

Older Adults' Personality and the Health of their Caregivers

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## ABSTRACT

The emotional and physical health consequences of caring for a family member are well-documented. However, although personality has been shown to affect dyadic interactions and been linked with individual outcomes for both CRs and CGs, the influence of care recipient (CR) personality on caregiver (CG) health remains unexplored. This study investigated associations between CRs' five-factor personality traits and CGs' physical and emotional health in 269 dyads of older adults and their informal caregivers who participated in the Medicare Primary and Consumer-Directed Care Demonstration. Analyses also probed differences in the health of adult child versus spousal CGs as well as CGs of CRs with versus without chronic pain. When considering the full CG sample, mixed models controlling for CG personality, strain, sociodemographic characteristics, CR physical impairment and pain found that Agreeableness in CRs was associated with better physical health among CGs. Facet-level analyses showed specific associations between the trust and compliance facets of Agreeableness and CG physical health. Investigation of personality styles revealed that the "easygoing" (N+, A+) and "well-intentioned" (A+, C-) styles predicted better physical health; the "leaders" (E+, A-) style had the opposite effect. No significant associations were found between CR personality and CG mental health. Surprisingly, no differences emerged among the sub-samples: neither CR pain nor CR personality predicted differences in the health of adult child vs. spousal CGs. Results from this study reveal the value of considering CR personality in relation to CG health, regardless of CR pain or CG relationship to the patient. Overall, these findings highlight the importance of assessing dispositional qualities within the context of care provision and informal assistance.

## BIOGRAPHICAL SKETCH

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The lengthening of life expectancy, accompanied by a rise in chronic conditions, necessitates extended elder care and informal assistance by spouses and adult children. Although estimates vary, recent reports indicate that up to 86% of assistance is provided by family members (National Alliance for Caregiving & AARP, 2009). For some persons, the caregiving experience may be a source of satisfaction and pleasure (Koerner, Kenyon, & Shirai, 2009), but for the majority, feelings of burden and strain temper such positive uplifts (Monin & Schulz, 2009; Pinquart & Sörensen, 2003). As a result, informal caregivers (CG) often emerge from caregiving roles as “hidden patients” (Fengler & Goodrich, 1979), enduring heavy physical and psychological demands. In response, considerable research has investigated why differences in the CG experience exist and how they can be addressed (Pinquart & Sörensen, 2005).

Theoretical models (Pearlin, Mullan, Semple, & Skaff, 1990) propose that both contextual factors (e.g., amount and duration of care) and individual characteristics of the CG (e.g., age, gender, self-efficacy) shape CG outcomes. Recent meta-analyses confirm these predictions, emphasizing associations between caregiver qualities and overall health (See Pinquart & Sörensen, 2003; 2005; 2006; 2007 for reviews). In general, existing evidence suggests that sociodemographic and personal characteristics (e.g., perception of caregiving demands, self-efficacy and coping) of CGs are critical contributors to their own physical and psychological health (Connell, Janevic, & Gallant, 2001). In addition, mounting evidence suggests that patient characteristics (such as level of impairment, pain, and disability) are potential stressors in the caregiving process.

One component that has been remarkably absent from existing theoretical models of caregiving is CR personality. Such a gap is surprising given that personality is linked to respective outcomes for both the CR and CG (Löckenhoff, Duberstein, Friedman, & Costa,

2011; Sörensen, Duberstein, Chapman, Lyness, & Pinqart, 2008), and has been shown to affect dyadic interactions within close relationships (Robins, Caspi, & Moffitt, 2000). Recently, the health psychology literature has begun to acknowledge the role of personality in the illness process, proposing that patient personality may indirectly affect providers and family members via channels of communication and behavior (Ferguson, 2011). This framework calls for a multi-level approach to health and emphasizes reciprocal relationships among CRs and CGs. However, formal tests of these predictions are lacking.

The present study expands upon the existing literature by exploring how five-factor personality traits of CRs may contribute to individual differences in CG health. I also examine two potential moderators of the relationship between CR personality and CG health: 1) CG relationship to the CR and 2) CR pain status.

Due to the dearth of research on in this topic area, I draw empirical and theoretical guidance from the broader caregiving and suffering (Monin & Schulz, 2009) literatures to inform my hypotheses. First, I review research exploring the role of personality in shaping respective outcomes for CGs and CRs. I then summarize predictions from theoretical models of caregiving and suffering, highlighting the interpersonal context of the care provision experience. Finally, I discuss how CR pain may accentuate the impact of CR personality on CG health and how adult children and spouses may differ in their responses to caring for an ailing relative.

Within the context of this thesis, I define “CG” as caregivers providing informal care to their relative and CRs as the corresponding care recipients. Further, I designate “CPP” to refer to CRs with chronic pain and “NCP” to refer to the non-chronic pain sample.



