AN ABSTRACT OF THE THESIS OF

Brandi June Hall for the degree of Master of Science in Human Development and Family Studies presented on June 2, 2009.
Title: Taking a Broader Approach: Longitudinal Effects of Personality on the Physical Health of Spouse Caregivers in Two Disease Groups.

Abstract approved:

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Karen A. Hooker

Caregiving circumstances frequently evoke high levels of stress for caregivers and have consistently been linked to adverse psychological and physical health consequences. Within the caregiving literature, researchers have sought to answer questions about why some individuals seem to be particularly vulnerable to the well-established deleterious consequences of caregiving stress. Several studies have found that personality traits are linked with physical health outcomes in caregivers. Past research, however, has not examined this relationship longitudinally, nor has it included aspects of personality beyond traits (i.e., the Big-Five: neuroticism, extraversion, agreeableness, conscientiousness, and openness to experience). Thus, the overall goals of this study are twofold: (a) to better understand the link between stressful caregiving situations and health outcomes by investigating the impact of both personality traits and states on physical health outcomes, and (b) to utilize two well-defined groups of caregivers to investigate whether contextual variables are related to perceived physical health outcomes of caregivers over time.

The project, “Health of Caregivers: The Role of Personality” provided the data for this study. Caregivers were interviewed in their homes between 1991 and 1992, and were sent mail-back questionnaires approximately one year later between 1992 and 1994. Caregivers who participated at both Time 1 and Time 2 were included in this study (n = 122). To explore the potential link between caregiver personality and contextual variables at Time 1 with perceived physical health at Time 2, hierarchical linear regressions were performed. Before adding state anxiety into the final model, individuals who scored high in neuroticism at Time 1 experienced worse physical health at Time 2. Surprisingly, individuals who scored high in openness to experience also experienced worse physical health at Time 2. Consistent with hypotheses, state anxiety significantly added to the predictive power of perceived physical health at Time 2, over and above contextual variables and the Big-Five personality traits. Individuals who scored high in state anxiety at Time 1 experienced worse perceived physical health at Time 2. The study findings demonstrate that a broader approach to personality is valuable to better identify vulnerable caregivers. Little is known regarding the trait of openness to experience in the caregiving and general populations. Caregivers who score high in openness to experience may feel “trapped” in their intensive caregiving situations, which may influence mental and physical health outcomes. Future research should further investigate both openness to experience, in particular, and more *state-like* aspects of personality to enhance interventions that successfully target at-risk caregivers.

Taking a Broader Approach: Longitudinal Effects of Personality on the Physical Health of Spouse Caregivers in Two Disease Groups

by
Brandi June Hall

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Science

Presented June 2, 2009
Commencement June 2010

Master of Science thesis of Brandi June Hall presented on June 2, 2009.

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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

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Brandi June Hall, Author

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation to the following people:

- My advisor, Dr. Karen Hooker, who has remained a constant source of support throughout this process.
- The members of my committee, Dr. Alexis Walker, Dr. Sally Bowman, and Dr. Susan Shaw, who graciously lended their time and expertise to this project.
- My mom and dad who have been such incredible parents from the very beginning. I am grateful for your love, thoughtful advice, and friendship along the way.
- My Nani and Papa who have always believed in this dream even when I didn't.
- Finally, my (soon to be) husband, David, whose patience and encouragement have truly been the foundation of this endeavor.

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Chapter 1
INTRODUCTION

Advances in medical technology and improved treatment of chronic diseases are allowing older adults to remain at home well into late adulthood (Chumbler, Rittman, Puymbroeck, Vogel, & Qnin, 2004). For older adults to remain in the home environment, they must often rely on family members for assistance. In fact, national estimates indicate that nearly 75% of all older adults who suffer from chronic illnesses and diseases depend exclusively upon help from family members and other sources of informal support (Noelker & Whitlatch, 2005). These circumstances frequently evoke high levels of stress for caregivers and have consistently been linked to adverse psychological and physical health consequences (Pinquart & Sorensen, 2003). Chronic stressors, such as those associated with many caregiving situations, are persistently linked with physical illnesses (Cohen, Kessler, & Underwood-Gordon, 1997), physiological risks (Kawakami, Haratani, & Araki, 1998), and increased risk of death (e.g., Schulz & Beach, 1999). Caregivers report poorer health, and more illnesses and disabilities, than their noncaregiving peers (Beach, Schulz, Yee, & Jackson, 2000). With the increase of the 65 and older population and the high demands on family members for care (Noelker & Whitlatch, 2005), it is vital to discover what makes some caregivers particularly vulnerable to the well-established deleterious health consequences of caregiving stress.

Several studies have found that personality traits are linked with physical health outcomes in caregivers (Hooker, Monahan, Bowman, Frazier, & Shifren, 1998; Hooker, Monahan, Shifren & Hutchinson, 1992; Vitaliano, Young, & Zhang, 2004). Past research, however, has not examined this relationship longitudinally, nor has it included aspects of personality beyond traits. Therefore, this study seeks to investigate how the construct of personality can inform research on the multitude of potential physical health outcomes among caregivers over time.

What Are Personality Traits and States?

Traits are stable tendencies in behavior across time and situations (Smith & Gallo, 2001). According to Hooker and McAdams (2003), a trait is "a dispositional signature that accounts for broad consistencies in behavior across situations and over time" (p. 296). Hooker and McAdams's (2003) six foci of personality framework proposes that personality structures, such as traits, are best understood when taking into account their parallel processes, such as states. States are short-term constructs that include emotions, hunger, and anxiousness and according to Hooker and McAdams (2003) "are intraindividual processes that connote dynamic change or the constant possibility of change" (p. 296).

The five-factor model of personality (McCrae & Costa, 2003) identifies the traits of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness as the major dimensions of personality (see Table 1). It has become known within the literature as "the Big-Five." The NEO Five-Factor Inventory is a

Table 1. *The Five-Factor Model of Personality*

Trait	Characteristics	Opposite pole
Neuroticism	Worrying	Calm
	Temperamental	Even-tempered
	Self-pitying	Self-satisfied
	Self-conscious	Comfortable
	Emotional	Unemotional
	Vulnerable	Hardy
Agreeableness	Softhearted	Ruthless
	Trusting	Suspicious
	Generous	Stingy
	Acquiescent	Antagonistic
	Lenient	Critical
	Good-natured	Irritable
Extraversion	Affectionate	Reserved
	Joiner	Loner
	Talkative	Quiet
	Active	Passive
	Fun-loving	Sober
	Passionate	Unfeeling
Conscientiousness	Conscientious	Negligent
	Hardworking	Lazy
	Well-organized	Disorganized
	Punctual	Late
	Ambitious	Aimless
	Persevering	Quitting
Openness to experience	Imaginative	Down-to-earth
	Creative	Uncreative
	Original	Conventional
	Prefer variety	Prefer routine
	Curious	Uncurious
	Liberal	Conservative

Note. Adapted from McCrae and Costa (2003), Table, p. 4.

well-established measure of the Big-Five (McCrae & Costa, 2003). High levels of neuroticism reflect emotional instability, anxiety, impulsiveness, and depression (p. 48). High levels of extraversion denote assertiveness, warmth, excitement seeking, and

positive feelings (p. 49). High levels of openness to experience signify curiosity, introspection, and imagination (p. 49). High levels of agreeableness reflect trust, altruism, and compliance (p. 50). Finally, high levels of conscientiousness signify competence, efficiency, and dutifulness (p. 50).

States, such as anxiety, represent the process component of personality and may vary across contexts and situations (Smith & Gallo, 2001). Research has shown that anxiety levels of caregivers can fluctuate from day to day (Shifren & Hooker, 1995). Thus, this study will investigate how both the structural components of personality traits (i.e., the Big-Five) and one process-like component of personality thought to be relevant for understanding caregiving (i.e., state anxiety) impact caregiver physical health outcomes over time.

Personality and the Stress Process

Personality has been shown to influence perceived stress among caregivers, potentially serving as the link between stressful caregiving environments and chronic health problems (Hooker et al., 1998). Personality may be linked to the stress process in a myriad of ways (Semmer, 2006). First, personality may impact the number of stressful situations a person actually encounters (Semmer, 2006). Some individuals may be attracted to certain stressful situations, whereas others are deterred. For example, individuals who score high in agreeableness experience fewer social disputes (Asendorpf & Wilpers, 1998), whereas people high in neuroticism report a greater level of conflicts (Bolger & Zuckerman, 1995; Zautra, Affleck, Tennen, Reich, & Davis,

2005). Alternatively, individuals high in extraversion experience many positive events (Suls & Martin, 2005).

Personality characteristics may also influence how individuals appraise stressful situations (Rusting, 1998), a key component in the stress and coping framework (Lazarus, 1999). For example, some personality traits, such as neuroticism, may predispose individuals to perceive caregiving situations as highly stressful (Jang, Mortimer, Haley, & Graves, 2002). Personality can also influence how individuals react to stressful situations (Zautra et al., 2005). Although individuals with high levels of neuroticism tend to react more strongly to negative events (Zautra et al., 2005), extraverts react more strongly to positive events (Semmer, 2006).

