & Radebaugh, 1996). Caregivers may feel a sense of guilt that they are not providing enough care, even when the task consumes a large portion of their time (Zarit et al., 1985).

Scales measuring symptoms of AD and caregiver burden are helpful tools for healthcare professionals to identify particular needs and possible interventions for patients and their families (Etters, Goodall, & Harrison, 2008). When used as a regular screening tool, these scales can monitor the progression of AD and how the caregiver is managing the added burden (Etters et al., 2008). Effective scales in measuring dementia symptoms include the Mini-Mental Status Exam, which focuses on memory and cognition, and the Hamilton Depression Rating Scale, which focuses on depressive symptoms (Teri et al., 1992). Caregiver burden may be measured using scales such as the Zarit Burden Interview (Zarit et al., 1985) and the Caregiver Strain Index (Robinson, 1983).

The Revised Memory and Behavior Problems Checklist is a valid and reliable scale measuring both frequency of dementia-related behavior and caregiver burden related to the behavior (Teri et al., 1992). The scale divides dementia symptoms into three groups or subscales: memory symptoms, depressive symptoms, and disruptive symptoms. The current study will narrow down the disruptive symptoms of the scale to the aggressive behavior items, and determine if an aggressive behavior subscale is a valid and reliable measure for clinicians.

This paper begins with a review of the literature. First, AD and dementia is defined, as well as their stages and characteristics. A discussion of AD caregivers follows, including a description of caregivers and caregiver burden, as well as the measurement of caregiver burden. Third, the existing research regarding AD aggression and its effects on caregivers are discussed. The Revised Memory and Behavior Problem Checklist is further defined and a theoretical foundation discussed. Finally, the purpose of the paper and the research questions are identified.

The literature review is followed by the methods of the study and its results. A discussion of the results includes its relation to previous research, implications for social workers, and study limitations.

Chapter 2: Review of the Literature

Alzheimer's disease: An Overview

As Alzheimer's disease (AD) caregivers comprise the population of this study, it begins by briefly examining AD, including signs, symptoms, stages, and treatment. This knowledge aids the understanding of caregiver challenges and experiences. German pathologist and psychiatrist Alois Alzheimer was the first to publish a description of the disease in one of his patients in 1906 (Cox, 2007). The patient, Auguste D., suffered from memory impairment and disorientation. As her illness progressed, she experienced hallucinations and a steady and gradual loss of cognitive function before she died. Alzheimer, believing that mental illness is caused by physical changes in the brain, ordered an autopsy of Auguste D.'s brain (Khachaturian & Radebaugh, 1996). Doctors found *intranuclear neurofibrillary tangles* and *neuropil plaque*, in addition to other abnormalities (Khachaturian & Radebaugh). Today, these lesions remain the most important diagnostic implications for dementia, specifically AD (Khachaturian & Radebaugh).

Organic brain syndrome was the popular diagnosis for dementia until the 1980s, when Alzheimer's disease and other forms of dementia became known as separate diseases, with different symptoms and etiologies (Cox, 2007). Today, the DSM-IV defines dementia as a disorder "characterized by multiple cognitive deficits that include impairment in memory" (American Psychological Association [APA], 2000; p. 135). Health providers screen individuals using brief tests like the Mini-Mental Status Examination, which helps to determine if the individual is suffering from dementia or delirium, or if the symptoms are caused by depression (Cox).

AD is a neurodegenerative disease with memory and cognitive deficits exceeding the scope of normal aging (Khachaturian & Radebaugh, 1996). It is the most common form of

dementia (Soukup, 1996). The usual age of onset is after 65 years, though earlier age of onset is not uncommon (Khachaturian & Radebaugh). The most common method of staging AD divides it into early, middle, and late stages (Soukup).

The first area of the brain to be affected by AD is the hippocampus, and symptoms are manifested in the form of short-term memory loss (Cox, 2007). Other early-stage signs of AD include disorientation and problems in language and abstract thinking (Soukup, 1996). With these first symptoms, it is common for the individual to attempt to hide deficits in cognition and memory (Soukup). However, as the disease progresses, and more areas of the brain are affected, memory loss becomes more noticeable, and family members may observe personality changes, aphasia (speech difficulties), apraxia (motor difficulties), agnosia (inability to recognize everyday objects), and disturbances in executive functioning (organizing and planning for the future) (APA, 2000).

In the early stage of AD, confusion, depression, and anxiety are common, as the individual recognizes the loss of memory and cognitive abilities (Soukup, 1996). The middle stage is characterized by behavioral problems such as wandering, agitation, and violence, partially caused by the inability to express needs or perform tasks independently (Khachaturian & Radebaugh, 1996). In the late stage, symptoms include withdrawal, incontinence, and severely limited motor function (Khachaturian & Radebaugh).

The two main pharmacological treatments for AD are neurotransmitter replacement, which attempts to reverse neurological damage, and neuroprotective agents, which attempt to slow the disease's progression (Khachaturian & Radebaugh, 1996). There are currently five medications approved by the Federal Drug Administration to slow the progression of the disease (AA, 2010a). However, these drugs are only effective for six to twelve months after beginning

treatment, and only slow progression in half of the individuals taking them. Doctors may also prescribe anti-depressants, neuroleptics, antipsychotics, and sedatives to help control emotional and behavioral symptoms (Khachaturian & Radebaugh). Non-pharmacological treatments can also be very effective in mediating symptoms. They include behavioral interventions, making environmental changes, and providing education and support to caregivers. Because informal caregivers provide the majority of care to older adults with dementia, the health and social work profession are focusing more research on how to involve caregivers in treatment, and how to better care for the mental and physical wellbeing of caregivers themselves (AA, 2010a; Cox, 2007).

Caregivers and Caregiver Burden

Caregivers provide help with everyday tasks as well as medical, emotional, and financial support to those unable to independently care for themselves. Formal caregivers are nurses, medical aides, doctors, and others formally trained to care for the ill or disabled. Informal, unpaid caretakers are parents, children, siblings, and neighbors, who may live with or separately from the care recipient (AA, 2010a).

While the number of male caregivers is rising, most informal caregivers, from 60-75%, are women (AA, 2010a; Family Caregiver Alliance [FCA], 2003). Women also provide most of the day-to-day care (FCA). The majority of caregivers are children of the care recipient, followed by spouses, other relatives, and non-relatives (AA, 2010a; FCA). Around 20% of caregivers caring for someone with dementia are over 50 years old (FCA). These caregivers are mostly middle-aged (FCA), and as many as 30% also care for children or grandchildren in the home, earning them the name the Sandwich Generation (AA, 2010a).

The demographics of caregivers vary between ethnic groups. Hispanic caregivers tend to be younger and more likely to be the primary caregiver than other ethnic groups (National Alliance for Caregiving [NAC], American Association for Retired Persons [AARP], 2009). A higher percentage of Hispanics make less than \$50,000 a year and have children under eighteen years of age in the household (NAC, AARP, 2009). In contrast, African American caregivers are older, with an average of 48 years of age (NAC, AARP). A higher percentage of African American caregivers are non-relatives than any other group (National Academy on an Aging Society [NAAS], 2000).

Caregiver responsibilities include managing the household and finances, providing transportation to doctors' appointments, overseeing medication adherence, arranging care when the caregiver is absent, and providing help with activities of daily living such as bathing, dressing, and eating (AA, 2010a). The drain of such responsibilities on the person's time, finances, and energy contribute greatly to caregiver burden.

Caregiver burden is generally acknowledged as the psychological, social, physical, and financial consequences a person experiences as a result of caregiving (Phillips, Gallagher, Hunt, Der, & Carroll, 2009). Emotionally, caregivers may feel overwhelmed by the challenges of caregiving, and guilty that they are not doing enough to help their loved one (Gonyea, Paris, & de Saxe Zerden, 2008; Phillips et al., 2009). Other emotions associated with caregiving are resentment, anger, and loneliness (Ross, Holliman, & Dixon, 2003). As personality changes are common in the middle to late stages AD, caregivers often find they no longer know their parent or spouse as they did before (Khatchaturian & Radebaugh, 1996). They must also cope with end-of-life issues as they face the approaching death of their loved one (Hebert, Dang, & Schulz, 2006). Preparing for loss and undergoing the grieving process can be more difficult due to the

emotional energy and time devoted to their loved one's care, and the closeness developed during that time (Cohen, Colantonio, & Vermich, 2002; Hebert et al., 2006). These emotions take their toll. Studies find that caregivers are more likely to experience symptoms of depression, anxiety, interpersonal conflict, and other forms of psychological distress (Phillips et al.; Pot, Deeg, & Van Dyck, 1997). As the motor and cognitive abilities of older adults with dementia decline, the psychological well-being of their caregiver tends to decline also (Pot et al., 1997). Psychological symptoms beginning as a result of caregiving can persist even after the care recipient is institutionalized or has died (Pot et al.).