## **The Role of Personality in Caregiving and Health**

A growing body of research has explored the role of CGs' personality in shaping their own well-being. CGs high in Neuroticism, for example, not only appraise the caregiving experience more negatively (Reis, Gold, Andres, Markiewicz, & Gauthier, 1994), but also exhibit greater depressive symptoms (Bookwala & Schulz, 1998) and poorer physical health (Hooker, Monahan, Shifren, & Hutchinson, 1992). Conversely, individuals high in the trait of Conscientiousness tend to show better subjective health overall; whereas Agreeableness and Openness are associated with better mental and physical health, respectively (Löckenhoff, et al., 2011).

Personality has also been implicated as a predictor of CRs' response to treatment (Booth-Kewley & Vickers, 1994; McCrae & Löckenhoff, 2010). CRs high in Conscientiousness or Agreeableness have been found to be more likely to adhere to treatment regimens and engage in positive health behavior (Bogg & Roberts, 2004; Smith & Williams, 1992); whereas individuals high in the trait of Extraversion may benefit from additional social support during an illness (Smith & Williams, 1992). Although high levels of Neuroticism are negatively correlated with adherence behavior among individuals with chronic illnesses, moderate levels not only promote treatment adherence, but also are indicative of lower levels of depression (Brickman, Yount, Blaney, Rothberg, & Kaplan De-Nour, 1996). In fact, Brickman and colleagues (1996) propose that personality directly affects patient behavior: those with moderate levels of Neuroticism exhibit greater vigilance in glucose-monitoring and better overall self-care.

Despite the growing body of research documenting the importance of personality in predicting respective outcomes among CRs and CGs (Connell, et al., 2001; Löckenhoff, Duberstein, Friedman, & Costa, 2011; Sörensen, Duberstein, Chapman, Lyness, & Pinquart,

2008), systematic exploration of the effects of CR's five-factor personality on caregiver health is limited. To date, only two studies have explored the role of CR personality in relation to CG outcomes. One investigation found pre-surgical Neuroticism in coronary artery bypass patients predicted post-surgical depression in their caregivers (Ruiz, Matthews, Scheier, & Schulz, 2006); another study revealed that CR Conscientiousness was positively associated with CG self-reported physical functioning (Roberts, Smith, Jackson, & Edmonds, 2009). Although these findings provide initial evidence for a role of CR personality in CG well-being, neither investigated the full range of five-factor personality in CRs, or their relative influence on physical versus mental health in CGs.

### **Personality and Formal Care**

Although no study has provided a comprehensive assessment of all five-factor CR personality traits in relation to CG health, prior theoretical and empirical work offers indirect support for such associations. In the following section, I discuss prior literature linking CR personality to reactions and responses of professional caregivers. While these findings do not apply directly to family caregivers, they provide initial evidence for the potential association between CR personality and CG outcomes.

Early clinical reports on the physician's perspective suggest that certain patients are simply more difficult to care for than others. Termed "hateful patients," (Groves, 1987) particular individuals present as a challenge for practitioners, not because of their physical ailments but rather because of their "insatiable dependency" and other personal characteristics, such as low Agreeableness. These patients evoke a wide range of negative reactions from the medical community, and Groves differentiates four subgroups: "dependent clingers," "entitled demanders," "manipulative help-rejecters," and "self-destructive deniers." Although clearly

derogatory, these labels highlight the salience to clinicians of certain patient personality traits such as low Agreeableness that might characterize “entitled demanders” and “manipulative help-rejecters.”

Since this initial report, more differentiated assessments investigating the five-factor model of personality depict consistent patterns among patients with psychophysiological conditions (Mutén, 1991). Specifically, in a sample of patients from a behavioral health clinic who presented with chronic conditions ranging from pain to gastrointestinal symptoms, Agreeable and Conscientious patients were perceived as easier to care for due to their compliance and low levels of hostility, whereas individuals who were low in the trait of Openness were found to be less willing to explore treatment options (Mutén, 1991).

These findings illustrate the dyadic and interpersonal nature of the caregiving relationship, and provide preliminary evidence for the potential association between CR personality and caregiver outcomes. However, although Neuroticism and Extraversion are associated with patient’s own treatment adherence and somatic complaints, links between these factors and the *care provider’s* physical and mental health have yet to be established. Further, very little is known about responses to patient personality among informal as opposed to professional caregivers, although relevant theoretical frameworks are beginning to emerge. Below, I consider pathways by which CR qualities may influence CG mental and physical health, respectively.

### **Care Recipient Qualities and Caregiver Mental Health**

As noted, no research has specifically addressed the role of CR five-factor personality in CG mental health. However, theoretical models provide indirect support for this association by considering how personal qualities of the CR may affect CG outcomes. A recent model put forth

by Monin and Schulz (2009) discusses the interpersonal effects of suffering within the family caregiving context. Their framework proposes that because family CGs witness the immense physical and psychological distress of a loved one, they in turn will experience a range of emotions and reactions – regardless of whether or not they actually provide care. This integrative approach not only incorporates multiple dimensions of the caregiving experience, including patient and CG perspectives, but also suggests that features of care provision beyond patients’ own functional impairment may be important. Moreover, Monin and Schulz contend that independent of illness attributes (e.g., disability) patient suffering along with CG compassion may have strong implications for CGs’ psychological morbidity.