Finally, personality can impact how people tend to cope with stressful situations (McCrae & Costa, 1986). Although coping is highly dependent upon the situation (Reicherts & Pihet, 2000), ample evidence now exists indicating that people have coping tendencies (Semmer, 2006). People high in neuroticism tend to use less adaptive coping strategies (Gunthert, Cohen, & Armeli, 1999), whereas extraverts have been shown to utilize more adaptive coping strategies (Semmer, 2006).

Within the caregiving literature, personality traits have been linked to physical health outcomes, especially in studies of neuroticism (e.g., Jang et al., 2004). Less is known, however, regarding the impact of other aspects of personality on physical health outcomes, especially process-like components such as state anxiety. Additionally, the need for clearly defined disease groups has been discussed within the caregiving

literature (Beach et al., 2000; Hooker et al., 2000; Hooker et al., 1998). Previous studies have found very mixed results when investigating health outcomes among Alzheimer's Disease (AD) and Parkinson's disease (PD) caregiving groups (Hooker et al., 1998). Thus, the broader inclusion of personality dimensions among well-defined caregiving samples is vital to help researchers and practitioners better understand why stressful caregiving situations translate into negative physical health outcomes for some caregivers and not for others.

Therefore, the main research questions important to this study are: (a) Do the Big-Five personality traits of spouse caregivers at Time 1 predict their own perceived physical health one year later at Time 2? (b) Does a process-like personality component (i.e., state anxiety) of spouse caregivers at Time 1 add to the predictive power of physical health at Time 2, over and above the Big-Five traits? and, (c) Do contextual variables among well-defined disease groups (i.e., SES, gender, ADL assistance levels, number of years caregiving) relate to caregiver perceived physical health outcomes?

Chapter 2
LITERATURE REVIEW

Personality Theoretical Perspectives

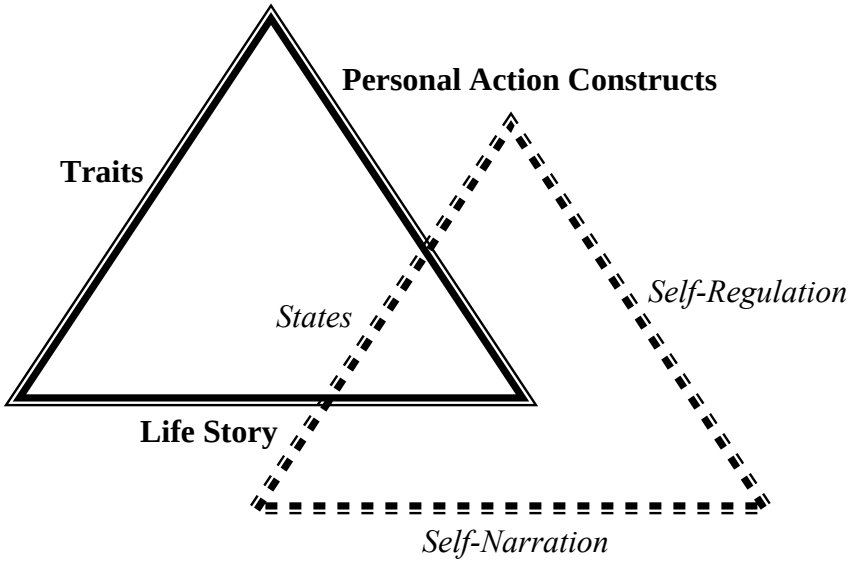
Early scholarly work on personality focused mainly on the structure of personality traits (Hooker & McAdams, 2003). The big five-factor model that previously dominated gerontological personality research viewed personality as highly stable across the lifespan (Mroczek, Spiro, & Griffin, 2006). This model made it difficult, however, to envision the multidimensional changing properties of personality. Grounded in Developmental Systems Theory (Ford & Lerner, 1992), Hooker and McAdams's (2003) six foci of personality model is a broader framework that emphasizes the plastic properties of the person. Contrary to the personality models that focused on the structure of traits, this model encompasses social-cognitive aspects of process (see Figure 1).

The Hooker-McAdams (2003) model is organized along two dimensions: structure and process. Structure constructs include traditionally studied traits, goals and motivations (also referred to as personal action constructs), and the person's understanding of self (life story) through narration. Each structure has a dynamic parallel process. Within the framework, states are the parallel process of traits and are less stable in nature. Examples of states include moods and anxiety. The parallel process of personal action constructs are self-regulatory processes such as goal setting and self-monitoring. These processes tend to be domain specific and serve as a means to a future goal. Finally, individuals reminisce or tell life stories, called self-narration or

the parallel process of the life story structure (Hooker & McAdams, 2003). Both stability and change are expected and accounted for within the model.

Personality has consistently been linked with physical health outcomes among caregivers (Vitaliano, Zhang, & Scanlan, 2003), and furthermore, research has shown that the strongest predictor of care-recipient institutionalization is caregiver health status (Dunkin & Anderson-Hanley, 1998). Thus, utilizing a broader approach to personality is imperative to better understand how change in personality can impact not only caregivers' health status, but also care-recipient well-being.

Figure 1. *Hooker and McAdams's (2003) Six Foci of Personality*



Note. Adapted from Hooker & McAdams (2003), Figure 1, p. 297.

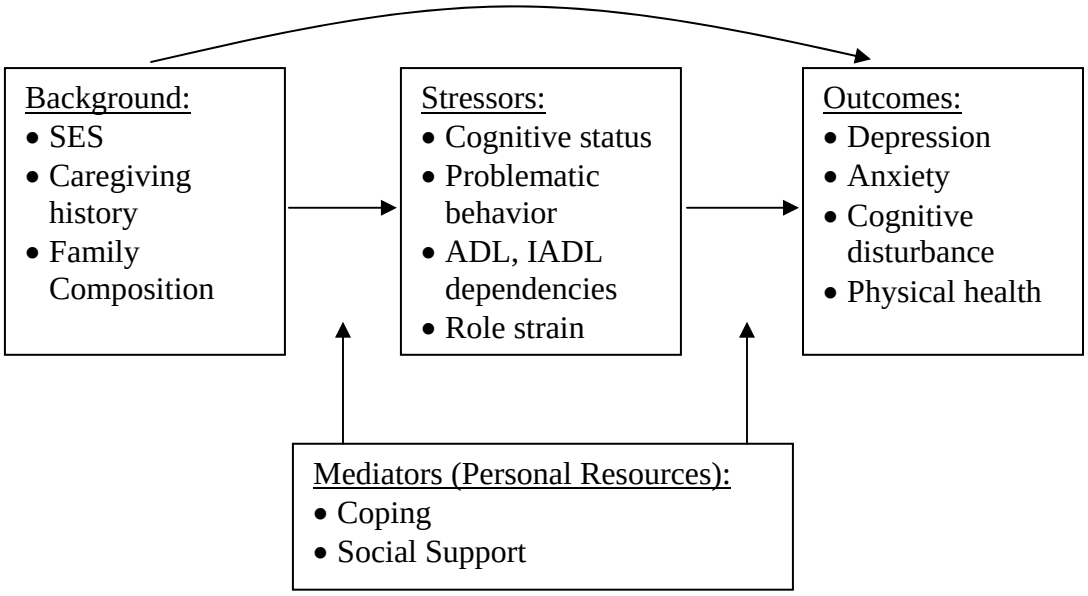
Stress Frameworks

In an attempt to better understand the impact of personality on the considerable variability in how caregivers cope with stressful caregiving situations, researchers have often used the stress and coping framework, originally proposed by Lazarus and Folkman (1984). This model suggests that adaptation to stress is primarily dependent upon appraisal processes and coping strategies (Lazarus & Folkman, 1984). There are two different appraisal forms, primary and secondary. Primary appraisal involves assessing how a stressor can impact one's self. Primary appraisal can include threats, danger, experiencing a loss, or feeling challenged (a positive appraisal). Secondary appraisal involves assessing how one can handle the problematic situation. Personal resources, such as personality, can impact this cognitive appraisal process (Hooker et al., 1998). Coping is often described by two typologies, emotion-focused and problem-focused. Emotion-focused coping, such as distancing oneself from the situation or drawing some sort of positive value out of a negative circumstance, aims to minimize emotional distress. Problem-focused coping involves active strategies that can help minimize the problem, including defining the problem, weighing costs and benefits, and then acting accordingly (Lazarus & Folkman, 1984). Within the coping literature, up to 50% of psychological symptoms can be accounted for by stress and coping variables (Aldwin, 2007). Because personality may influence the appraisal portion of the stress process, it is investigated within the current study.