Caregiving can also be a strain on an individual's social life. Family members of adults with dementia spend an average of 21 hours a week caring for their loved one, and nearly half provide over 40 hours of care a week (AA, 2010a). This is time spend away from their jobs, curricular activities, families, and friends. Many caregivers are reluctant to ask for outside or formal help, and have the unrealistic expectation that they perform the task "perfectly" on their own, causing them to devote more time to caregiving, and less time to their personal pursuits (Marquez-Gonzales, Losada, Izal, Perez-Rojo, & Montorio, 2007; Ross et al., 2003). Further, the social stigma and discrimination inherent in their loved one's illness may isolate them even more from their community (Jonker & Greef, 2009).

Numerous studies document the toll caregiving has on an individual's physical wellbeing (Andren & Elmstahl, 2008; Kiecolt-Glaser, Dura, Speicher, Trask, & Glaser, 1991; Lee, Colditz, Berkman, & Kawachi, 2003; Schulz & Beach, 1999). Because of the considerable amount of time spent caregiving, caregivers report they do not get enough sleep and are not able to devote enough time to self-care, such as exercising and resting adequately when they are ill (Schulz et al., 1997). Therefore, not surprisingly, caregivers with high caregiver burden perceive their

health more poorly than those with low caregiver burden or non-caregivers (Andren & Elmstahl; Schulz et al.). Studies find caregivers are more likely to experience physical health problems, including high blood pressure, depressed immune system, coronary heart disease, and even a higher mortality rate than non-caregivers (Kiecolt-Glaser et al., 1991; Lee et al., 2003; Schulz & Beach).

Caregiver burden is also positively correlated with a need for financial support (Casado, 2008). Out-of-pocket expenses for caregivers average \$219 a month (AA, 2010a). Half of Alzheimer's caregivers are employed full-time (AA, 2004). While the majority of caregivers do not report financial strain, most (70%) report difficulty in managing work and caregiver responsibilities and choose to sacrifice their careers by missing work, turning down promotions, taking leaves of absence, losing job benefits, and/or cutting down work hours. Some choose to leave their jobs altogether.

Ethnic differences play a large role in caregiver burden. Ethnic minority caregivers provide more hours of care, have fewer financial resources, and utilize informal support more frequently (Pinquart & Sörensen, 2005). While ethnic minority caregivers are healthier psychologically, they are less healthy physically than whites (Pinquart & Sörensen). Asian caregivers have a higher income and more education than other ethnicities (NAC & AARP, 2009). However, they utilize formal supports such as home health and respite care less frequently than whites, perhaps due to a language barrier (Pinquart & Sörensen). Asian caregivers also have a higher likelihood of depression. In contrast, African Americans report lower levels of depression, anxiety, stress, and burden (Haley et al., 2004; Pinquart & Sörensen). They are more likely to view caregiving as a shared burden and have larger support networks (Cuellar, 2002). Whites report more stress related to caregiving, feel greater responsibility, and are more likely to

view caregiving as a personal (not shared) issue (Cuellar, 2002; Haley et al.). African Americans also perceive more benefits from caregiving than other ethnicities (Haley et al.; Pinquart & Sörensen).

Positive Aspects of Caregiving

While caregiver burden provides many reasons for concern, it is important to recognize that it is only a part of the caregiving experience. There are many positive benefits and emotions associated with caregiving. As one caregiver stated, “The benefits are immeasurable. The love, warmth, and feelings of trust that you build with your loved one are tremendous. You have given a small part of what your parents have done for you” (Ross et al., 2003, p. 88). In a study following almost 300 caregivers, most of whom were caring for a person with dementia, Cohen et al. (2002) found that 70% of caregivers were happy in their role. Many caregivers reported feeling a sense of fulfillment, enjoyment, and companionship.

Caregivers also find their role and the time with their loved one very meaningful (Butcher et al., 2001). They are able to form a closer bond, reminisce on happy times, and participate in enjoyable activities with the care recipient (Butcher, Holkup, & Buckwalter, 2001). Individuals realize that though caregiving presents many challenges, the time spent with their loved one before the illness ultimately progresses is precious and invaluable (Gonyea et al., 2008).

Measuring Caregiver Burden

Researchers have developed many scales to measure caregiver burden. Three of the most popular are the Revised Memory and Behavior Problem Checklist (RMBPC), the Caregiver Strain Index (CSI), and the Zarit Burden Interview (ZBI) (Teri et al., 1992; van Exel et al., 2004; Zarit, Orr, & Zarit, 1985). The RMBPC is a 24-item caregiver-report scale measuring care

recipient behavior and the caregiver's reaction (Teri et al.). Because the RMBPC is the main subject, it will be discussed in further detail later in this paper.

Robinson (1983) developed the CSI for individuals providing care for older adults. The index is a reliable and valid scale (Cronbach's $\alpha = 0.86$, $p < .05$) (Robinson, 1983; van Exel et al., 2004). Its short length also increases its feasibility in a clinical setting (van Exel et al.). The CSI is a 13-question scale administered to the caregiver, with response choices of "yes" or "no" (Sullivan, 2004). The test administrator asks the caregiver if different areas of their life have been made more difficult by caregiving, including employment, finances, physical health, social health, and time. Example items are "Sleep is disturbed", "It is a physical strain", and "Some behavior is upsetting". A combined score of 7 or above indicates a need for intervention. Researchers utilized the CSI for individuals caring for various age groups and illnesses, including individuals with cancer (Donnelly et al., 2008), individuals with HIV (Pirraglia et al., 2005), intellectually disabled children (Tsai & Wang, 2009), and stroke victims (van Exel et al.). In past research, the CSI positively correlates caregiver strain with caregiver depression (Donnelly et al., 2008; Pirraglia et al., 2005), low socio-economic status (Donnelly et al.), and increased level of the care recipient's disability (Tsai & Wang, 2009; van Exel et al.).

The ZBI is one of the most commonly used scales to measure caregiver burden, and has shown to be valid and reliable (Bachner & O'Rourke, 2007). The ZBI was developed in 1980 specifically for informal AD caregivers (Zarit et al., 1985). However, like the CSI, it has also been used successfully with various other illnesses, including cancer, stroke, developmental disorders, and psychiatric illnesses (Bachner & O'Rourke). It is a self-administered, 22-item scale examining the caregiver's feelings and perceptions regarding caregiving, including the psychological and physical health effects (Zarit et al.). Previous research links higher ZBI scores

with increased incidence of caregiver depression (Ramos-Cerquera, Torres, Torresan, & Negreiros, 2008) and behavior disturbances in the care recipient (Arai, Matsumoto, Ikeda, & Arai, 2007; Coen, Swanwick, O'Boyle, & Coakley, 1997).

Alzheimer's Disease and Aggression

Caregiving for family members with AD provides many additional obstacles. In the early stage, the insidious nature of the disease may cause the caregiver to question if the family member is ill at all (Cox, 2007). As the disease progresses, however, caregivers must not only adjust to the care recipient's gradual decline of memory and cognitive function, but also to the decline of motor abilities. As the care recipient's disability increases, the caregiver's sense of burden increases also (Pot et al., 1997). Another important factor shown to contribute to caregiver burden is aggressive behavior on the part of the care recipient (Coen et al., 1997). Aggression can be verbal or physical in nature, and usually appears in the middle to late stages of AD, though not every individual with AD presents signs of aggression (Khachaturian & Radebaugh, 1996). The next section describes AD aggression, its causes and treatment, and its impact on the caregiver.

Aggression signifies an action with the intent to harm and the expectation of aversive consequences (Kool, 2008). For example, the act of a physician giving a shot to a screaming child, while causing the child pain, is not considered aggressive because her intentions are to benefit the child, rather than harm her/him. A child hitting another in order to get a toy, however, is aggressive: the child has the intent of doing harm with the expectation that the other child would be hurt and upset enough to drop the toy.

Aggression can be physical or verbal, active or passive (Kool, 2008). Examples of active verbal aggression in AD individuals include speaking in an aggressive or angry way, or verbally

threatening another individual (Keene et al., 1999). Active physical aggression can present in the form of hitting, pushing, kicking, slapping, or spitting (Keene et al.). Passive aggression in AD individuals can also be verbal, such as refusing to speak, or physical, such as refusing to move (Kool). The current study focuses on instances of active aggression. In the literature, aggression falls into the category of behavioral and psychological symptoms of dementia (Eustace et al., 2002; Hart et al., 2003; Hollingsworth et al., 2006; Margallo-Lana et al., 2001; Teri et al., 1992). Other problem behavior includes wandering, repetitive questioning, and incontinence (Khachaturian & Radebaugh, 1996).