Extending from clinical reports, empirical studies have begun to explore the dyadic process by which CR qualities affect CG outcomes (e.g., Lyons, Zarit, Sayer, & Whitlatch, 2002). These studies underscore the importance of assessing both CG and CR perspectives in portraying a complete picture of the caregiving relationship. Indeed, research reveals deleterious health consequences for CGs of emotionally distressed patients (Bookwala & Schulz, 1998; Meiland, Kat, van Tilburg, Jonker, & Dröes, 2005). Whereas patient Neuroticism may be predictive of spousal depression (Ruiz, Matthews, Scheier, & Schulz, 2006), positive ratings of a CR’s personality by the CG appear to be associated with lower caregiver burden (Cicirelli, 1988). This finding is echoed within the chronic pain literature, such that compromised physical and emotional well-being among patients has repercussions for family members’ own psychological health (Cohen, Vowles, & Eccleston, 2010; Flor, Turk, & Scholz, 1987; Schwartz, Slater, Birchler, & Atkinson, 1991).

Notably, both Neuroticism and Extraversion are associated with increased emotional expressiveness (Riggio & Riggio, 2002) and heightened reactivity (Canli et al., 2001). In patient

populations, high levels of Neuroticism have been linked with more frequent and severe physical symptoms and somatic complaints (Costa & McCrae, 1987; Watson & Pennebaker, 1989) as well as greater levels of distress (BenDebba, Torgerson, & Long, 1997) and pain catastrophizing (Affleck, et al., 1992; Groth-Marnat & Fletcher, 2000). Similarly, Extraversion has been linked with high levels of emotional disturbance (Wade, Dougherty, Hart, Rafii, & Price, 1992) and increased pain expression (Phillips & Gatchel, 2000). Thus, CRs who score high in these traits may be more likely to communicate their feelings of anguish to their family members. Such associations warrant further exploration, but provide a foundation on which to argue that greater expressions of suffering, as conveyed by heightened levels of Extraversion and Neuroticism, may elicit greater psychological distress among CGs.

### **Care Recipient Qualities and Caregiver Physical Health**

Although less is known about the correlates of physical health of informal caregivers, a recent meta-analysis suggests that poorer physical health among CGs is more strongly linked with CR behavior problems than with CR impairment (Pinquart & Sörensen, 2007). Such investigations have focused on CGs of dementia patients; thus, it remains unclear whether these associations will extend to caregiving for cognitively intact individuals. Still, prolonged exposure to problematic behaviors poses challenges to endocrine and immune function (Kiecolt-Glaser, 1991), particularly when the stress is persistent and unrelenting. Abrasive and hostile relationships not only contribute to physiological dysregulation, but also hasten physical decline (Uchino, 1996). Whereas tense and strained relationships ignite inflammation and corrode overall physical health (Kiecolt-Glaser, Gouin, & Hantsoo, 2010), supportive and less conflictual relationships promote physical wellness (Uchino, 2004) and positive “biological profiles” (Uchino, 2006).

Though research has yet to explore the association of abrasive and inflexible dispositions in cognitively intact CRs with CG health, existing evidence provides the groundwork for such investigation. Of the five-factor personality traits, Agreeableness is most often linked with social behavior and interpersonal processes (Graziano, Jensen-Campbell, & Hair, 1996; White, Hendrick, & Hendrick, 2004), and has been consistently associated with better relationship satisfaction (Karney & Bradbury, 1995; White, et al., 2004). Moreover, Agreeableness promotes adaptive responses to interpersonal conflict (Jensen-Campbell & Graziano, 2001) as well as feelings of greater social support (Graziano, Jensen-Campbell, & Hair, 1996).

Conscientiousness, too, has been linked with better relationship quality and fewer conflicts within dyads (Asendorpf & Wilpers, 1998). Perhaps “friendly compliance” (Digman, 1990) or acquiescence on the part of the relative has the potential to reduce tension and strain within caregiving relationships, thereby alleviating the physical burden associated with oppositional or defiant behaviors. Given the association of Agreeableness and Conscientiousness with social relations, I predict that CR’s standing on these traits will have the strongest association with CG physical health.

By exploring CR personality, it may be possible to disentangle the relative contributions of patient suffering (conveyed by Neuroticism and Extraversion) and behavioral tendencies (conveyed by Conscientiousness and Agreeableness) to mental and physical aspects of CG health. In other words, I hope to explore the relative role of CR’s outward signs of suffering as compared to abrasive or antagonistic tendencies.

## **Moderators of the Relationship between Care Recipient Personality and Caregivers' Subjective Health**

The primary focus of this study is to uncover the personality characteristics of CRs that are potentially noxious or nourishing to CG health, the strength of such associations may depend on moderating factors. Specifically, I will investigate the role of CR chronic pain and the relationship between CG and CR.