Pearlin and colleagues (1990) provide a useful framework specific to the caregiving situation in which to investigate the stress process and its relation to health outcomes. The stress process model builds upon the stress and coping framework (Lazurus & Folkman, 1984) and is proposed to consist of the interplay between the *personal resources* of the caregiver and the *contextual stressors* to which they are exposed (Pearlin, Mullan, Semple, & Skaff, 1990). This study utilizes the stress process model by investigating the personal resource of personality characteristics along with the contextual variables of gender, SES, care-recipient disease status, ADL assistance levels, and number of years that the caregiver has provided care.

The stress process consists of four domains: (a) the context of stress, (b) the actual stressor, (c) mediators of the stress, and (d) outcomes of stress (see figure 2). Although the stress process model provides a useful framework for investigating the stress-health interface in caregiving situations, the potential influence of personality is omitted from the model. Thus, it is proposed within the current study that personality may serve as the link between the actual stressor (i.e., the caregiving situation) and the outcomes of stress (i.e., physical health) by impacting how one appraises the stress associated with the caregiving situation. The inclusion of personality components within the stress process model may aid researchers and practitioners in targeting caregivers who may be at particular risk for experiencing poor physical health outcomes.

Figure 2. *The Four Domains of The Stress Process Model*



Note. Adapted from Pearlin, Mullan, Semple, and Skaff (1990), Figure 1, p. 586.

The Caregiving Context

Why study the impact of personality on physical health outcomes within the caregiving context? Research has shown that caregiving situations represent real life contexts of chronic stress (Pinquart & Sorensen, 2003). Nearly 44.4 million individuals provide informal care for family members or friends (National Alliance for Caregiving and AARP, 2004). Spouses are most likely to assume the primary caregiving role within families (Noelker & Whitlatch, 2005). In a national survey of informal caregivers, more than a third of individuals have not received any form of unpaid assistance with caregiving duties within the past year (National Alliance for Caregiving and AARP,

2004). Research has shown that carrying the load of caregiving responsibilities can adversely affect mental and physical health (Beach, Schulz, Yee, & Jackson, 2000; National Alliance for Caregiving and AARP, 2004). In a meta-analysis of 23 caregiving studies, Vitaliano and colleagues (2003) found that caregivers reported high rates of chronic illness, high rates of medication usage, poor perceived global health, and substantial levels of stress resulting from caregiving duties. Shaw and colleagues (1997) found that caregivers with the greatest caregiving load were most likely to develop health problems over a 6-year time period. Caregivers' self-rated health seems to worsen over time (Skaff, Pearlin, & Mullen, 1996), often because of poor diet, lack of exercise, and loss of sleep (Butler, Lewis, & Sunderland, 1998). In one study by Vitaliano and colleagues (2002), male caregivers were more likely to develop heart disease over 30 months than men who were not caregivers. Caregivers have even been found to have higher death rates over a 4-year period when compared to noncaregivers (Schulz & Beach, 1999).

Only recently have longitudinal studies on caregiving materialized in the literature. These studies have strengthened knowledge of the link between caregiving situations and health outcomes. Individuals in stressful caregiving situations are at particular risk for experiencing poor mental health (Schulz, O'Brien, Bookwala, & Fleissner, 1995) including increased levels of anxiety (Mohide, Pringle, Streiner, Gilbert, Muir, & Tew, 1990). The stress process model (Pearlin et al., 1990) identifies background and contextual variables as important aspects of the caregiving situation

when looking at caregiver health outcomes. Thus, this study investigates how socioeconomic status (SES), gender, level of caregiving, and disease status impact caregiver perceived physical health over time.

Socioeconomic Status

Socioeconomic status (SES), typically measured by indicators such as education and income, is included in the stress process model as a key background or contextual variable (Pearlin et al., 1990). Within the caregiving literature, higher levels of SES tend to buffer individuals from burden associated with stressful caregiving situations (Kinsella, Cooper, Picton, & Murtagh, 2000). In a study of 30 caregivers of cancer patients, lower levels of SES were correlated with higher levels of caregiver burden (Andrews, 2001). Caregivers with higher levels of SES have better access to resources than caregivers with lower levels of SES (Payne, 2004). In a study of 960 cancer deaths, Kessler and colleagues (2005) found that caregivers with higher levels of SES sought information and services more actively than caregivers with lower levels of SES. Caregivers from lower classes of SES, however, were also more likely to receive family support and to have stronger family networks (Kessler, Peters, Lee, & Barr, 2005). Socioeconomic status has been identified as a potentially important variable within the stress process model and in reviews of social influences on caregiver outcomes (Payne, 2004; Pearlin et al., 1990). Thus, this study includes SES as a background variable in statistical analyses.

Gender

Gender may impact ideologies and cultural influences that shape the way the environment interacts with men compared to women. Past research suggests that gender is a significant factor in the caregiving literature, as gender has been shown to be highly related to caregiver health outcomes (i.e., Huang, 2006; Neal & Hammer, 2005). In a study among spouse caregivers of Alzheimer's Disease and Parkinson's disease caregivers, Hooker and colleagues (Hooker, Manoogian-O'Dell, Monahan, Frazier, & Shifren, 2000) proposed that literature suggesting caregiving wives fare worse in terms of mental health than caregiving husbands may have resulted from the fact that the caregiving literature was overwhelmingly based on AD caregiving. In AD, there is a profound loss of reciprocity within the marriage, which does not exist in nondementia caregiving situations. This loss of reciprocity was hypothesized to be more problematic psychologically for women than for men. In comparing gender differences in the two different caregiving contexts, Hooker et al. indeed found that AD wives experienced significantly worse mental health than husbands but this was not true for PD caregivers. There were no differences in mental health between husbands and wives in the PD caregiving group. It is important to disentangle gender differences from disease contexts in caregiving research.

Women also appear to be more vulnerable to the stress associated with caregiving roles (Moen, 2001). With a sample of 148 Taiwanese caregivers of family members with dementia, Huang (2006) found that female caregivers had more

depressive symptoms than male caregivers, especially for those with low income. Neal and Hammer (2005) also found that men may fare better with the stresses of caregiving. Men who helped with activities of daily living (ADLs) for their parents had greater life satisfaction. Neal and Hammer suggest that men who are caring for their parents may receive more positive feedback from society, as our society views the woman as the typical caregiver. Because men are not expected to provide daily care to their aging family members, they are not only noticed, but many times praised when they do fill the caregiving role. Yee and Schulz's (2000) study of gender differences in family caregiving indicated that female caregivers experience more psychological distress than men. Yee and Schulz (2000) suggest that the increased levels of psychological distress observed in women may be a result of increased caregiving levels.

Level of caregiving

Level of caregiver involvement has consistently been linked to stress and burden (Brazil, Bedard, Willison, & Hode, 2003). In a study of 151 family caregivers, Brazil and colleagues (2003) found that as caregivers provided more assistance with activities of daily living (ADLs), they were more likely to experience higher levels of burden and worse physical health.

Tooth and colleagues (2005) found that an increase in time spent caregiving for stroke victims resulted in higher levels of perceived caregiver burden and poorer physical health status. Caregivers provided interviews 6 and 12 months after their stroke patients were discharged, and initial burden levels and physical health remained stable

across time. Caregivers who spent more time caring for stroke patients were more likely to experience increased feelings of burden at both data collection points.

Additionally, in the study of the implementation of care insurance systems for elderly persons in Japan, Washio and colleagues (2005) found that the predominant risk factor for caregiver depression was time spent caring. Along with time, other risk factors for caregivers included little time to spend alone, small number of family members, and having no family members to help with caregiving. Being a primary caregiver, typically a spouse, as opposed to an occasional caregiver, also seems to be more stressful (Haley et al., 2002). This study utilizes both ADL assistance levels and years spent providing care to capture the contextual level of caregiving.

Alzhiemer's Disease (AD) and Parkinson's Disease (PD)

Dementia caregivers in particular experience severe chronic stress (George & Gwyther, 1986). The presence of Alzheimer's Disease results in a slow deterioration of memory and brain functioning that can often lead to neuropsychiatric symptoms including apathy, irritability, and anxiety (Gonyea, O'Connor, & Boyle, 2006). Research has suggested that the elevated levels of stress associated with caring for a loved one with dementia provides a prime context for investigating the link between stress and physical health outcomes (Grant, 1999). Although few comparative studies have clearly defined disease groups within the caregiving literature (Beach et al., 2000; Hooker et al., 2000; Hooker et al., 1998), there is some evidence that dementia caregivers may be at greater risk for experiencing negative health outcomes (Hooker et

al., 1998). Ory et al. (1999) found that caregivers of dementia patients experienced increased levels of physical strain and health problems. Dementia caregivers may also be at a greater risk for experiencing psychiatric illness, depressive symptoms, and emotional strain (Schulz et al., 1990).