Studies report conflicting results on whether aggression is more common in the mentally ill than in the general population (Link, Andrews, & Cullen, 1992). More recently, research suggests that aggression, while rare in relation to most mental illnesses, occurs more frequently in instances of paranoia or psychosis (Link et al., 1992). Similarly, the likelihood of aggression in individuals with dementia rises when paranoia and psychotic symptoms are more likely to occur, from the middle to late stages of the disease (Hart et al., 2003; Hollingsworth et al., 2006; O'Leary, Jyringi, & Sedler, 2005). In a five year longitudinal study by Eustace et al. (2002), aggressive symptoms increased in prevalence and severity as the illness progressed. The prevalence and frequency of aggressive behavior tends to rise as the impairment worsens and then decline in the most severe stages (Brodaty et al., 2001; Cox, 2007; Menon et al., 2001; Miyamoto, Ito, Otsuka, & Kurita, 2002). Aggressive symptoms in early-stage dementia or AD are uncommon (Khachaturian & Radebaugh, 1996).

The prevalence of aggression varies from study to study. Eastley and Wilcock (1997) found that 35% of 262 non-institutionalized AD individuals showed signs of aggression. In a study of over 600 institutionalized individuals with dementia, 82% showed signs of aggression

(Brodaty et al., 2001). Other studies find the prevalence of aggression in between (Eustace et al., 2002; Hart, 2003; Hollingsworth et al., 2006). Aggressive behavior presents a major concern and burden for formal and informal AD caregivers (Coen et al., 1997). As such, it is a leading cause of institutionalization among those with dementia (Ballard, Day, Sharp, Wing, & Sorenson, 2008; Coen et al., 1997; Haupt & Kurz, 1993).

Verbal aggression is more common in individuals with dementia than physical aggression (Eastley & Wilcock, 1997; Keene et al., 1999). In a ten-year longitudinal study, verbal aggression also lasted the longest (Keene et al.). Keene et al. found that physical aggression occurred more often in individuals with severe dementia, and was most likely to continue until the individual's death. While evidence suggests that both types of aggressive behavior can last until death, they tend to decrease once the individual becomes immobile (Keene et al.; Miyamoto et al., 2002).

Individual and environmental factors can cause AD aggression (Khachaturian & Radebaugh, 1996). Researchers found many individual traits correlate with aggressive behavior. The most common characteristic of individuals with aggression is impaired cognitive and motor ability (Eastley & Wilcock, 1997; Eustace et al., 2002; Khachaturian & Radebaugh). Males exhibit aggressive symptoms more frequently than females (Eastley & Wilcock; Eustace et al., 2001; Khachaturian & Radebaugh). A comorbidity of dementia and depression also increases the likelihood of aggression (Brodaty et al., 2001; Menon et al., 2001; O'Leary et al., 2005).

Evidence suggests that a previous history of mental illness, alcoholism, and conduct problems in childhood may predispose an AD individual to aggression (Bedford, Melzer, & Guralnik, 2001; O'Leary et al.). Other psychotic symptoms such as delusions and paranoid ideation associate with increased aggressive behavior (Eustace et al., 2001; Keene et al., 1999).

Studies found a correlation with the presence of pain as well (Buffum, Miaskowski, Sands, & Brod, 2001; Manfredi et al., 2003). AD individuals may find it difficult to relay messages about their physical wellbeing, including those with vocal ability (Buffum et al., 2001). Researchers found that individuals unable to communicate their discomfort or pain lash out through agitated and aggressive behavior at their caregivers (Buffum et al.; Manfredi et al.).

Environment plays an important role in managing aggression. Certain environmental factors, such as the use of restraints or noisiness, can increase the likelihood of aggression (Khachaturian & Radebaugh, 1996). As impairment rises, so does the need for intimate caregiving. Intimate caregiving entails helping with many activities of daily living, such as bathing, dressing, and toileting (Burgener, Jirovec, Murrell, & Barton, 1992). Studies show that intimate caregiving is the most common environmental trigger of aggression in individuals with dementia (Burgener et al., 1992; Keene et al., 1999). The frustration the individual feels due to the inability to complete the task oneself and the intrusive nature of the aid attribute to the cause of aggressive behavior. Overall, the causes of aggression vary according to the individual, and some are yet unknown. Keene et al. found that while intimate caregiving was the most frequent cause of aggression, the second most frequent was some unexplained stimulus. Nevertheless, doctors and clinicians can tailor interventions according to the individual and the environmental stimuli.

Research conflicts on the subject of ‘sundowning’ or ‘sunrising’, a phenomenon wherein the individual’s agitated symptoms increase in the early morning or early evening hours (Martin, Marler, Schochat, & Ancoli-Israel, 2000; Nowak & Davis, 2007; Theison, Geisthoff, Förstl, & Schröder, 2009). Nowak and Davis (2007) found that physically aggressive behavior typically occurred around the same time every day, even if it was not at sunrise or sunset. Martin et al.

(2000) found similar results while observing agitated behavior, strengthening evidence that agitation can be connected to temporal rhythms. Medications and factors contributing to circadian rhythms, such as sleep and exposure to bright light, can play a role in rhythms of agitation (Martin et al.).

The treatment of AD aggression utilizes pharmacological and non-pharmacological interventions. Physicians prefer the use of non-pharmacological interventions over medication, because of the risk of adverse side effects (Zec & Burkett, 2008). However, doctors frequently prescribe certain medications to manage or prevent aggression when other interventions fail (Herrmann & Lanctôt, 2007). Doctors prescribe atypical antipsychotics, or neuroleptics, most frequently (Schneider et al, 2006; Zec & Burkett). A study of six nursing care facilities found that 41% of patients with behavioral problems currently took neuroleptics (Margallo-Lana et al., 2001). These include medications such as risperidone and olanzapine (Schneider et al., 2006; Zec & Burkett). Lately, researchers question the effectiveness of these drugs (Ballard et al., 2008). A recent study of over 400 AD individuals with behavioral symptoms found that antipsychotics are ineffective when compared to a placebo (Schneider et al.). Additionally, doctors often discontinued the medications not long after prescribing them because of the severity of adverse side effects, including Parkinsonism, weight gain, sedation, cardiovascular trouble, and even death (Schneider et al.).

Because of this evidence, research on non-antipsychotic drugs in the medical community continues to grow (Tariot et al., 1998). Though still untested for long-term effects, anti-convulsant medications provide a safer and more effective alternative to reducing aggressive behavior. Researchers find that a drug called memantine, which is used to combat cognitive and behavioral symptoms of AD, can prevent aggressive symptoms in individuals in the moderate to

severe stages (Gauthier, Loft, & Cummings, 2008). Doctors can also try to manage symptoms which may cause aggression. Opioid medications reduce aggressive behavior when the individual is in pain (Buffum et al., 2001; Manfredi et al., 2003). Because of the correlation between depression and aggression, antidepressants are another option. However, the evidence of antidepressants reducing aggressive behavior is mixed and currently unsubstantiated (Herrmann & Lanctôt, 2007). Most medications have adverse side effects (Herrmann & Lanctôt). Doctors and caregivers must weigh the cost and benefit of using medication to moderate aggression.

Non-pharmacological interventions provide a safer and more long-lasting alternative. Non-pharmacological approaches include environmental changes, behavioral therapy, and caregiver training (Khachaturian & Radebaugh, 1996). While many techniques show promise in alleviating psychological and behavioral symptoms in dementia, few specifically target aggression (Buchanan, Christenson, Ostrom, & Hofman, 2007). A study comparing a typical nursing home unit to a special care unit found a significant reduction in verbal agitation when residents had access to outdoors, natural light in the rooms and hallways, private restrooms, and were allowed to place personal items such as photos and artwork around their room (Wilkes, Fleming, Wilkes, Cioffi, & LeMiere, 2005). Social skills training for the AD individual, including modeling, role play, and feedback, can also reduce verbal aggression (Vaccarro, 1990). Most non-pharmacological interventions focus on the formal or informal caregiver.

Bathing is one of the most frequent precipitators of aggression in older adults (Burgener et al., 1992). Sloane et al. (2004) found that by making the bathing experience more personal and relaxing, aggression during bathing decreases up to 60%. Burgener et al. also found that allowing more autonomy during bathing made the individual calmer and more functional.

In an institutional setting, the behavior of the caregiver during intimate caregiving significantly affects the care recipient's behavior (Burgener et al., 1992). For this reason, caregiver education is an essential part of behavioral intervention (Huang, Lotus Shyu, Chen, Chen, & Lin, 2003; Khachaturian & Radebaugh, 1996). In a study on caregiver response, care recipients were calmer, more attentive, and more functional when the caregiver smiled often (Burgener et al.). They were also more social and at ease with the caregiver. Informal caregiver training in an in-home setting decreased verbal aggression in AD care recipients (Huang et al., 2003). The training included identifying problem behaviors, their environmental causes, and finding ways to modify environmental stimuli (Huang et al.).