### **Care Recipient Chronic Pain Status**

A growing body of literature indicates that chronic pain extends beyond the patient's immediate functioning into the family environment, often exacting a toll on caregiving relatives (Cano, Gillis, Heinz, Geisser, & Foran, 2004; Palermo, 2000; Palermo & Eccleston, 2009; Payne & Norfleet, 1986). Indeed, empirical evidence reveals that exposure to individuals in chronic pain elicits distress in the observer (Goubert et al., 2005) where both verbal and nonverbal expressions of pain in the CPP are associated with maladaptive outcomes in significant others (Craig, 2009).

Importantly, personality may shape the way in which chronic pain patients disclose and communicate about their symptoms. The trait of Neuroticism, for example, has been associated with more somatic complaints and greater pain catastrophizing (Affleck et al., 1992) as well as heightened levels of distress (BenDebba, Torgerson, & Long, 1997) among CPPs. Extraversion has also been linked with high levels of emotional disturbance (Wade, Dougherty, Hart, Rafii, & Price, 1992) and increased pain expression (Phillips & Gatchel, 2000). In turn, these conditions (i.e., catastrophizing, pain disclosure) have been implicated as risk factors for poorer psychological and physical health among family members (e.g. Cohen, Vowles, & Eccleston, 2010; Craig, 2009).

Although less is known about the other five-factor personality dimensions (i.e., Openness, Agreeableness, Conscientiousness) in relation to CPPs and their caregivers, there is some evidence for the indirect effects of these personality traits on CG health. Prior research reveals an association between CPP pain behavior and CG psychological distress (Druly et al., 2003) as well as CPP nonverbal behavior and CG compromised health (Stephens, Martire, Cremeans-Smith, Druley, & Wojno, 2006). As previously discussed, both Agreeableness and Conscientiousness foster positive social relationships and interpersonal processes, whereas oppositional or defiant behaviors are associated with negative social outcomes. Such qualities may be especially relevant to CGs of CPPs given that outward behavioral displays by CPPs are strongly linked with decrements in CG's health. On the basis of prior literature, I therefore expect that the effect of CR personality on CG health may be especially pronounced in chronic pain samples.

### **Differences between Adult Child and Spousal Caregivers**

Both adult children and spouses are likely to provide care and assistance to their aging relatives. According to the Center on Aging Society (1999), adult children comprise the largest portion of those providing informal assistance to individuals age 65 or older (44%), with spouses constituting the next largest portion (41%). Although both groups are highly involved in provision of care, adult children may differ from spouses in their responses to the caregiving experience.

One structural component that distinguishes adult children from spouses is coresidence. Although it is normative for married couples to coreside, only 10% of older individuals live with their adult children. Unfortunately, living with an ailing relative may put the CG at heightened risk for negative physical and psychological health consequences (Pinquart & Sörensen, 2007;



2011), often resulting from prolonged exposure to the CR's suffering (conveyed by Neuroticism and Extraversion) (Monin & Schulz, 2010).

Spouses may also be at heightened risk for physical and emotional upset arising from verbal and behavioral cues by their ill partner. Previous research has shown CR behavior problems to be more closely linked with maladaptive outcomes among spouses than adult children (Pinquart & Sörensen, 2007). As such, the link between CR behavior and spousal health suggests that spouses may be sensitive to the CR traits of Agreeableness and Conscientiousness. For instance, when the CR is particularly disagreeable or demanding, spousal health may suffer.

Overall, I conjecture that CR personality will have the greatest impact on spousal or coresiding CG health due to accentuated contact with the CR. In particular, CR Neuroticism and Extraversion will be associated with poorer mental health, whereas CR Agreeableness and Conscientiousness will be associated with better physical health.

### **The Present Study**

Thus far, I have reviewed theoretical accounts and empirical evidence suggesting that personality among CRs may influence CG health and that CR pain status and relationship to the CG may affect the strength of such links. The present study will add to the existing body of literature by investigating the association between CR five-factor personality traits and CG mental and physical health while controlling for relevant covariates and examining the moderating role of CR pain and relationship to the CG.

**Domain and facet-level hypotheses.** On the basis of the theoretical models and empirical evidence reviewed above, I propose that care recipient personality will show a significant association with caregiver physical and emotional health. In general, I predict that high Neuroticism and Extraversion in CRs will confer poor emotional health consequences

because of their association with emotional disturbance and pain catastrophizing, respectively (Phillips & Gatchel, 2000). In contrast, I expect that high Agreeableness and Conscientiousness in CRs will promote better physical health outcomes among CGs since the prior literature links CR interpersonal behavior with CG physical functioning (Pinquart & Sörensen, 2007). With regard to specific subsamples, I expect that CR personality will have that greatest impact on spousal CGs, and that problematic health outcomes will be especially pronounced among CGs caring for CPPs.