Caring for a spouse with Parkinson's disease can also be detrimental to one's physical health (Hooker et al., 1998). Parkinson's disease is characterized by loss of motor functioning, tremors, and rigidity (Frazier, Cotrell, & Hooker, 2003). Hooker et al. (1998) found that PD caregivers actually reported worse physical health than their AD caregiving counterparts, when all other variables were controlled. Both AD and PD are chronic diseases that lend themselves to stressful caregiving situations (Hooker et al., 1998). Providing care for an AD or PD patient is not only emotionally draining but can be physically taxing as well (Ory et al., 1999). Thus, this study utilizes a sample of both AD and PD caregivers to investigate the impact that personality has on physical health outcomes among well-defined disease groups over time in chronic stressful caregiving situations.

Personal Resources: Personality Traits and Physical Health Outcomes

Personality traits have an impact on both physical health and length of life (Caspi, Roberts, & Shiner, 2005). Studies have shown that longer lives are associated with high levels of extraversion and conscientiousness and low levels of neuroticism and negative affect (Christensen et al., 2002; Danner, Snowdon, & Friesen, 2001; Jylha & Isometa, 2006; Wilson et al., 2004). Neuroticism has received most of the attention

when looking at self-assessed health and illness behavior in comparison to the other dimensions of the Five-Factor Model (Williams, 2006). In the general population, individuals who score high in neuroticism tend to have poorer self-assessed health (Costa & McCrae, 1987; Williams & Wiebe, 2000). Individuals with high levels of neuroticism may report more symptoms because they experience increased sensitivity to physical ailments (Williams, 2006). There has also been evidence, however, suggesting neurotic individuals may report symptoms that are unrelated to disease or illness (Wiebe, Alderfer, Palmer, Lindsay, & Jarret, 1994). Neuroticism has also been linked to greater reactivity to stressors (Bolger & Zuckerman, 1995) and to higher levels of the stress hormone cortisol (Williams, 2006). Additionally, higher levels of neuroticism are related to some risky health behaviors such as substance abuse (Booth-Kewly & Vickers, 1994; Cooper, Agocha, & Sheldon, 2000). Siegler and colleagues (2003) found that high levels of college hostility (highly related to neuroticism) significantly predicted smoking and alcohol consumption. Consistent with past research, Gray and Watson (2002) also found that neurotic individuals are at greater risk for experiencing poorer sleep quality. Thus, research indicates that the poorer self-assessed health of neurotic individuals may be consistent with underlying health problems (Cameron, Leventhal, & Love, 1998).

High levels of neuroticism have also been shown to predict feelings of burden and negative health outcomes among caregivers (Jang et al., 2004; Welleford et al., 1995; Jylha & Isometsa, 2006; Reis et al., 1994). Previous research (Bookwala &

Schulz, 1998; Hooker et al., 1994; 1998) suggests that high levels of neuroticism are linked to how caregivers appraise stressful situations. Situations may seem more stressful or threatening, thus neurotic individuals are at an increased risk for experiencing physical health problems and psychological distress (Jang et al., 2004). Perceived stress levels appear to magnify the effect of personality on physical health outcomes.

Although neuroticism remains the most investigated dimension of the Big-Five traits within the psychology and health literature (Williams, 2006), one exception is in the self-care domain in which the dimension of conscientiousness has been found to exert a strong effect on physical health outcomes (Bogg & Roberts, 2004). High levels of conscientiousness have been linked to healthy behaviors (Bogg & Roberts, 2004) and longer lives (Friedman, Tucker, Tomlinson-Keasey, Schwartz, Wingard, & Criqui, 1993). In a study of 72 renal dialysis patients, Christensen and Smith (1995) found that higher levels of conscientiousness were related to better adherence to medical regimens.

In terms of the remaining Big-Five traits, high levels of extraversion have been related to greater reports of illness symptoms (Williams, O'Brian, & Colder, 2004). These findings have resulted from a relationship between extraversion and risky health behaviors (Cooper et al., 2000). High scores in extraversion, however, have also been linked to social support and help-seeking behavior (Amirkhan, Risinge, & Swickert, 1995). Courneya and colleagues (2002) found that high levels of extraversion were beneficial in exercise adherence programs for cancer survivors. Low levels of

agreeableness have been related to hostility (Costa, McCrae, & Dembroski, 1989), which is consistently linked to poor health outcomes (Miller, Smith, Turner, Guijarro, & Hallet, 1996). Openness to experience has received the least attention in its relation to physical health outcomes in the general population (Williams, 2006). Where it has been examined, there is little evidence of a direct link between openness to experience and physical health outcomes (Williams, 2006). Studies that investigate the entire spectrum of personality dimensions in relation to physical health outcomes are warranted (Williams, 2006). Thus, this study includes all five of the Big-Five personality traits, along with the process-like component of state anxiety.

Personal Resources: State-Like Characteristics and Physical Health Outcomes

Substantial evidence links affective states, stress, and functioning of the immune system (Cohen & Williamson, 1991). Anxiety has consistently been linked to negative health outcomes, such as coronary heart disease in the general population (Aldwin, Levenson, & Gilmer, 2003). Among the caregiving population, evidence suggests that caregiving places one at risk to experience elevated levels of anxiety (Mohide et al., 1990). Mohide and colleagues (1990) found that 22 out of 23 caregivers in their study reported significant symptoms of anxiety. Additionally, research indicates that anxiety levels of caregivers can fluctuate on a day-to-day basis (Shifren & Hooker, 1995). Studies have shown that measures of *state-like* processes can successfully predict health outcomes over time (Eizenman, Nesselroade, Featherman, & Rowe, 1997). In one of the Cornwall Manor Studies, Eizenman and colleagues (1997) found that weekly

measurements of within-person variability of perceived control and perceived competence in an older sample significantly predicted mortality 5 years later. Thus, this study includes Time 1 measurements of state anxiety to better understand how process-like components of personality, such as anxiety levels, impact perceived physical health outcomes among the caregiving population over time.

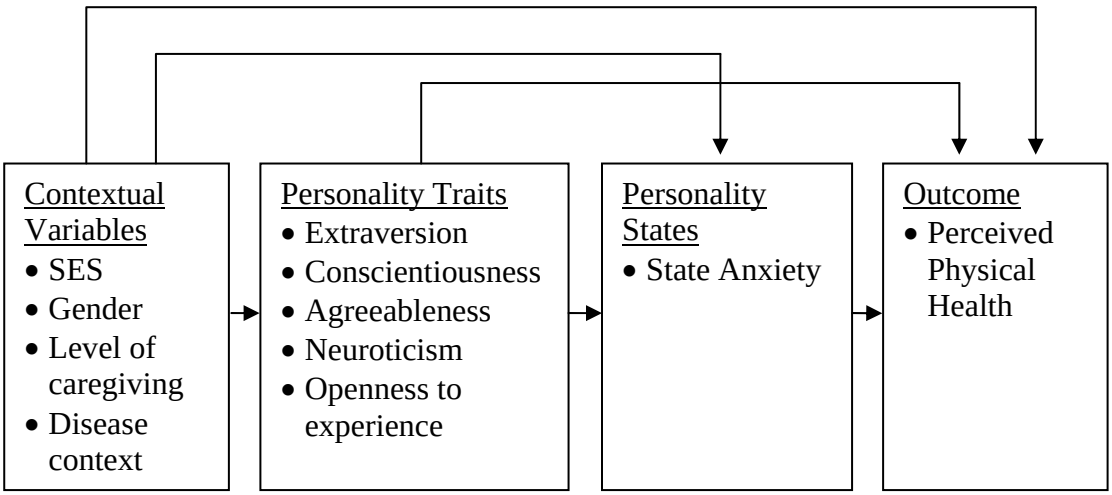
Summary

Research has shown that personality traits have an impact on physical health outcomes in the general population (Caspi et al., 2005) and in caregiving samples (Hooker et al., 1998). Neuroticism has received the most attention of the Big-Five personality traits and has consistently been linked to poor self-assessed health (Costa & McCrae, 1987; Williams & Wiebe, 2000). Conscientiousness has been studied mostly in the self-care domain (Bogg & Roberts, 2004). High levels of conscientiousness are related to healthy behaviors (Bogg & Roberts, 2004), longer lives (Friedman et al., 1993), and better adherence to medical regimens (Christensen & Smith, 1995). Far less is known about the traits of extraversion, agreeableness, and openness to experience. Some studies have found that high levels of extraversion are related to greater reports of illness symptoms (e.g., Williams et al., 2004), whereas other studies have found that extraverts are more likely to adhere to exercise programs (e.g., Courneya et al., 2002). Low levels of agreeableness may be related to hostility, which is consistently linked to poor physical health outcomes (Miller et al., 1996). There has been little evidence for a direct link between openness to experience and physical health outcomes (Williams,

2006). All Big-Five traits are examined in this study, however, as knowledge of the entire spectrum of personality dimensions is needed (Williams, 2006).