For numerous reasons, aggression causes psychological distress for the caregiver, and contributes greatly to caregiver burden (Coen et al., 1997; Hart et al., 2003; Miyamoto et al., 2002). Of many behavioral disturbances related to AD, including irritability, apathy, and sleep and appetite disruption, caregivers report higher distress in the presence of aggression (Hart et al.). VandeWeerd and Paveza (2005) found that caregivers of verbally aggressive elders were eight times more likely to be verbally aggressive toward the care recipient. This evidence points not only to the stress the caregiver feels, but also to the urgent need for clinicians to provide intervention and support once aggression is noted.

Burden related to aggression increases with lack of informal support (Coen et al., 1997). Caregivers of individuals with early-onset dementia find it more difficult to cope with behavioral disturbances than caregivers of individuals with late-onset dementia (Arai et al., 2007). The cause of this disparity could be the comparatively younger age of the caregiver, or the deviation from age-related norms (Arai et al., 2007). Research shows that aggressive behavior negatively affects female caregivers more than male caregivers (Coen et al., 1997; Robinson, Adkinsson, &

Weinrich, 2001). The probability that females provide intimate care more often than males gives a possible explanation for the gender difference (Robinson et al., 2001).

Revised Memory and Behavior Problems Checklist

The current study uses the RMBPC to assess AD individuals and their caregivers' burden. Zarit et al. (1987) designed the Memory and Behavior Problems (MBP) checklist to measure the frequency of problem behaviors and the subsequent distress of the caregiver. The purpose of the scale was to demonstrate the importance of education and training in the management behavioral problems to alleviate caregiver burden. This self-administered checklist contains thirty questions for the caregiver regarding the frequency of inappropriate behavior and deficits in activities of daily living. The caregivers also rates their distress related to the behavior on a Likert scale.

Terri et al. (1997) also recognized the impact of dementia-related behavioral problems on caregivers, as well as the possibility of managing those behaviors. They developed the RMBPC to focus on those behaviors which might be managed or modified. The researchers hoped that using this scale would allow doctors and clinicians to identify the most bothersome behavior and develop interventions to decrease it (Teri et al., 1992). They took many items from the original MBP checklist and added a few of their own, categorizing the problems according to memory, depression, and disruption. Like the MBP checklist, the RMBPC asks caregivers to relate the frequency of the care recipient's behavior and the caregiver's emotional response (Teri et al.).

The researchers administered the RMBPC to around 200 caregivers of individuals with dementia, and compared the results to scales with established reliability and validity (e.g., the Mini-Mental Status Exam, the Hamilton Depression Rating Scale to assess patient depression, the Center for Epidemiological Studies—Depression Scale to assess caregiver depression, and

the Caregiver Stress Scale) (Teri et al., 1992). The study found the RMBPC to be reliable (behavior frequency, Cronbach's $\alpha = .84$; caregiver reaction Cronbach's $\alpha = .90$) and valid based on significant correlations ($p < .01$ for both scale components) with the previously established scales (Teri et al.). Similar studies reflect these results and find the RMBPC to be an easy-to-use, effective tool (Johnson, Wackerbarth, & Schmitt, 2001; Roth et al., 2003).

Teri et al. (1992) chose the behavioral problem subscales of memory, depression, and disruption because of their importance and prevalence in dementia sufferers. The memory-related subscale of the RMBPC measures physical and verbal behavior related to memory deficits, such as repeating a statement the individual said moments before or forgetting where he/she placed frequently-used items (Teri et al., 1992). In studies using the RMBPC, caregivers reported memory-related problems most frequently (Johnson et al., 2001; Roth et al., 2003; Teri et al.).

The depression subscale measures physical and verbal behavior related to feelings of sadness, loneliness, anxiety, and helplessness (Teri et al., 1992). Depression is common for individuals with dementia, especially in the first stages of the illness, and often continues as the dementia progresses (Brodaty et al., 2001; Soukup, 1996). This measure is important because doctors and clinicians often fail to notice depressive symptoms in favor of the more visible signs of dementia, thereby leaving it untreated (Theison et al., 2009).

The disruptive subscale items refer specifically to socially-disruptive behavior. This subscale includes a broader array of items than the memory and depression subscales, and varies from distracting behavior to aggressive behavior (Teri et al., 1992). The distracting behavior items include arguing, performing embarrassing behavior, waking up the caregiver, and loud and

rapid speech. The other half of the disruptive scale refers to aggressive behavior, a particular focus of this study.

This study focuses on the verbally and physically aggressive-related items of the disruptive subscale. These items include “verbal aggression”, “threats to hurt others”, “destroying property”, and “behaving dangerously toward self or others” (Teri et al., 1992, p. 625). Verbal aggression may include yelling, screaming, and/or cursing, and is the most common form of aggression observed in individuals with dementia (Keene et al., 1999; Nowak & Davis, 2007). Threatening to harm others may refer to verbal and/or physical aggression, and includes verbal attacks or intimidation, name-calling, raising a fist, and standing in an aggressive posture (Almvik, Woods, & Rasmussen, 2007). Destroying property is a physically aggressive behavior, and is often associated with tearing things, such as pages out of books, in individuals with dementia (Buffum et al., 2001; Manfredi et al., 2003; Patel & Hope, 1993). The item referring to dangerous behavior may broadly include symptoms of physical aggression, such as hitting, kicking, and throwing objects (Keene et al.; Nowak & Davis). It can also include self-destructive behavior, such as cutting or hitting oneself and repeated removal of essential medical equipment (e.g., tubes and catheters) (Low, Draper, & Brodaty, 2004).

Theoretical Foundation: The Pearlin Stress Process Model

The Pearlin Stress Process Model (PSPM), one of the most influential theoretical models in the realm of caregiver research (Carretero, Garcés, Ródenas, & Sanjosé, 2009), is used as the theoretical foundation of the current study. The model describes how the stress and burden of caregiving affects the psychological and physical wellbeing of the caregiver (Pearlin, Menaghan, Lieberman, & Mullan, 1981). Authors of the model sought to include two factors considered to be scarce from research on stress (Pearlin & Skaff, 1995). The first is context, including the

individual's age, background, socioeconomic status, ethnicity, and access to resources (Pearlin & Skaff). The second factor is the chronic nature of stress and the tendency for life stressors to propagate and lead to new stressors, which the authors refer to as *stress proliferation* (Pearlin et al., 1981; Pearlin & Skaff). Applying the understanding that stress affects people differently, the authors used a multi-dimensional framework with three components: stressors, moderators, and outcomes (Pearlin et al., 1981; Pearlin & Skaff). Figure 1 illustrates the three main components of the PSPM.

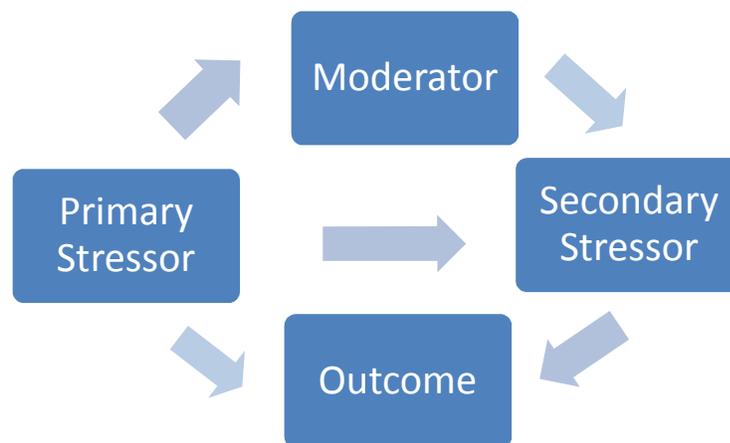


Figure 1. Pearlin Stress Process Model.

The PSPM divides stressors into two categories: primary stressors and secondary stressors (Pearlin & Skaff, 1995). The primary stressor is the original life event or chronic problem; secondary stressors are strains resulting from the primary stressor. Pearlin and Skaff described caregiving as a chronic role strain which is unexpected in nature, as individuals do not often realize the number of years and amount of time required for the role of caregiver. In the case of caregiving, there may be multiple primary stressors, from dealing emotionally with the illness or disability of a family member to providing for the family member's daily basic needs.

The needs, as previously stated, vary from grocery shopping to bathing and feeding. Secondary stressors are also plentiful, and include strains on time, finances, work, and a plethora of other areas of life.

The PSPM explains the differences in the impact of stress on individuals by the presence of moderators which decrease burden (Pearlin et al., 1981; Pearlin & Skaff, 1995). Moderators include successful coping mechanisms, formal and informal social support, and high self-concept (Pearlin et al., 1981; Pearlin & Skaff). Self-concept, or mastery, refers to an individual's sense of control in their environment (Pearlin et al., 1981). While coping mechanisms, social support, and high self-concept can mitigate the effects of caregiver burden, it is important to note that long-lasting strain can change or negatively affect all three moderators (Pearlin & Skaff).