Several covariates that have been previously associated with CG health will also be explored: CG sociodemographic characteristics (age, gender, education, relationship to CR, coresidence), CG strain (Pinquart & Sörensen, 2006, 2007), as well as CR pain and physical impairment (Bookwala & Schulz, 1998; Pinquart & Sörensen, 2007). Given that prior theory (Monin & Schulz, 2009) and research (Pinquart & Sörensen, 2007) indicate stronger associations of CG health with CR behavior than with CR impairment, I expect that CR personality will show a significant association with CG health beyond that of CR pain and disability. In addition, I predict that differences in CR personality will have an effect on CG health above and beyond the CG's own personality. This is particularly relevant since CG personality may resemble CR personality because of shared genetics (adult child caregivers) and assortative mating (spousal caregivers) (Mikhila, Connellan, Iacono, McGue, & Burt, 2010).

The present study not only seeks to examine the broad five-factor dimensions, but also the facet sub-scales, which will allow for fine-grained insights into specific aspects of personality that may be noxious to CGs. I expect that facet-level effects will show a similar pattern to the corresponding higher-level traits (i.e., positive scores on facets within the domains of

Agreeableness and Conscientiousness should also confer salubrious outcomes, whereas facets within the domains of Extraversion and Neuroticism should predict worse health).

**Personality style hypotheses.** The preponderance of literature on personality and caregiving has considered the unique contributions of individual personality traits and facets to particular outcomes. However, much less is known about how certain combinations of factor pairs interact when coupled together although this may reveal a textured portrayal of how and when certain traits are protective or harmful (Costa & Piedmont, 2003).

Therefore, beyond simply examining the five-factor domains and facets as uni-dimensional constructs, I also consider the circumplex combinations of factor pairs, or *personality styles* (Costa & Piedmont, 2003). For instance, CR styles characterized by high Agreeableness (A+) and low Neuroticism (N-) (i.e., “easygoing”) or by low Neuroticism (N-) and low Extraversion (E-)(i.e., “low-keyed”) may be associated with better health outcomes among CGs, whereas styles characterized by high Extraversion (E+) and low Agreeableness (A-) (i.e., “leader”) may put CGs at risk for poor health. However, given the limited research on personality styles and CG health, I do not propose explicit hypotheses regarding specific styles.

## **Method**

### **Participants**

Analyses for this study are based on data from the Medicare Primary and Consumer-Directed Care (PCDC) Demonstration, a randomized, controlled trial of primary and consumer-directed care (Meng, Friedman, Wamsley, Mukamel, & Eggert, 2005). From 1998 to 2002, data were collected from CGs and care recipients residing in 19 counties in Ohio, New York State, and West Virginia. Care recipients were eligible to participate if they were: (a) enrolled in

Medicare Part A and B, (b) needed or received help with at least two activities of daily living (ADLs) or at least three instrumental activities of daily living (IADLs), and (c) received significant health care services (i.e., had been hospitalized, lived in a nursing home, received home healthcare within the past 12 months, or had visited the emergency department two or more times in the past 6 months). CG selection was based on an adapted version of the rules for identifying the primary informal caregiver used for the Medicare Alzheimer's Disease Demonstration (Newcomer, Yordi, DuNah, Fox, & Wilkinson, 1999). Patients whose Medicare eligibility had been verified by the Centers for Medicare and Medicaid Services were contacted by telephone to determine the primary caregiver in preparation for the baseline assessment visit. Demonstration staff determined the existence of a primary caregiver through a series of 9 questions while talking with the patient and/or other contact person (e.g., "Is there a family member or friend who spends time with you – helping you with things (not necessarily hands on physical care)?" "Is there one of these people who spends the most time with you?"). A comprehensive overview of eligibility criteria and recruitment can be found elsewhere (Friedman, Wamsley, Liebel, Saad, & Eggert, 2009).

Note that the MPCC was initially conceived as an intervention study examining the effectiveness of two consumer-directed care services on the well-being and healthcare utilization of physically impaired adults and their caregivers. Interventions included nurse home visits and a voucher for health supplies or support services (for additional detail see Meng et al., 2005). Preliminary analyses showed that the intervention conditions were not significantly associated with any of the measures in the present study. Also, there is no theoretical reason to believe that the conditions would affect personality traits. Therefore, the intervention variable was dropped from subsequent analyses.

Of the initial sample consisting of 2,279 individuals who were assessed at study baseline, 1,786 (78.4%) were randomized and 1,605 dyads were followed over a 24-month period. By the 22-month assessment, 514 individuals (32.0% of the 1,605) had been lost. Particular to the present study, personality traits, CG subjective health and CR pain were measured at 22 months.

Analyses were conducted on a final sample of 269 dyads that had complete data for the primary variables of interest for this study (i.e., personality traits and caregiver subjective health). Of the 269 CRs included in this sample, 143 were cared for by an adult child. The remaining 126 CRs were cared for by a spouse. CGs who were excluded from the present analyses due to missing data did not differ from the current sample in terms of age ( $M = 63.5$ ,  $SD = 14.0$  vs.  $M = 62.9$ ,  $SD = 13.7$ ,  $t = 0.35$ ,  $n.s.$ ) or gender (71% vs. 72% female,  $\chi^2 = 2.49$ ,  $n.s.$ ). See Table 1 for specific sample characteristics.