Anxiety has consistently been linked to poor health outcomes (Aldwin, Levenson, & Gilmer, 2003). State anxiety represents the process-like dimension of personality within this study. Research has shown that *state-like* processes can predict participants' health outcomes over time (Eizenman et al., 1997). Taking a broader approach to personality is expected to add to the predictive power of perceived physical health outcomes (Hooker & McAdams, 2003). The stress process model is proposed to consist of the interplay between the *personal resources* of the caregiver and the *contextual stressors* to which they are exposed (Pearlin et al., 1990). Research has shown that personality may impact the way caregivers appraise stress, ultimately influencing physical health outcomes (Hooker et al., 1998). Contextual variables such as SES, gender, level of caregiving, and disease status have also been linked to caregiver health outcomes (Brazil et al., 2003; Hooker et al., 2000; Moen, 2001). Thus, it is proposed within the current study that contextual variables, personality traits, and personality states all influence perceived physical health among caregivers over time (see Figure 3). The overall goals of this study are twofold: (a) to utilize two well-defined groups of caregivers to investigate whether contextual variables are related to perceived physical health outcomes, and (b) to better understand the link between stressful caregiving situations and health outcomes by investigating the impact of both personality traits and states on physical health outcomes.

Figure 3. Conceptual Model



Research Questions

Grounded in Pearlin and colleagues' (1990) stress process model, and the six foci model of personality (Hooker & McAdams, 2003), this study seeks to answer the following research questions:

1. Do contextual variables among well-defined disease groups (i.e., SES, gender, ADL assistance levels, number of years caregiving) correlate to caregiver perceived physical health outcomes?
2. Do the Big-Five personality traits of spouse caregivers at Time 1 predict their own perceived physical health one year later at Time 2?

3. Does a process-like personality component (i.e., state anxiety) of spouse caregivers at Time 1 add to the predictive power of physical health at Time 2, over and above groups of contextual variables and the Big-Five traits?

Research Hypotheses to Be Tested

1. Better perceived physical health at Time 2 will be predicted by:
    a. Higher levels of SES
    b. Being a male caregiver
    c. Lower levels of ADL assistance
    d. Fewer years of providing care
    e. Being a caregiver of an individual with Parkinson's disease
2. Better perceived health at Time 2 will be predicted by:
    a. Higher levels of extraversion at Time 1
    b. Higher levels of conscientiousness at Time 1
    c. Higher levels of agreeableness at Time 1
    d. Lower levels of neuroticism at Time 1
    e. Higher levels of openness to experience at Time 1
    f. Lower levels of state anxiety at Time 1
3. When added hierarchically after the block of demographic variables and the block of Big-Five traits, state anxiety of spouse caregivers at Time 1 will significantly add to the predictive power of perceived physical health at Time 2.

Chapter 3
METHOD

The project, "Health of Caregivers: The Role of Personality," provided the data for this study. Funded by the National Institute of Mental Health (NIMH), this study was designed to explore psychosocial processes and health outcomes of spouse caregivers of Alzheimer's Disease (AD) and Parkinson's disease (PD) patients. Caregivers were interviewed in their homes between 1991 and 1992, and were sent mail-back questionnaires approximately one year later between 1992 and 1994. Caregivers who participated at both Time 1 and Time 2 were included in this study (N = 122).

Participants

Time 1

At Time 1, 88 AD spouse caregivers and 87 PD spouse caregivers (N = 175) were recruited from hospital-based dementia evaluation clinics, neurologists' offices, AD and PD support groups, newspaper ads and articles, public service announcements, churches, and health fairs in the Central New York area (Hooker et al., 1998). Caregivers were included in the study if they met the following criteria: (a) spouse had confirmed diagnosis of AD or PD, (b) spouse had been diagnosed at least one year previously, (c) caregiver and spouse had to be living in the same household, and (d) PD patients had to be cognitively intact (Hooker et al., 1998).

Fifty-two (59.1%) of the 88 AD caregivers were wives and 36 (40.9%) were husbands (see Table 2). All but four of the 88 AD caregivers were White (95.5%). Only 4.5% of the AD sample were minority caregivers (3 caregivers were African

American and 1 was Asian). The average age of AD caregivers was 70.2 years (*SD* = 9.5), ranging from 39 to 89 years of age. AD caregivers had been married an average of 43.4 years (*SD* = 13.8 years) and had been caregiving an average of 4.4 years (*SD* = 3.7 years).

Of the 87 PD caregivers, 55 (63.2%) were wives and 32 (36.8%) were husbands. All but 1 (African American) of the PD caregivers was White (98.8%). The average age of PD caregivers was 67.1 years (*SD* = 8.6 years), ranging from 41 to 82 years. PD caregivers had been married an average of 39.6 years (*SD* = 12.6 years) and had been caregiving an average of 7.6 years (*SD* = 7.1 years).

Table 2
Demographic Characteristics of Time 1 and Time 2 Participants

	Time 1 (*N* = 175)		Time 2 (*N* = 122)	
Characteristic	AD (*n* = 88)	PD (*n* = 87)	AD (*n* = 64)	PD (*n* = 58)
Gender (%)				
Male	40.9	36.8	37.5	38.0
Female	59.1	63.2	62.5	62.0
Ethnicity (%)				
White	95.5	98.8	98.4	94.8
Non-White	4.5	1.2	1.6	5.2
Mean Age	70.2	67.1	70.3	67.4
Mean Years Married	43.4	39.6	43.8	38.4
Mean Years Caregiving	4.4	7.6	4.8	8.5
Care-recipient Residence (%)				
Home	100	100	66.0	93.0
Nursing Home	-	-	20.0	3.0
Other	-	-	3.0	2.0
Deceased	-	-	11.0	2.0

Time 2

Approximately one year after participating in the Time 1 interview, 122 spouse caregivers (64 AD, 58 PD) responded to mail-back questionnaires (a return rate of 70%). Forty of the 64 AD caregivers (62.5%) were wives and 24 (37.5%) were husbands at Time 2 (see Table 2). All but 1 (African American) of the AD caregivers were White (98.4%). AD caregivers were an average of 70.3 years of age (*SD* = 9.4 years), ranging from 45 to 89 years. Caregivers had been married an average of 43.8 years (*SD* = 14.1 years) and had been caregiving an average of 4.8 years (*SD* = 4.1 years). At Time 2, the majority of care recipients remained at home (66%) whereas 20% resided in a nursing home, 3% reported *other* residential statuses, and 11% were deceased.

Thirty-six (62%) of the 58 PD caregivers were wives and 22 (38%) were husbands. All but 3 (African American) of the PD caregivers were White (94.8%). PD caregivers were an average of 67.4 years of age (*SD* = 8.9 years), ranging from 41 to 81 years. Caregivers had been married an average of 38.4 years (*SD* = 13.6 years) and had been caregiving an average of 8.5 years (*SD* = 7.3 years). At Time 2, the majority of care recipients remained at home (93%), whereas 3% resided in a nursing home, 2% reported *other* residential statuses, and 2% were deceased.

Measures

Personality Traits

To measure personality traits, an abbreviated version of the NEO Personality Inventory (Costa & McCrae, 1989), the NEO-Five Factor Inventory (NEO-FFI) was utilized. The NEO-FFI is a 60-item self-report measure of the five major personality domains: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Each domain was measured by 12 items on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Participants were measured on all five domains of the NEO-FFI at Time 1. Sample items are "I often feel inferior to others" (neuroticism), " I like to have a lot of people around me" (extraversion), "I often enjoy playing with theories or abstract ideas" (openness to experience), "I would rather cooperate with others than compete with them" (agreeableness), and "I am a productive person who always gets the job done" (conscientiousness). Cronbach's alpha coefficients were .77 for the neuroticism scale, .73 for the extraversion scale, .72 for the openness to experience scale, .74 for the agreeableness scale, and .84 for the conscientiousness scale.

State Anxiety

At Time 1, the Spielberger's State-Trait Anxiety Inventory (STAI) was used to assess spouse caregivers' levels of current anxiety (Form Y; Speilberger, 1980). State anxiety was measured by 20 items on a 4-point scale, ranging from 1 (*not at all*) to 4 (*very much so*). Higher scores indicated higher levels of anxiety. Previous research has

shown that the STAI has strong psychometric properties (e.g., Buros, 1978) and is appropriate for use with older adults (Usala & Hertzog, 1990). Sample items are “I feel calm” and “I am presently worrying over possible misfortunes.” Cronbach’s alpha for state anxiety in this study was .94.

Physical Health

Perceived physical health was assessed at both Time 1 and Time 2 utilizing the Current Health subscale of the Health Perceptions Questionnaire (HPQ) from the Rand Health Insurance Experiment. Perceived physical health was measured by 9 items on a 5-point scale, ranging from 1 (*definitely false*) to 5 (*definitely true*). The HPQ has been shown to be very reliable and valid (Davies & Ware, 1981). Higher scores indicated worse perceived physical health. Sample items include, “According to the doctors I’ve seen, my health is now excellent” and “I’m not as healthy now as I used to be.” Cronbach’s alpha for this scale in this study was .89 at Time 1, and .84 at Time 2.