Outcomes are the psychological, physical, and functional effects of the stressors and moderators (Pearlin & Skaff, 1995). While the PSPM was originally created to study stress in older adults, Pearlin and Skaff noted its particular usefulness when studying caregivers. In fact, researchers expanded its reach to caregivers of individuals with Alzheimer's disease (Pearlin, Mullan, Semple, & Skaff, 1990), traumatic brain injuries (Degeneffe & Lynch, 2006), spinal cord injuries (Elliott, Shewchuk, & Richards, 1999), and those in nursing homes (Majerovitz, 2007). In summary, the conceptual framework is as follows: the stressor causes the outcome, which is affected by the moderator.

Application of PSPM to AD caregivers. In the current study, the primary stressor is the aggressive behavior of the care recipient. The outcome is caregiver burden, as indicated on the RMPBC. The moderators are coping strategies employed by the caregiver. Coping is a person's method of cognitively and behaviorally managing, reducing, and/or removing factors in life perceived as negative (Endler & Parker, 1990). The current study focuses on three well-known

coping strategies: task-focused (seeks to perform a task in order to alleviate the problem), emotion-focused (seeks to regulate or alleviate distressing emotions), and avoidance-focused (avoids problem or situation in order to decrease stress) (Endler & Parker, 1990; Higgins & Endler, 1995). Figure 2 illustrates the PSPM applied to AD caregivers with caregiver burden as the outcome. Caregiver burden is a psychological effect of the aggressive behavior, and may decrease when the caregiver utilizes effective coping strategies (Phillips et al., 2009; Pot et al., 1997).

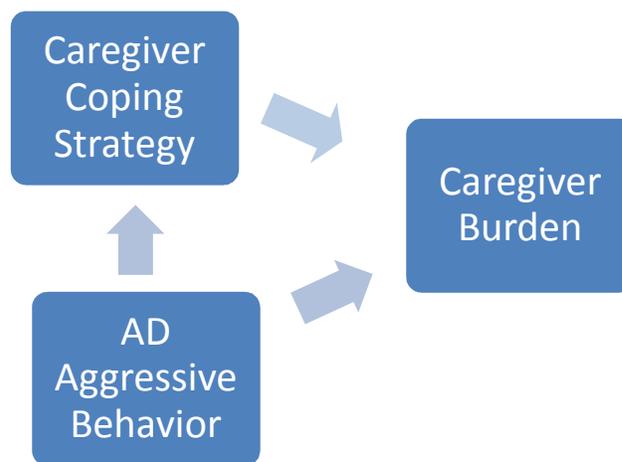


Figure 2. Pearlin Stress Process Model with caregiver burden as the outcome.

A second outcome with the same stressor and moderator is resilience. Resilience is one's ability to adapt and maintain balance when confronted with adversity, and the subsequent self-perceived ability to succeed when confronted with adversity in the future (Gustafsson, Eriksson, Strandberg, & Norbert, 2010). In this case, caregiver burden is a secondary stressor, as research shows that it negatively influences resilience (Wilks & Vonk, 2008). Figure 3 illustrates the PSPM with resilience as the outcome. It is important to note that this study does not test these theoretical models. Rather, these models present a conceptual framework that is a foundation of validity analysis.

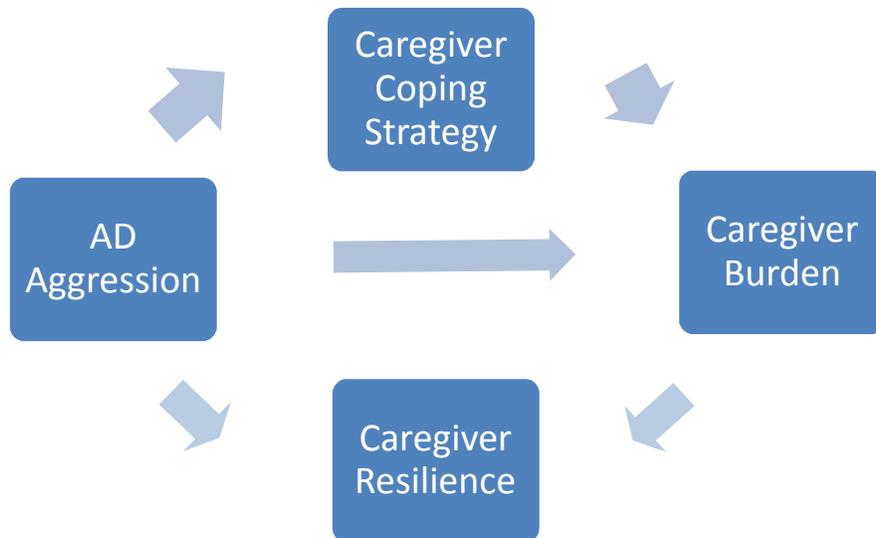


Figure 3. Pearlin Stress Process Model with resilience as the outcome.

Purpose and Research Questions

The purpose of the study is to examine the psychometric viability of a proposed aggressive behavior subscale of the RMPBC. Therefore, the research questions are:

- 1) What is the factor structure of an aggressive behavior subscale of the RMPBC?
- 2) Is an aggressive behavior subscale of the RMPBC a valid measure?
- 3) Is an aggressive behavior subscale of the RMBPC a reliable measure?

This will be determined by factor analysis, reliability analysis, and validity analysis, as detailed in the analytic strategy section.

Chapter 3: Methods

Design and Sampling

This study utilized secondary data from a previous research study (Wilks, Little, Hough, & Spurlock, 2011). The LSU Institutional Review Board approved the use of this data for the current study. The study design is a cross-sectional analysis of self-reported data from 419 AD caregivers. The target population was AD caregivers in Louisiana. The study recruited AD caregivers using two different methods. The first method involved mailing surveys to approximately 5000 caregivers on the mailing lists of a non-profit 501(C)3 AD services organization. The mailing included survey packets with an informational cover letter and a postage-paid return envelope. In order to maintain the confidentiality of the caregivers, the AD services organization assisted with this process. Because the researchers did not have access to the mailing list, there were no follow-up mailings or contact attempts with the caregivers. Of this sample, 566 caregivers completed the surveys, producing a 12% response rate.

The second method of recruitment addressed the African American population. This community is the second largest group of caregivers in the United States (NAC & AARP, 2009). Because many African Americans may be less likely to utilize formal support services due to perceived cultural barriers, it was important to recruit directly from this community to assure that they were appropriately represented in the study population (Williams & Barton, 2004). A faculty consultant recruited participants from several community organizations and agencies including a home health agency, adult day centers, churches, community centers, as well as in caregiver homes.

In compensation, caregivers were offered \$10 for their time and participation. Approximately 700 participants completed the survey in the original study (Wilks, 2006). The

total sample in the current study consisted of the 419 participants reporting some frequency of AD aggression.

Instrumentation

The data consisted of a self-administered caregiver survey. The survey was divided into four parts: demographics and caregiver contextual factors, standardized measures of AD aggression and caregiver burden, caregiver coping strategy, and caregiver resilience.

Demographics and caregiving context. The demographic items included gender, age, ethnicity, and marital status. The caregiving context items were relation to the care recipient and the stage of AD. The stage of AD contained three responses and subsequent brief descriptions: early stage (noticeable memory loss/other cognitive deficits, yet functioning independently), middle stage (decline in mental abilities, physical functioning with increased dependence), and late stage (loss of bodily functions requiring total dependence). All of the aforementioned variables are non-parametric, except for age which is a parametric measure.

Caregiver burden. The ZBI is a 22-item, self-administered scale regarding the individual's feelings while caregiving (Zarit et al.). Some questions are: "Do you feel embarrassed over your relative's behavior?"; "Do you feel your health has suffered because of your involvement with your relative?"; "Do you feel you have lost control of your life since your relative's illness?" (Zarit et al., p. 84-85). The caregiver responds on a 5-point Likert scale, ranging from *0-never* to *4-nearly always* (Bachner & O'Rourke, 2007). The global scores range from 0 – 88. It is a valid and reliable measure (Cronbach's $\alpha = 0.86$; see Bedard et al., 2001).

AD aggression. AD aggression was assessed using the RMBPC (Teri et al., 1992). Of the 24 behavior items on the RMBPC, this study focused on the four behavior items entailing aggression: verbal aggression, threats to others, destroying property, and behavior dangerous to

self or others. The RMBPC asks caregivers to rate the frequency of observable behavior problems on a Likert scale, from *0-never occurred* to *4-daily or more often*. Caregivers also rate how bothered they are by the behavior from *0-not at all* to *4-extremely*. The global scores for the aggressive behavior subscale range from 0 – 16 for frequency of behavior and from 0-16 for caregiver reaction. Higher scores indicate a higher frequency of aggressive behavior for the former, and a stronger reaction by the caregiver to aggressive behavior for the latter. This subscale is also a parametric measure. The psychometric properties are the center of the current study and are reported in the results section.