## Measures

**Care recipient and caregiver personality.** To assess personality, participants responded at 22 months to the NEO Personality Inventory Revised (NEO-PI-R, Costa & McCrae, 1992), which contains 240 short, self-descriptive statements. As a well-validated measure of personality (McCrae & Costa, 2010; McCrae, Terracciano, & The Personal Profiles Culture Project, 2005), the NEO-PI-R provides scores for each of the five personality domains: Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Each larger domain is composed of six facets, yielding a total of 30 facet scores. For the present analyses, factor scores were computed as a weighted combination of the 30 facet scales. Both factor scores and facet scales were then  $t$ -standardized using U.S. norms (Costa & McCrae, 1992).

**Caregiver subjective health.** Subjective mental and physical health were assessed using the SF-36 Health Survey (Ware, Kosinski, & Keller, 1994). Comprised of four mental health

scales (vitality, social functioning, role-emotional, and mental health) and four physical health scales (physical functioning, role-physical, bodily pain, and general health), the SF-36 contains several response formats ranging from binary responses to six-item Likert scales. The SF-36 is a well validated and widely employed assessment tool (McHorney, Ware, Lu, & Sherbourne, 1994), and is endorsed by the United States Food and Drug Administration for monitoring patient-report outcomes (Ware, et al., 1994). For the present study, summary scores for both mental and physical health were *t*-standardized using the U.S. Norms (Ware, et al., 1994).

**Caregiver strain.** Because earlier work has linked caregiver strain with physical and emotional outcomes (Pinquart & Sörensen, 2003), it was included as a covariate. Caregivers responded to 21 items adapted from Pearlin et al.'s (1990) measurement of the caregiver stress process. Items targeted three issues: overload (e.g., having too much to do), worry and strain (e.g., feeling more and more tense as the day goes on), and role captivity (e.g., wanting to escape or run away) (Leitsch, Zarit, & Townsend, 2001). Response categories ranged from 0 = *never* to 4 = *all of the time* ( $\alpha = .89$ ).

**Chronic pain.** The presence of chronic pain was assessed by the question “Do you have pain that has persisted longer than 3 months?” (0 = *no*, 1 = *yes*). This measure of pain was based on guidelines issued by the American Geriatrics Society Panel on Chronic Pain in Older Persons (1998).

**Physical impairment.** Care recipient activities of daily living, or ADLs (toileting, dressing, bathing, walking, and eating), were assessed with questions adapted from the Medicare Health of Seniors Survey. Instrumental activities of daily living, or IADLs (meal preparation, housework, managing finances and medications, telephone use, and shopping), were assessed with questions adapted from the Medicare's OASIS survey (Shaughnessy, Crisler, & Schlenker,

1997). Difficulty with ADLs and IADLs was reported by CGs at 22 months into the study. Because it has been suggested that personality may influence CGs' reports of care recipients' impairment (Bookwala & Schulz, 1998), this study employed trained interviewers to incorporate information from both CGs and CRs. For further analyses, a single summary score across ADL and IADL impairments was computed. To limit skewness a quartile split was performed.

**Sociodemographic characteristics.** Care recipient and caregiver characteristics included age, gender (1 = *male*, 2 = *female*), education (1 = *less than high school*; 2 = *high school degree*; 3 = *some college*, 4 = *college degree*, 5 = *more than college degree*), and coresidence (0 = *coresiding*, 1 = *not coresiding*). CG relationship to CR was coded 1 = *spouse*; 2 = *adult child*.

### **Analytic Plan**

**Correlational analyses.** Bivariate correlations explored associations between CRs' personality traits, their primary CGs' subjective health, and potential covariates. Covariates included CG sociodemographic characteristics (i.e., age, gender, and education), caregiver strain and personality traits, as well as CRs' physical impairment (ADL/IADLs). Potential moderators, CG relationship to CR, coresidence and CR pain were also included.

**General linear model (GLM) analyses.** Following these preliminary analyses, separate general linear models were conducted for CG physical and mental health as dependent variables. Subsequent exploratory analyses using the eight SF-36 subscales as dependent variables (four for mental health subscales and four for physical health) were also conducted. All analyses included CG sociodemographic characteristics (i.e., age, gender, education, relationship status, and coresidence), caregiver strain, and five-factor personality, as well as CR physical impairment, pain status, and five-factor personality.

I first explored all five CR personality domains by entering them simultaneously into the model. Subsequent models explored individual facets of the broad domains, but only when the domain effect was significant. Facets were each entered individually due to concerns about multi-collinearity.

Once a baseline model was established, two-way (i.e., pain x domain, pain x relationship to CR, and domain x relationship to CR) and three-way interactions (i.e., pain x domain x relationship to CR) terms were probed. The two-way interactions were first entered simultaneously and then removed one at a time by non-significance and strength of effect.