Activities of Daily Living

Activities of daily living (ADL) were measured at Time 1 using the Multilevel Assessment Instrument (MAI; Lawton, Moss, Fulcomer, & Kleban, 1982). Activities of daily living include tasks such as eating, bathing, and dressing. ADL assistance levels were measured by 15 items on a 3-point scale, ranging from 0 (*none*) to 2 (*much*). Caregivers were first asked whether their spouse needed assistance with everyday tasks. If caregiver assistance was indicated, individuals were then asked how much help they provided for their spouses. Cronbach’s alpha for this scale was .93.

Attrition Analysis

Fifty-three cases dropped from the study between Time 1 (N = 175) and Time 2 (N = 122). Attrition resulted from death, illness, and changing residence. It should be noted that participants were initially recruited for Time 1 only, with no expectation that there would be a follow-up. An attrition analysis was conducted to examine whether there were any differences between the participants who provided data at both Time 1 and Time 2, and participants who only provided data at Time 1. Chi-square tests and *t*-tests indicated that there were no differences between the dropped and retained samples: SES (t = .79, p = .43), gender (χ^2 = .32, p = .62), disease group (χ^2 = .28, p = .62) ADL assistance (t = .13, p = .90), number of years caregiving (t = 1.75, p = .08), Time 1 perceived physical health (t = .71, p = .48), neuroticism (t = .61, p = .54), extraversion (t = -.03, p = .97), openness to experience (t = 1.27, p = .21). agreeableness (t = -.30, p = .77), conscientiousness (t = .56, p = .58), and state anxiety (t = -.68, p = .50). The samples at Time 1 and Time 2 were not statistically significantly different.

Analytic Strategies

Before conducting hierarchical linear regression analyses, a linear regression power analysis was run using STATA 9 (StataCorp, 2005). A power analysis was performed to determine the power available to successfully detect statistically significant model coefficients. A power level of 0.80 or above is considered an adequate level to successfully detect regression coefficients (Cohen, 1988). Given an alpha level

of $p = .05$, a sample of $N = 122$, 11 model predictors, and a projected moderate effect size of $f_2 = .15$, the estimated power was 0.83.

To explore the potential link between caregiver personality at Time 1 and perceived physical health at Time 2, descriptive statistics and hierarchical linear regressions were performed. Quantitative statistical analyses for this study were conducted using SPSS (Statistical Package for the Social Sciences) 15.0 (2006), and statistical significance was set at the two-tailed $p < .05$ level. Descriptive statistics were included in the data analyses for each variable to test for normality and skewness of the sample, and also for outliers. Hierarchical linear regressions were used to explore relationships between predictor variables and outcome variables.

Hierarchical linear regressions were performed for the outcome variable of perceived physical health at Time 2. The regression explored whether state anxiety at Time 1 adds to the predictive value of perceived physical health at Time 2, over and above the Big-Five traits. The regression also tested whether contextual variables (i.e., SES, gender, disease status, ADL assistance levels, number of years caregiving) impact perceived physical health at Time 2.

The first step in the regression was to include SES, gender, disease group, number of years caregiving, and the number of activities of daily living (i.e., bathing, eating, dressing) with which the care-recipient requires help. The inclusion of disease group, number of years caregiving, and activities of daily living assistance provides information regarding the caregiving context of two clearly defined caregiving groups

(i.e., AD vs. PD). These are referred to as primary stressors in the stress process model (Pearlin et al., 1990). The second block added the Big-Five traits (i.e., neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness). The third block added Time 1 state anxiety to show the amount of the variance in perceived physical health at Time 2 that was accounted for by state anxiety, over and above the Big-Five traits, SES, gender, disease group, number of years caregiving, activities of daily living assistance, and Time 1 perceived physical health.

Very few missing data were observed for variables used in this study. The most missing data involved the variable of state anxiety at Time 1. Of the 122 participants who participated in both waves of data collection, 5 individuals did not report information for state anxiety (4.3%). This study used EM (Expectation-Maximization) missing value analysis (SPSS, 2006). The EM approach is based upon the relationship among all variables to estimate the means, the covariance matrix, and the correlation of quantitative variables for missing values (Acock, 2005). For this study, the estimation method utilized all available information for the 122 participants.

Chapter 4
RESULTS

This study was focused on better understanding the link between stressful caregiving situations and health outcomes by investigating the impact of both personality traits and states, and contextual caregiving variables, on physical health outcomes. Hierarchical linear regression analysis was used to address the study's three research questions: (a) Do contextual caregiving variables, such as disease status, number of years caregiving, and activities of daily living assistance, relate to Time 2 caregiver perceived physical health outcomes? (b) Do the Big-Five personality traits of spouse caregivers at Time 1 predict their own perceived physical health one year later at Time 2? and (c) Does a process-like personality component (i.e., state anxiety) of spouse caregivers at Time 1 add to the predictive power of physical health at Time 2, over and above blocks of demographic variables and the Big-Five traits?

Table 3 shows the means, standard deviations, and correlations for the 12 observed variables. Caregivers for individuals with Alzheimer's Disease provided more ADL assistance, but for fewer years than caregivers for individuals with Parkinson's disease. Not surprisingly, caregivers with lower levels of SES also provided more ADL assistance. Alzheimer's Disease caregivers also had worse perceived physical health at Time 2.

Assessment of Multicollinearity

Bivariate correlations were examined to detect the presence of collinearity

Table 3

*Correlations, Means, and Standard Deviations for Variables in Hierarchical Regression (*N = *122)*

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. SES												
2. Gender[a]	-.02											
3. Disease group[b]	-.11	.01										
4. ADL assistance	-.23*	.10	.30**									
5. Caregiving years	.10	.06	-.30**	.04								
6. Neuroticism	-.16	.03	.18*	.11	-.15							
7. Openness to experience	.13	-.16	.13	-.09	-.14	-.03						
8. Extraversion	.14	-.04	-.16	-.18*	.05	-.39**	.15					
9. Agreeableness	.12	-.28**	-.16	.02	.19*	-.31**	.09	.10				
10. Conscientiousness	.10	-.08	.01	-.04	.09	-.22*	-.09	.27**	.31**			
11. State anxiety	-.07	-.12	.34**	.16	-.16	.46**	.01	-.26**	-.16	-.01		
12. Time 2 HPQ	.07	-.04	-.19*	-.12	-.04	-.29**	-.20*	.19*	.02	-.04	-.33**	
M	44.09	1.38	.52	5.30	6.59	49.85	49.71	51.43	52.99	50.64	36.97	30.87
SD	12.50	.49	.50	4.65	6.15	9.30	10.69	10.61	11.02	11.59	12.13	8.17

Note. Variables 1-11 were measured at Time 1. [a]0 = *husband*, 1 = *wife*, [b]0 = *Parkinson's disease*, 1 = *Alzheimer's Disease*.
*$p \leq .05$ **$p \leq .01$. Two-tailed tests.

greater than $r = .60$ (Nunnally, 1978; see Table 3). No correlations met the criterion and were generally small to moderate, ranging from $r = .01$ to .46. Multicollinearity diagnostics were also used during regression modeling in which the variance inflation factor and tolerance were tested. None of the tolerances was lower than .71. No evidence of problematic levels of multicollinearity was detected.

Hierarchical Linear Regression Analysis

Hierarchical multiple regression analysis was conducted to test relationships between three levels of predictor variables and the outcome variable, Time 2 perceived physical health. To ensure that the assumptions of multiple regression analysis were not violated, stem and leaf plots and scatterplots of residuals were utilized. Stem and leaf plots demonstrated normality of distribution and scatterplots demonstrated homoscedasticity. The assumptions of normal distribution, homoscedasticity, and no outliers (Agresti & Finlay, 1997) were satisfied.

Control variables and contextual variables were entered into the model first (SES, gender, disease group, ADL assistance, and number of years caregiving; Model 1), personality trait variables were entered into the model next (neuroticism, openness to experience, agreeableness, extraversion, conscientiousness; Model 2), and finally the state anxiety variable was entered into the model last (Model 3). Hierarchical linear regression analyses (see Table 4) measured whether a statistically significant amount of variance in Time 2 perceived physical health was predicted by: (a) control and contextual variables; (b) control variables, contextual variables, and personality traits; and (c) control variables,

Table 4

*Summary of Hierarchical Regression Analysis for Time 1 Variables Predicting Time 2 Perceived Physical Health (*N = *122)*

Predictor	Model 1			Model 2			Model 3		
	B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Control and contextual variables									
SES	.03	.06	.05	.04	.06	.06	.04	.06	.07
Gender[a]	-.37	1.61	-.02	-1.24	1.64	-.07	-1.83	1.63	-.11
Disease group[b]	-3.50	1.72	-.21*	-2.06	1.68	-.13	-1.21	1.70	-.07
ADL assistance	-.06	.18	-.03	-.03	.18	-.01	-.01	.17	-.01
Number of years caregiving	-.13	.13	-.10	-.19	.13	-.14	-.20	.13	-.15
Personality Traits									
Neuroticism				-.23	.10	-.25*	-.15	.10	-.17
Openness to Experience				-.21	.08	-.27**	-.21	.07	-.28*
Agreeableness				-.01	.08	-.02	-.03	.08	-.04
Extraversion				.13	.08	.16	.11	.08	.14
Conscientiousness				-.11	.08	-.15	-.09	.07	-.12
State anxiety							-.16	.07	-.23*
R^2	.05			.19			.23		
R^2 Change				.14			.04		
F	1.21			2.41*			2.72**		
df	5, 108			10, 103			11, 102		
F change				1.20			0.31		
df				5, 103			1, 102		
Intercept	32.75			54.47			57.51		

[a]0 = *husband*, 1 = *wife*, [b]0 = *Parkinson's disease*, 1 = *Alzheimer's Disease*.