Coping strategy. To assess whether the caregiver is more likely to employ task-focused, emotion-focused, or avoidance-focused coping strategies, caregivers completed the situational Coping in Task Situations questionnaire (CITS; Matthews & Campbell, 1998). The CITS contains three 9-item subscales of coping behaviors with responses on a 5-point Likert scale. The caregivers rated their use of the coping behavior from *0-not at all* to *4-extremely*. Example items are “was single-minded and determined in my efforts to overcome any problems” (task-focused), “blamed myself for not knowing what to do” (emotion-focused), and “decided there was no point in trying to do well” (avoidance-focused) (Matthews & Campbell, p. 822). For each subscale, the global scores range from 0 – 36, with higher scores indicating greater likelihood of a coping strategy employment. All three subscales have demonstrated acceptable psychometric properties, with alpha coefficients ranging from .84 to .86 (Matthews & Campbell, 1998). The CITS is a parametric measure.

Resilience. The 14-item Resilience Scale (RS-14) measures individual resilience. The format is a 7-point Likert scale ranging from *1-disagree* to *7-agree*. Items include statements such as “I can get through difficult times because I've experienced difficulty before” and “My

life has meaning” (Wagnild, 2009). The global scores range from 14 – 98, with higher scores indicating greater perception of resilience. Wagnild and Young (see Wagnild, 2009) report the RS-14 has strong internal consistency (Cronbach’s $\alpha = .94$). The RS-14 is a parametric measure.

Analytic Strategy

Descriptive statistics. Descriptive statistics were performed on every measure stated above. For all of the non-parametric variables, frequencies and percentages were reported. For all parametric variables, means and standard deviations were reported.

Research questions. In regards to Research Question 1, an exploratory factor analysis (EFA) was conducted to identify potential underlying dimensions of the proposed aggressive behavior subscale of the RMPBC. There was no limitation on the number of possible factors. A customary, minimum eigenvalue setting of 1.0 determined the number of factors retained for final solution. Minimum factor loadings for item retention accorded with the following formula: $5.152/\sqrt{(N - 2)}$ (Wilks, 2008). This type of analysis has been used in previous studies where a subscale was introduced for the first time (Wilks, 2010).

Research Question 2 concerns the validity of the aggressive behavior subscale. Convergent validity analysis was performed in order to determine how the subscale items (including caregiver burden and frequency of behavior) related to the other variables in the theoretical model. These variables include scores on the caregiver burden portion of the ZBI, the CITS, and the RS-14. All correlations were calculated using Pearson’s r .

Research Question 3 explores the reliability of the scale. Overall internal consistency of the aggressive behavior subscale was reported using Cronbach’s alpha. Inter-item correlations were also reported. All statistical analysis was performed using SPSS software (SPSS, 2010).

Chapter 4: Results

Descriptive Statistics

Sample characteristics. The sample consisted of 419 caregivers. The majority of caregivers were female (79.3%, $n = 330$). The mean age was 61 years. A slight majority of caregivers reported their ethnicity as Caucasian/White (56.7%, $n = 236$), and the next largest group reported their ethnicity as African American (41.1%, $n = 171$). The majority were married (62.5%, $n = 262$), while the remaining caregivers were mostly divorced (15.3%, $n = 64$) or never married (14.8%, $n = 61$). Most caregivers were the child of the care recipient (51.4%, $n = 215$) or described their relationship as *other* (16.5%, $n = 69$). The most common stages of AD were late stage (41.4%, $n = 161$) and middle stage (40.1%, $n = 156$). The typical caregiver in this study was a white, married female caring for a parent with late stage AD. Table 1 provides the complete details of demographic information. Table 2 provides details of caregiver relationship and stage of AD.

Table 1. Descriptive statistics for demographic information.

Variable	Valid %	(n)
<i>Gender</i>		
Female	79.3	(330)
Male	20.7	(86)
<i>Ethnicity</i>		
Caucasian	56.7	(236)
African American	41.1	(171)
Hispanic/Latina(o)	1.2	(5)
Other	1.0	(4)
<i>Marital Status</i>		
Married	62.5	(262)
Divorced	15.3	(64)
Single (never married)	14.6	(61)
Widowed	7.2	(30)

Table 2. Descriptive statistics for caregiver-care recipient relationship, stage of AD, and age of caregiver.

	Valid %	(n)	Mean
<i>Relation to Care Recipient</i>			
Child	51.3	(215)	
Spouse/Partner	15.3	(64)	
Other	16.5	(69)	
Grandchild	8.8	(37)	
Sibling	4.1	(17)	
Friend	3.3	(14)	
<i>Stage of AD</i>			
Late	38.4	(161)	
Middle	37.2	(156)	
Early	17.2	(72)	
<i>Age</i>		(419)	61

Aggression subscale. The RMBPC item *threatening to harm others* occurred the least frequently, with 60.9% ($n = 255$) of caregivers reporting the behavior never occurred, and 13.6% ($n = 57$) of caregivers reporting it almost never occurred. When the behavior did occur, most caregivers (59.6%, $n = 233$) reported the behavior did not bother them at all, while 12.3% ($n = 48$) reported they were extremely bothered. The behavior item *destroying property* occurred daily or more according to 9.1% ($n = 38$) of caregivers, and never for 41.3% ($n = 173$) of caregivers. Approximately 48% ($n = 187$) were not bothered by the behavior, and 10.3% ($n = 40$) were extremely bothered. The item *engaging in dangerous behavior* occurred daily or more according to 12.8% ($n = 53$) of caregivers, and never according to 37.9% ($n = 157$) of caregivers. Approximately 21% ($n = 83$) of caregivers were extremely bothered by this behavior, while 40.4% ($n = 157$) were not bothered at all. The most frequently reported behavior item was *verbal aggression*: 14.8% ($n = 62$) of caregivers said it occurred daily or more, while only 13.8% ($n = 58$) said it never occurred. Caregivers were also the most bothered by verbal aggression, with

20.7% ($n = 82$) and 22.5% ($n = 89$) reporting they were bothered extremely or a lot, respectively. In contrast, 21.7% ($n = 86$) of caregivers reported they were not at all bothered by verbal aggression. Table 3 and Table 4 display frequencies and percentages of caregivers' responses to all RMBPC aggressive behavior items regarding frequency of behavior and caregiver reaction, respectively.

Table 3. Caregivers' Report of the Frequency of RMPBC Aggression Subscale Items (N=419)

Response	DestrProp % (n)	DangBeh % (n)	ThrHarm % (n)	VerbAggr % (n)
Daily or more	9.1% (38)	12.8% (53)	6.2% (26)	14.8% (62)
Frequently	9.1% (38)	12.6% (52)	7.4% (31)	21.2% (89)
Sometimes	17.4% (73)	15.0% (62)	11.9% (50)	23.4% (98)
Almost never	21.5% (90)	21.3% (88)	13.6% (57)	26.3% (110)
Never	41.3% (173)	37.9% (157)	60.9% (255)	13.8% (58)
Don't know	1.7% (7)	0.5% (2)	0% (0)	0.5% (2)

DestrProp – destroys property; DangBeh – engages in dangerous behavior; ThrHarm – threatens harm to others; VerbAggr – verbally aggressive

Table 4. Caregivers' Report of the Level of Bother of RMPBC Aggression Subscale Items (N=419)

Response	DestrProp	DangBeh	ThrHarm	VerbAggr
	% (n)	% (n)	% (n)	% (n)
Extremely	10.3% (40)	21.3% (83)	12.3% (48)	20.7% (82)
A lot	12.1% (47)	12.6% (49)	11.3% (44)	22.5% (89)
Some	12.6% (49)	11.6% (45)	8.2% (32)	18.7% (74)
A little	15.2% (59)	13.1% (51)	8.4% (33)	16.2% (64)
Not at all	48.1% (187)	40.4% (157)	59.6% (233)	21.7% (86)
Don't know	1.8% (7)	0.5% (2)	0.3% (1)	0.3% (1)

DestrProp – destroys property; DangBeh – engages in dangerous behavior; ThrHarm – threatens harm to others; VerbAggr – verbally aggressive

Factor Analysis

The EFA set a minimum eigenvalue of 1.0 with no limitation on the number of possible factors. One factor had an eigenvalue of 2.411 among the items. It accounted for 60% of variation of all possible factors. The RMBPC aggression subscale items had factor loadings as follows: *destroying property* = .767; *engaging in dangerous behavior* = .837; *threatening to harm others* = .818; *verbally aggressive* = .674.

Convergent Validity Analysis

Correlations between AD aggression and caregiver task-focused coping as reported on the CITS were not significant. AD aggression significantly correlated with emotion-focused coping ($p < .01$, $r = .167$) and avoidance-focused coping ($p < .01$, $r = .335$). AD aggression also had a significant, negative correlation with resilience scores on the RS-14 ($p < .05$,

$r = -.105$), and a significant, positive correlation with caregiver burden as determined by the ZBI ($p < .01$, $r = .173$).