In a subsequent set of analyses, CG relationship was replaced with coresidence as a potential moderator of the association between CR personality and CG health. As with the first set of interaction terms, I first entered all two-way interactions (i.e., pain x domain, pain x coresidence, and domain x coresidence) simultaneously, removing each one at a time by non-significance and strength of effect.

I next explored personality styles. Following the procedure outlined by Weiss and Costa (2005), I used the threshold of  $\frac{1}{2}$  SD above or below the mean in the current sample to distinguish CRs either as high or low on a particular trait. Each domain was coded into  $-1 = \frac{1}{2}$  SD below the mean and  $1 = \frac{1}{2}$  SD above the mean. On the basis of these codes, CRs were classified into the various styles as described by McCrae and Costa (2010) (e.g.,  $A = 1$  &  $E = 1$  are "welcomers,"  $A = -1$  &  $E = 1$  are "leaders"). Those who were not classified on a certain style (because they fell within  $\frac{1}{2}$  SD of the mean on a particular trait) were excluded from the analysis.



## Results

### Descriptive Analyses

Table 1 provides descriptive information regarding demographic characteristics, background variables, and outcome measures. Compared to US norms, CGs in this sample scored lower on subjective physical health, as assessed by the SF-36 ( $\bar{x} = 43.7$  vs.  $\mu = 47.7$ ;  $t = -5.63$ ;  $p < .001$ ), than in the U.S. normative sample. Their subjective mental health was somewhat closer to normative values, but still lower than the U.S. national average ( $\bar{x} = 49.9$  vs.  $\mu = 51.7$  vs.;  $t = -2.88$ ;  $p < .01$ ).

With regard to personality, CGs scored lower on Conscientiousness ( $\bar{x} = 49.2$  vs.  $\mu = 50.8$ ;  $t = -2.12$ ;  $p < .01$ ), but higher on Neuroticism ( $\bar{x} = 51.7$  vs.  $\mu = 46.8$ ;  $t = 8.12$ ;  $p < .001$ ) and Agreeableness ( $\bar{x} = 55.0$  vs.  $\mu = 50.4$ ;  $t = 8.3$ ;  $p < .001$ ) as compared to U.S. norms of middle-aged adults. Their scores were similar to U.S. norms on Extraversion ( $\bar{x} = 48.3$  vs.  $\mu = 48.8$ ;  $t = -1.0$ ;  $p = n.s.$ ) and Openness ( $\bar{x} = 46.1$  vs.  $\mu = 52.0$ ;  $t = 0.08$ ;  $p = n.s.$ ). Compared to U.S. norms of older individuals, CRs in this sample scored lower on Extraversion ( $\bar{x} = 46.3$  vs.  $\mu = 47.5$ ;  $t = -2.63$ ;  $p < .01$ ), Openness ( $\bar{x} = 43.0$  vs.  $\mu = 52.0$ ;  $t = -18.2$ ;  $p < .001$ ) and Conscientiousness ( $\bar{x} = 46.1$  vs.  $\mu = 49.3$ ;  $t = -6.1$ ;  $p < .001$ ), but higher on Neuroticism ( $\bar{x} = 52.7$  vs.  $\mu = 45.8$ ;  $t = 10.4$ ;  $p < .001$ ) and Agreeableness ( $\bar{x} = 55.7$  vs.  $\mu = 52.3$ ;  $t = 5.3$ ;  $p < .001$ ).

**Adult children versus spouses.** The sample for this study was comprised of adult child (53%) and spousal (47%) caregivers. On average, the adult children were younger, ( $M = 53.3$ ,  $SD = 8.4$ , vs.  $M = 75.8$ ,  $SD = 7.9$ ,  $t = 23.1$ ,  $p < .001$ ) than spouses and were less likely to live with their ailing relative (30% vs. 99%,  $\chi^2 = 142.4$ ,  $p < .001$ ). Consistent with national trends (National Alliance for Caregiving & AARP, 2009), CGs were predominantly women, though adult children were more likely than spouses to be female (80% vs. 54%,  $\chi^2 = 21.5$ ,  $p < .001$ ).

When considered separately, spouses exhibited worse physical ( $M = 40.3, SD = 11.5$  vs.  $M = 46.8, SD = 10.9, t = -4.9, p < .001$ ), but not mental health ( $M = 50.0, SD = 10.0$  vs.  $M = 49.4, SD = 10.4, t = .50, n.s.$ ) as compared to adult children. Spouses and adult children did not differ in their feelings of burden ( $M = 2.0/4, SD = 1.3$  vs.  $M = 2.0/4, SD = 1.2, t = .04, n.s.$ ) and were similar across three of the five personality domains (Neuroticism:  $M = 52.4, SD = 9.7$  vs.  $M = 51.0, SD = 9.2, t = -1.2, n.s.$ ; Agreeableness:  $M = 54.9, SD = 9.9$  vs.  $M = 54.6, SD = 8.4, t = -0.3, n.s.$ ; Conscientiousness:  $M = 49.9, SD = 10.2$  vs.  $M = 48.3, SD = 9.2, t = -1.4, n.s.$ ). However, adult children were higher on Extraversion ( $M = 49.5, SD = 9.7$  vs.  $M = 46.7, SD = 7.1, t = -2.7, p < .001$ ) and Openness ( $M = 48.6, SD = 10.8$  vs.  $M = 43.5, SD = 8.6, t = -4.4, p < .01$ ) dimensions of personality. When taken together, CGs scored lower on Openness, but higher on Agreeableness as compared to U.S. norms.