*$p \leq .05$ **$p \leq .01$.

contextual variables, personality traits, and state anxiety.

Model 1

Model 1 assessed the effect of control variables and contextual variables on Time 2 perceived physical health outcomes. The model did not account for a statistically significant amount of variance, indicating that there was no linear relationship between the five control and contextual variables (SES, gender, disease group, number of years caregiving, and ADL assistance) and Time 2 perceived physical health. The first model accounted for 5% of the variance in Time 2 perceived physical health outcomes. The hypothesis that contextual factors would be significantly related to Time 2 perceived physical health outcomes was not substantiated.

Model 2

Model 2 included personality trait variables along with control and contextual variables and was statistically significant (R^2 = .19, F(10, 103) = 2.41, p < .05). The combined effects of the control variables and contextual variables, and personality trait variables significantly explained 19% of the variance, which was a 14% increase from Model 1. Neuroticism (t = -2.40, p < .05) and openness to experience (t = -2.81, p < .01) were statistically significant predictors in Model 2. As predicted, a one standard deviation increase in scores of Time 1 neuroticism was associated with a .23 standard deviation decrease in Time 2 perceived physical health. Surprisingly, however, a one standard deviation increase in scores of Time 1 openness to experience was associated with a .21 decrease in Time 2 perceived physical health.

Model 3

Model 3, consisting of control variables, contextual variables, personality traits, and the personality state measurement of state anxiety accounted for a statistically significant amount of the variance in Time 2 perceived physical health (R^2 = .23, F(11, 102) = 2.72, p < .01). The combined effects of control variables, contextual variables, personality traits, and state anxiety significantly explained 23% of the variance in Time 2 perceived physical health, 4% more than Model 2, which was consistent with the study's second hypothesis. Openness to experience (t = -2.91, p < .01) and state anxiety (t = -2.20, p < .05) were statistically significant predictors in Model 3. A one standard deviation increase in Time 1 scores of openness to experience was associated with a .21 decrease in Time 2 perceived physical health. A one standard deviation increase in Time 1 scores of state anxiety was associated with a .16 decrease in Time 2 perceived physical health.

Overall, Time 1 contextual variables did not significantly predict Time 2 perceived physical health, with the exception of disease status in Model 1. Model 1, however, did not account for a statistically significant amount of variance in Time 2 perceived physical health. The inclusion of personality traits in Model 2 accounted for 14% more variance than Model 1 and was statistically significant. Of the 10 predictors entered in Model 2, only neuroticism and openness to experience were statistically significant. As predicted, higher levels of Time 1 neuroticism was associated with worse perceived physical health at Time 2. Surprisingly, however, higher levels of Time 1 openness to experience was also associated with worse perceived physical health at Time 2. The inclusion of state anxiety

in Model 3 accounted for 4% more variance in perceived physical health than Model 2, and was statistically significant. Higher levels of state anxiety at Time 1 were statistically significant in predicting worse perceived physical health at Time 2. Although openness to experience remained statistically significant in Model 3, neuroticism no longer significantly predicted Time 2 perceived physical health.

Chapter 5
DISCUSSION

A key question within the caregiving literature is why some caregivers are particularly vulnerable to the harmful health consequences associated with caregiving stress. Research has indicated that personality can impact physical health outcomes among caregivers (Hooker et al., 1998). The caregiving literature, however, has not included aspects of personality beyond traits, nor has it examined this relationship longitudinally. This study aimed to better understand the link between stressful caregiving situations and health outcomes by investigating the impact of a broader concept of personality including both traits and states.

The present study utilized hierarchical linear regression analyses to investigate the influence of contextual variables and a broader concept of personality (i.e., traits and states) on perceived physical health over time. Consistent with hypotheses, state anxiety significantly added to the predictive power of perceived physical health at Time 2, over and above contextual variables and the Big-Five personality traits. Individuals who scored high in state anxiety at Time 1 experienced worse perceived physical health at Time 2. Surprisingly, individuals who scored high in openness to experience at Time 1 experienced worse physical health at Time 2. Before adding state anxiety in the final model, high levels of neuroticism at Time 1 also predicted worse perceived physical health at Time 2. Neuroticism, however, was not statistically significant in the final model. The following discussion of research findings are organized in order of the study's research questions: (a) Do contextual variables (i.e., SES, gender, ADL assistance levels, number of years

caregiving, disease status) relate to caregiver perceived physical health outcomes? (b) Do the Big-Five personality traits of spouse caregivers at Time 1 predict their own perceived physical health one year later at Time 2? (c) Does a process-like personality component (i.e. state anxiety) of spouse caregivers at Time 1 add to the predictive power of physical health at Time 2, over and above groups of contextual variables and the Big-Five traits?

The Caregiving Context

Surprisingly, of the contextual and background variables, only disease group was significantly correlated with perceived physical health outcomes (r = -.19, p < .05). Caregivers for dementia patients had worse perceived physical health at Time 2. Caregivers for dementia patients may experience worse health outcomes because of the taxing physical and emotional distress associated with watching the deterioration of a spouse's mental capacities. Although contextual variables accounted for only 5% of the variance in Time 2 perceived physical health outcomes, the addition of personality traits and states accounted for an additional 23% of the variance. Research has shown that individuals tend to evaluate themselves by making social comparisons (Wood, 1989). Individuals also tend to compare themselves with individuals who they perceive to be in worse situations (Wood, 1989). Perhaps caregivers compare themselves to individuals in similar or worse situations and thus perceive lower levels of stress comparatively, ultimately impacting physical health outcomes.

Although contextual variables did not significantly predict physical health outcomes among caregivers, the utilization of clearly defined disease groups is essential to

enhance the caregiving literature. Most studies have included only AD or PD caregivers, or compared one disease group with a noncaregiving control group. These results indicate that caring for a spouse with mental versus physical health impairments may have significantly different impacts on caregiver physical health outcomes. Future research should further pursue the assessment of clearly defined disease groups to better understand which caregiving situations are particularly hazardous to caregiver health outcomes.

The Big-Five Personality Traits

Openness to experience has received the least of attention in its relation to physical health outcomes in the general population (Williams, 2006). Therefore, results indicating a significant link between openness to experience and perceived physical health were unexpected. High scores on openness to experience refer to curiosity, imagination, and interest in variety (Costa & McCrae, 2003). At first glance, these characteristics would seem beneficial in stressful situations. Individuals who scored high in openness to experience at Time 1, however, experienced worse perceived physical health at Time 2. Perhaps caregivers who score high in openness to experience feel “trapped” by their intensive care responsibilities within the home environment. Spouse caregivers may be particularly vulnerable to this role strain. In a study of 527 caregivers of dementia patients, Skaff and Pearlin (1992) found that spouses were more likely to experience role engulfment and loss of self than were adult children. Higher levels of self-loss were associated with lower scores on self-esteem and higher levels of depressive symptomatology. Depressive symptoms have been linked with poor physical health

outcomes among caregivers (Hooker et al., 1998; Schulz & Beach, 1999). Relatively little is known, however, regarding how the trait domain of openness to experience impacts feelings of role strain and entrapment at this time. Gaugler and colleagues (2005) found that personal resources presented within the Stress Process Model (Pearlin et al., 1990), such as socieoemotional support and mastery, significantly predicted feelings of role overload. Future research should investigate how personality resources, in particular, openness to experience, influence role strain and feelings of entrapment, and furthermore, physical health outcomes.