Reliability

The aggressive behavior subscale had a Cronbach's alpha of .778 and a Guttman split-half coefficient of .734. All inter-item correlations were significant ($p < .01$) and are displayed in Table 5.

Table 5. Inter-item correlations, Level of Caregiver Bother on RMPBC Aggression Subscale Items (N = 419)

Behavior Item	1	2	3	4
1. DesProp	--			
2. DangBeh	.576**	--		
3. ThrHarm	.504**	.558**	--	
4. VerbAggr	.255**	.411**	.437**	--

** $p < .01$

DestrProp – destroys property; DangBeh – engages in dangerous behavior; ThrHarm – threatens harm to others; VerbAggr – verbally aggressive

Chapter 5: Discussion

This study examined the psychometric properties of a proposed, aggressive behavior subscale of the RMBPC for Alzheimer caregivers, and found that it is a valid and reliable measure. The RMBPC is a 24-item measure that assesses the frequency of behaviors common to individuals with AD, as well as their caregivers' reaction related to the behavior, and is divided into memory, depression, and disruptive subscales (Teri et al., 1992). The aggressive behavior subscale narrows the disruptive subscale of the RMBPC to include only active verbally and physically aggressive items. The four aggressive behavior subscale items were *property destruction, engagement in dangerous behavior, threats to harm others, and verbal aggression*.

The purpose of an aggressive behavior subscale is to alert doctors, social workers, and other practitioners of the presence or escalation of aggression in AD individuals. Such knowledge enables them to better prepare informal caregivers by training them to reduce triggers for aggression in the environment and employ successful coping strategies.

Interpretation of Results

This study tested the psychometric properties of the aggressive behavior subscale using exploratory factor analysis, convergent validity analysis, and Cronbach's alpha. Factor analysis of the aggressive behavior subscale was favorable and concluded that one factor, aggressive behavior, accounted for 60% of the variation within the four subscale items.

This study found evidence of convergent validity by correlating the RMBPC aggressive behavior subscale with three valid scales: the CITS measuring caregiver coping strategy, the RS-14 measuring caregiver resilience, and the ZBI measuring caregiver burden. The Pearlin Stress Process Model provides a theoretical framework relating these factors with AD aggression as the stressor, caregiver resilience or burden as the outcome, and caregiver coping strategy as the

moderator. There were significant correlations between AD aggression and scale results with all three measures. An increased frequency of AD aggression significantly increased the caregivers' use of emotion-focused and avoidance-focused coping strategies as reported on the CITS. An increase in AD aggression frequency also significantly increased caregivers' ZBI scores of caregiver burden. Frequency of AD aggression significantly negatively correlated with caregiver resilience on the RS-14.

The aggressive behavior subscale showed significant inter-item correlations on all items. The subscale had an internal consistency comparable to that of RMBPC subscales in other studies (Johnson et al., 2001; Roth et al., 2003; Teri et al., 1992).

Previous Research Related to the Current Study

The sample of the study reflects the typical AD caregiver in the United States (AA, 2004; NAC, AARP, 2009): the majority are female, married, and the child of the care recipient. Ethnic groups were well-represented in the sample, with proportions similar to those in the area population (United States Census Bureau, 2010). Women make up around 60% of AD informal caregivers in the United States (AA, 2010a). In the current study, women comprised almost 80% of the sample. The greater percentage of women in the study may be due to recruitment of a large portion of the sample from support groups. Women are more than twice as likely to participate in support groups as men, and this proportion may be higher in AD caregiver support groups (Kessler, Mickelson, & Zhao, 1997; Molinari, Nelson, Shekelle, & Crothers, 1994; respectively).

The higher proportion of female participants is an important consideration when examining the results of this study. In a study by Robinson et al. (2001), female caregivers reported more distress due to behavioral disturbances than male caregivers, even when the

frequency of the behavior was the same. Coen et al. (1997) found that female caregivers closer in relation to the care recipient (i.e., daughters) experienced more stress than females of farther-removed blood relations. Such results indicate that while contemplating gender differences in caregiver burden, researchers and clinicians must also consider the closeness of the relationship between the caregiver and the care recipient. In a previous study on the RMBPC by Roth et al. (2003), female caregivers not only rated their reactions to behaviors higher than male caregivers, but they also tended to report a higher frequency of problem behavior. The higher likelihood of female caregivers to report problem behavior and its related burden may result from a higher likelihood of intimate caregiving (Kramer & Kipnis, 1995; Robinson et al.). Intimate caregiving (bathing, dressing, toileting) triggers aggressive behavior more often than any other type of caregiving (Burgener et al., 1992; Keene et al., 1999). Research indicates that female caregivers are more likely to perform these intimate tasks than male caregivers (Kramer & Kipnis; Robinson et al.). Therefore, it follows that female caregivers are more likely to observe aggressive behavior in the care recipient.

Recruitment from support groups may also account for the older average age of study participants and therefore the higher likelihood of being the spouse of the care recipient. The average age of AD caregivers in the U.S. is 51 years of age (AA, 2010a; NAC, AARP, 2009), while the average age in this study was 61 years. Work and childcare responsibilities of middle-aged adults may prevent them from participating in support groups, which may explain the reason AD caregiver support group participants are older than the average AD caregiver (Molinari et al., 1994). As with gender, the age of the caregiver is a factor in caregiver burden. In a study by Roth et al. (2003), older caregivers reported lower ratings on problem behavior frequency and reaction on the RMBPC than their younger counterparts.

As expected, most caregivers in the sample reported their loved one to be in the middle to late stages of AD, when aggressive behavior is most common (Khachaturian & Radebaugh, 1996). It is important to note that aggressive behavior can occur at any stage of AD. In the current study, around 20% of care recipients were in the early stages of AD. Keene et al. (1999) found the most common aggressive behavior in the early stage of AD was verbal aggression, whereas physical aggression occurred almost exclusively in the later stages of the disease.

This study's findings on factor loadings were higher than those found for the same items on previous studies examining the entire RMBPC scale, with the exception of verbal aggression which showed a similar or slightly lower factor loading (Roth et al., 2003; Teri et al., 1992). The Cronbach's alpha of the aggressive behavior subscale is comparable to that of the disruptive subscale in other psychometric studies of the RMBPC (Johnson et al., 2000; Roth et al.; Teri et al.).

Previous research indicates that the use of emotion- and avoidance-focused coping strategies is positively related to anxiety, depression, psychological distress, and somatic symptoms of stress (Bauman, Haaga, & Dutton, 2008; Endler & Parker, 1990; Higgins & Endler, 1995). It is not surprising then that a higher occurrence of AD aggression, and the corresponding increase in stress, were related to the caregivers' use of these two coping strategies in this study. These indications coincide with the study's outcomes regarding caregiver burden.

The study's finding that AD aggression increases caregiver burden agrees with several studies denoting the significant contributions of AD aggression to caregiver burden and psychological distress (Coen et al., 1997; Hart et al., 2003; Keene et al., 1999; Miyamoto et al., 2003). A study by Hart et al. (2003) found that aggression caused more distress to caregivers than any other behavioral disturbance related to dementia. The increased level of burden makes

aggressive behavior the leading cause of nursing home placement for individuals with dementia (Ballard et al., 2008; Coen et al.; Haupt & Kurz, 1993).

AD aggression's negative impact on caregiver resilience also reflects the findings of previous research. Wilks and Vonk (2008) found that an increase in burden for AD caregivers corresponds with a decrease in caregiver resilience. A decrease in resilience indicates that the caregiver is having difficulty to adapting to the challenges inherent in caring for a loved one with AD and moderating the negative psychological and physiological effects of caregiving (Gustafsson et al., 2010).

The most commonly reported behavior in the study was verbal aggression, which includes screaming, cursing, yelling, and verbally threatening another individual (Keene et al., 1999; Nowak & Davis, 2007). This corresponds with findings that verbal aggression is the most common and long-lasting form of aggression in individuals with dementia (Eastley & Wilcock, 1997; Keene et al.; Nowak & Davis; Roth et al., 2003; Terri et al., 1992). The order of frequency for the other items followed previous studies of the RMBPC (Roth et al.; Terri et al.). From most frequent to least frequent, the items were verbally aggressive, engaging in dangerous behavior, destroying property, and threatening harm to others.

Study participants were most bothered by verbal aggression and least bothered by destruction of property. The level of bother corresponded to the frequency of the behavior reported by caregivers, indicating that the more the behavior occurred, the more it caused the caregiver some distress. This finding corresponds with a study by Robinson et al. (2001), though researchers found caregiver reactions were due more to the caregivers' perception of the severity of the problem behavior than to its frequency of occurrence. This study and studies by Terri et al.