As expected, hierarchical linear regression analyses revealed that individuals who scored higher in neuroticism at Time 1 experienced worse perceived physical health at Time 2. This relationship was true, however, only before the addition of state anxiety in the final model. Neuroticism is characterized by high levels of anxiety (McCrae & Costa, 2003), so it is not surprising that neuroticism and state anxiety were moderately correlated ($r = .46$, $p < .01$). It is suspected that this correlation may be the reason that neuroticism loses statistical significance with the addition of state anxiety into the model. The trait domains of conscientiousness, agreeableness, and extraversion did not significantly predict perceived physical health outcomes among caregivers. Perhaps the influence of some personality traits are better captured by investigating diverse dimensions of physical health. For example, in studies investigating adherence to medical regimens (Christensen & Smith, 1995) and reports of illness symptoms (Williams et al., 2004), conscientiousness and extraversion have been linked to physical health outcomes. Perhaps a broad measure of

perceived physical health is not influenced by the traits of conscientiousness, extraversion, and agreeableness. Broader measures of physical health should also be utilized to better understand the relationship between neuroticism, state anxiety, and physical health. Future studies that investigate multiple dimensions of physical health may help researchers and practitioners better understand how personality components are linked to different manifestations of physical health outcomes.

Personality States

Studies have indicated that measures of *state-like* processes can successfully predict health outcomes over time (Eizenman et al., 1997). Anxiety has consistently been linked to poor health outcomes (Aldwin et al., 2003) and represented the *state-like* dimension of personality within this study. As predicted, hierarchical linear regression analyses revealed that state anxiety significantly explained 4% more of the variance in Time 2 perceived physical health, over and above the Big-Five traits and contextual variables. These results indicate that the inclusion of *state-like* variables within caregiving studies is warranted to better understand which caregivers are particularly vulnerable to the deleterious effects of caregiving stress. Studies that have investigated the flexible components of personality have found significant links to physical health outcomes (Wrosch, Dunne, Scheier, & Schulz, 2006). For example, in a study of 284 older adults, Umstattd and colleagues (2008) found that the *state-like* variable of self-regulation significantly predicted physical activity levels. Wrosch and colleagues (2006) suggest that self-regulatory processes may even mediate the relationship between common age-related challenges and mental and physical

health outcomes. Thus, taking into consideration the malleable aspects of personality, such as state anxiety, may prove to be extremely important for the development of successful future interventions. Relatively little is known, however, regarding how personality traits and states interact to impact health outcomes among caregivers. Future research should investigate this relationship and its impact on caregiver health outcomes and well-being.

Limitations and Future Directions

Several limitations should be noted within the current study. The sample consisted of predominantly White participants from Upstate New York. Thus, the results of this study cannot be generalized to other populations. Ethnicity can have a significant impact on reactions to disease and also the family structure of care (Dilworth-Anderson & Gibson, 1999). Utilizing data from the Resources for Enhancing Alzheimer's Caregiver Health (REACH) study, Coon and colleagues (2004) found that Latina caregivers appraised caregiving situations as less stressful and as having greater benefits than White caregivers. Additionally, African American caregivers reported lower levels of anxiety and better well-being than White caregivers (Haley, Gitlin, Wisniewski, Mahoney, Coon, Winter, Corcoran, Schinfeld, & Ory, 2004). Thus, ethnicity may impact the stress process, and ultimately health outcomes, via appraisal processes. Future studies should sample diverse participants to better understand how ethnicity impacts appraisals of stress and physical health outcomes.

Additionally, this study only investigated one *state-like* personality component. State anxiety is most closely related to the Big-Five trait of neuroticism. Future research

should investigate how other states that reflect processes of conscientiousness, extraversion, agreeableness, and openness to experience impact caregiver health outcomes. Studies that investigate process-oriented personality constructs, such as motivations and self-regulatory processes, may be extremely beneficial in better understanding the link between stressful caregiving situations and physical health outcomes among caregivers.

Finally, perceived physical health at Time 1 was not included within this study. Thus, this study was unable to investigate *change* in perceived physical health between Time 1 and Time 2. Rather, this study focused on investigating whether measures of personality can be used to predict significant differences in perceived physical health among caregivers. This information can be used to target caregivers who are particularly vulnerable to experiencing the negative physical health outcomes associated with stressful caregiving environments. Future studies, however, should collect physical health data from multiple waves of data collection to better understand how personality can impact *change* in perceived physical health over time.

Overall, results from this study add to the evidence that personality plays a significant role in the link between stressful caregiving situations and physical health outcomes. Findings demonstrate that a broader approach to personality may be very valuable in better identifying vulnerable caregivers. Caregivers who score high in neuroticism, openness to experience, and state anxiety in particular should be targeted for intervention.

Chapter 6
CONCLUSION

With the increase of the 65 and older population, it is vital to discover what makes some caregivers particularly vulnerable to the well-established deleterious health consequences of caregiving stress. Results from this study add to the evidence that personality plays a significant role in the link between stressful caregiving situations and physical health outcomes. Individuals who scored high in neuroticism and openness to experience at Time 1 experienced worse physical health at Time 2. These results are consistent with previous literature looking at neuroticism and health outcomes among caregivers. Little is known, however, regarding the trait of openness to experience in the caregiving and general populations. Caregivers who score high in openness to experience may feel “trapped” in their intensive caregiving situations, which may influence mental and physical health outcomes. These findings may be able to enhance interventions that successfully target at-risk caregivers.

The study findings demonstrate that a broader approach to personality is valuable to better identify vulnerable caregivers. Other than disease status, contextual variables did not significantly correlate with perceived physical health outcomes. State anxiety significantly added to the predictive power of perceived physical health at Time 2, over and above the Big-Five personality traits and contextual variables. Utilizing a clearly defined caregiving sample, however, is relatively unique and recommended for future studies to better understand factors that impact caregiver health outcomes.

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APPENDICES

Appendices

- Thank you for completing these questionnaires
- Caregiver Tasks and Assistance Questionnaire
- Health Perception Questionnaire

Appendix A

THANK-YOU
for completing these questionnaires

Some of these questions may look familiar to you because they are similar to questions that you responded to approximately one year ago. We are interested in how you may have changed or remained the same in comparison to a year ago. In order to help us interpret any changes we may find, it would be helpful to know if your living situation is the same, or if changes have taken place.

1. My spouse is currently (please check one of the following):

_____living at home

_____living in a nursing home

_____deceased

_____other (please specify)

2. The functioning of my spouse now as compared to one year ago is:

_____better

_____about the same

_____worse

The rest of this page is blank so that IF there have been events in your life over the past year that have affected your responsibilities to your spouse you can list them here:

When you are finished with the questionnaires, please return them to Dr. Hooker in the enclosed envelope which is already addressed and stamped for your convenience. Please try to answer each question; it is important that we get complete information. If you have any questions, do not hesitate to call Dr. Hooker at: **(315) 443-3737**

Appendix B

CAREGIVER TASKS AND ASSISTANCE

Next, I'm going to ask you about how some everyday tasks are done. For each task I'd like you to tell me whether (your spouse) does the task (him/herself) or if (he/she) gets help and how much help (he/she) gets. [READ EACH TASK DESCRIPTION IN ITS ENTIRETY] During the past month has (YOUR SPOUSE) done the following (him/herself)?

	Is Your Spouse doing task by him/herself? 0 = yes 1 = no	If IP gets help How much are you giving? 2 = much 1 = some 0 = none
1. Eat; include supervising or reminding [(SPOUSE) to eat, cutting food, identifying food (for the blind) or actually feeding. Do not include preparation of food.		
2. Care for (his/her) appearance; include supervising or reminding [him/her] or doing tasks such as combing, shaving, or brushing teeth.		
3. Bathe or shower; include supervising or reminding, lifting (him/her) in and out of tub. Include help with sponge baths.		
4. Get around the house		
5. Dress or undress; include supervising or reminding (him/her) to dress or undress or actually dressing/undressing (him/her).		
6. Use the toilet; include reminding or taking [him/her] to toilet, supervising, helping to clean, help with catheters and colostomies.		
7. Get in and out of bed; include helping, lifting, and moving (him/her).		

Appendix C

HEALTH PERCEPTIONS

PLEASE READ EACH OF THE FOLLOWING STATEMENTS, AND THEN CIRCLE ONE OF THE NUMBERS ON EACH LINE TO INDICATE WHETHER THE STATEMENT IS TRUE OR FALSE FOR YOU.
THERE ARE NO RIGHT OR WRONG ANSWERS.

If a statement is definitely true for you, circle 5.
If it is mostly true for you, circle 4.
If you don't know whether it is true or false, circle 3.
If it is mostly false for you, circle 2.
If it is definitely false for you, circle 1.

SOME OF THE STATEMENTS MAY LOOK OR SEEM LIKE OTHERS. BUT EACH STATEMENT IS DIFFERENT, AND SHOULD BE RATED BY ITSELF.

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
A. According to the doctors I've seen, my health is now excellent.	5	4	3	2	1
B. I feel better now than I ever have before.	5	4	3	2	1
C. I am somewhat ill.	5	4	3	2	1
D. I'm not as healthy now as I used to be.	5	4	3	2	1
E. I'm as healthy as anybody I know.	5	4	3	2	1
F. My health is excellent.	5	4	3	2	1
G. I have been feeling bad lately.	5	4	3	2	1
H. Doctors say that I am now in poor health.	5	4	3	2	1
I. I feel about as good as I ever have.	5	4	3	2	1