(1992) and Roth et al. (2003) all differed in the order of severity regarding caregiver reaction to behavior items, limiting the generalizability of the results.

Implications to Social Work

Caregivers in a study by Miyamoto et al. (2002) reported that their loved one's aggressive behavior caused them not only fear for their safety, but also sadness from witnessing behavior so incongruent to the person they know and love. Caregivers choosing to care for their loved one at home must adapt to the added burden of time and responsibility while watching their loved one deteriorate physically and mentally. Monitoring aggressive behavior and the caregiver's related stress allows doctors and social workers to intervene as the behavior first appears or begins to worsen. Relative to this intervention, the current study found that an aggressive behavior subscale of the RMBPC is a valid and reliable method of determining the frequency of aggressive behavior and caregiver's level of reaction.

Despite its limitations, Johnson et al. (2001), Roth et al. (2003) and Teri et al. (1992) found the full RMBPC to be a helpful, practical, and easy-to-use scale in clinical settings. The use of the aggressive behavior subscale provides doctors, social workers, and other clinicians a quick understanding of the prevalence of the behavior without having to observe the individual. Longitudinal use of the aggressive behavior subscale may assist care providers to discern increases and/or decreases in aggressive behavior, and make changes to treatment intervention accordingly (Etters et al., 2008; Roth et al.; Teri et al.). Altering the treatment plan may include adjusting or adding medication, making environmental changes, and/or training the caregiver in aggressive behavior-reducing techniques.

Environmental changes shown to decrease aggressive behavior include eliminating the use of restraints, reducing noise, providing natural light, and surrounding the individual with

familiar items (Khachaturian & Radebaugh; 1996; Wilkes et al., 2005). The Alzheimer's Association (2010b) provides several tips for caregivers to respond to aggressive behavior. The tips include identifying the trigger of the behavior, focusing on the individual's feelings instead of on his/her behavior or words, keeping calm, introducing relaxing distractions, and avoiding or altering the action or environmental factor which triggered the behavior if at all possible.

The aggressive behavior subscale may also identify caregivers needing intervention in order to minimize or reduce burden outcomes such as psychological and physiological distress. This study found that caregivers reporting a higher frequency of aggressive behavior were more likely to utilize emotion- and avoidance-focused coping strategies. As previous research links these strategies with negative psychological outcomes, these caregivers are at a higher risk for depression, anxiety, and physiological symptoms related to stress (Bauman et al., 2008; Endler & Parker, 1990; Higgins & Endler, 1995). A previous paper related to this study reported that caregivers' emotion- and avoidance-focused coping strategies also significantly decreased their resilience (Wilks et al., in press). The current study found a negative relationship between aggressive behavior frequency and caregiver resilience.

Social workers can intervene by helping the caregiver identify unhelpful and maladaptive coping techniques. Once these techniques are identified and acknowledged, the social worker can teach the caregiver more successful, task-focused coping strategies and improve his/her problem-solving skills. Caregivers may find they need these lessons to be reinforced as the disease progresses and new symptoms or complications arise. The subscale may be helpful to caregivers to monitor their own reactions to the care recipients' behavior and examine whether environmental changes or strategies are working to minimize aggressive behavior.

There are other tools social workers and clinicians may provide AD caregivers if there is an increase in ratings on the aggressive behavior subscale, including informing the caregiver about the course of AD and relating the importance of social support. Education about the stages and characteristics of the disease is also important. AD affects every individual differently in terms of course and variation of symptoms (Khachaturian & Radebaugh, 1996), but doctors and social workers should give care recipients and caregivers a general idea of what to expect in the months and years to come. The presence of aggressive behavior usually indicates progression of AD, including an increase in cognitive impairment and decrease in physical function (Khachaturian & Radebaugh). Therefore, it is imperative to relate possible psychological stressors for the caregiver, such as personality changes and behavioral disturbances in their loved one, as well as physiological symptoms, such as incontinence and debility, which may affect their ability to care for the care recipient in the home. Hepburn, Tornatore, Center, and Ostwald (2001) found that educating caregivers about the disease process of dementia helped them to accept their limitations in caregiving, adjust their self-expectations, and decrease the severity of caregiving-related stress.

Social workers and clinicians may also emphasize the importance of social support when ratings on the aggressive behavior subscale increase. The benefits of social support for caregivers are well-documented in research (Andrén & Elmståhl, 2008; Gustafsson et al., 2010; Jonker & Greef, 2009; Phillips et al., 2009; Ross et al, 2003; Wilks & Croom, 2008). Many caregivers sacrifice their time with friends and family in order to care for their loved one, and this is especially true when problem behaviors are present (Robinson et al., 2001). Decreased social support coincides with caregivers' poorer physiological health, greater strain due to caregiving, depression, and anxiety (Andrén & Elmståhl; Coen et al., 1997; Phillips et al.). Several research

studies found that informal social support, such as that provided by family members and friends, helps to increase caregiver resilience (Gustafsson et al.; Jonker & Greef; Ross et al.; Wilks & Croom). More formal types of support, such as respite care and support groups, may provide much-needed rest from caregiving duties, opportunities to receive validation and expressions of concern from peers, and community resources to reduce the financial burden of caregiving (Cangelosi, 2009; Molinari et al., 1994).

Study Limitations

The ethnic groups of the sample were proportional to the population of the study area; however, the disproportion of gender and age may have been due to participant recruitment methods. A large portion of participants in this study were recruited from AD support groups. Support group members are more likely to be older and female (Kessler et al., 1997; Molinari et al., 1994). Previous research showed gender and age as important factors correlating with caregiver burden. Specifically, female caregivers report higher burden than other demographic groups (Coen et al., 1997; Kramer & Kipnis, 1995; Robinson et al., 2001; Roth et al., 2003). Further research should include populations less likely to seek out guidance, assistance, or support in their caregiving responsibilities, such as Hispanics, Asians, and vulnerable populations. Another limitation regarding the individuals surveyed was the response rate. The response rate for this study was low, at only 12%.

There are also limitations due to the nature of the RMBPC as a self-reporting, self-administered survey. The behavior items are stated in general terms and depend on the interpretation of the individual taking the survey. For example, some caregivers may interpret *threatening harm to others* differently than others, depending on the caregiver's perception of bodily expression. Therefore, the items are vulnerable to the subjective opinions and

observations of the individual caregiver. Item responses are also dependent on the caregiver's ability to recall instances of problem behavior. Because the survey is self-reporting, it does not have the accuracy that observation or interviewing would provide (Teri et al., 1992).

Teri et al. (1992) reported that the RMBPC was written on a tenth-grade reading level. Therefore, the accuracy of responses depends upon the education and reading comprehension level of the caregiver. The researchers concluded that conductors of the survey should anticipate the needs of individuals at lower reading levels, and assist them as necessary.

Conclusion

As medical technology improves and a greater percentage of the population ages, AD will continue to affect a significant number of families. With no cure and few effective treatments on the market, it is up to health care professionals, including social workers, to find effective and creative ways to manage the symptoms of AD and assist caregivers with the emotional trauma of watching their loved one's memories and personality fade, along with their physical functioning. This study concluded that an aggressive subscale of the RMBPC is a reliable and valid tool to measure the frequency of aggressive behavior in AD individuals and caregiver reaction. Tools such as the RMBPC aggressive behavior subscale are important because they monitor not only the care recipient's behavior, but also the caregiver's handling of aggressive behavior symptoms. Scale results may indicate to doctors and social workers a need for intervention for both the care recipient and the caregiver. Further research on this scale should include a more diverse sample, including male and younger caregivers. It is hoped that this scale will be a helpful and practical resource for AD researchers, professionals, and caregivers, as they face the challenge of providing dignity and a better quality of life for individuals with AD.

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Vita

Kristina Little was born in Sulphur, Louisiana. She graduated from Sulphur High School in May 2000. She earned a degree of Bachelor of Science in psychology from Louisiana State University in May 2004. Her senior year, she completed an honors thesis titled “The Effects of Music and Television on Fourth and Sixth Graders’ Performance on Mathematics and Reading Comprehension Assignments” under the direction of Dr. Emily M. Elliott. She will graduate with a master of social work from Louisiana State University in May 2011. During the social work program, she completed internships at Cancer Services of Greater Baton Rouge and the Baton Rouge General Medical Center. In her foundation year, she co-wrote a paper titled “Alzheimer’s Aggression: Influences on Caregiver Coping Strategy and Resilience” with Dr. Scott E. Wilks. The manuscript was published in the Journal of Gerontological Social Work in 2011. She presented the paper at the Louisiana Life Course and Aging Center’s 8th Annual Student Poster Session in February 2011. The paper was also accepted for presentation at the Society for Social Work and Research 15th Annual Conference. She continued research on Alzheimer’s disease and aggression in her thesis, under the direction of Dr. Scott E. Wilks, which is titled “Psychometric Evaluation of a Proposed, Alzheimer’s Aggression Scale.”