**The role of chronic pain.** The chronic pain sample experienced moderate levels of pain ( $M = 2.7, SD = 1.0$  on a 5-point scale). Care recipients both with and without pain differed only slightly in their physical impairment ( $M = 2.2/4, SD = 0.9$  vs.  $M = 2.1/4, SD = 0.9, t = .52, p < .1$ ), and were similar across all personality traits (Neuroticism:  $M = 52.4, SD = 8.9$  vs.  $M = 52.0, SD = 8.7, t = -.74, n.s.$ ; Extraversion:  $M = 45.7, SD = 7.1$  vs.  $M = 47.2, SD = 7.4, t = 1.8, n.s.$ ; Openness:  $M = 43.4, SD = 8.7$  vs.  $M = 42.6, SD = 8.6, t = -.78, n.s.$ ; Agreeableness:  $M = 55.9, SD = 9.9$  vs.  $M = 55.5, SD = 8.6, t = -.42, n.s.$ ; Conscientiousness:  $M = 45.6, SD = 9.1$  vs.  $M = 46.8, SD = 7.7, t = 1.2, n.s.$ ).

### **Correlational Analyses**

Three sets of bivariate associations were conducted. The first set explored associations among all CGs' subjective health, CRs' personality traits, pain status, CG relationship,

coresidence, and other relevant covariates (Table 2). The remaining two sets examined associations separately for adult children and spouses.

Bivariate associations among CRs' personality traits, CGs' subjective health and relevant covariates are presented in Table 2. Two positive associations emerged. Agreeableness among CRs was associated with better CG physical health but not with mental health, whereas Conscientiousness among CRs was associated with better CG mental health but not physical health. Concurring with previous literature, CG strain was negatively associated with both physical and mental health.

### **General Linear Models**

**Domains and facets.** Contrary to expectation, none of the five-factor personality domains were associated with subjective mental health among CGs after relevant covariates were controlled (See Table 3). Follow-up analyses employing the SF-36 mental health subscales as outcome measures also failed to reveal significant associations between CR personality and CG mental health. However, CR Agreeableness emerged as a significant predictor of better subjective physical health among CGs ( $B = .020, p = .007$ ) (See Table 4). Further exploration of the SF-36 physical health subscales showed a significant association between CG Agreeableness and the SF-36 subscale for General Health ( $B = .020, p = .156$ ).

In addition, facet-level analyses revealed that the trust ( $B = .022, p = .021$ ), compliance ( $B = .016, p = .021$ ), and modesty ( $B = .016, p = .037$ ) facets of Agreeableness in CRs were related to better physical health among CGs. Again, these factors were significant predictors of physical health, even after the covariates listed in Tables 3 and 4 were taken into account.

**Two- and three-way interactions.** After establishing the baseline model of domain effects, interaction terms were added to explore the moderating role of CR pain status and

relationship to the CG. Three sets of interaction terms were included in each of the two models: 1) pain x domain, 2) pain x relationship to CR, 3) domain x relationship to CR. In subsequent analyses, relationship to CR was replaced with coresidence to explore its potential as a moderator between CR personality and CG health. In all, 17 two-way interactions were probed. For completeness, analyses also assessed three-way interactions (i.e., pain x domain x relationship to CR and pain x domain x coresidence).

As previously indicated, the first set of interaction terms (pain x domain, pain x relationship to CR, domain x relationship to CR) were entered simultaneously, then removed one at a time. In subsequent exploration, interaction terms were entered back into the model individually and in distinct combinations. None of these interaction terms significantly added to either of the two models predicting either physical or mental health. The three-way interaction exploring pain x domain x relationship also failed to retain significance and was thus removed from the models. However, analyses investigating the interaction of CR Agreeableness x coresidence found that the association between CR Agreeableness and CR physical health was stronger among co-residing dyads.

**Styles.** Preliminary analyses showed no differences between adult children and spouses or between the CPP and NCP samples, thus analyses exploring personality styles were conducted on the full CR and CG samples, and were not distinguished by CR relationship nor by pain status. In addition, because the trait of Agreeableness among CRs was associated with better CG physical health, only the styles containing the Agreeableness domain were subjected to further examination. However, follow-up analyses revealed no significant associations among the other personality styles and CG health.

In total, 16 types within four styles were examined: style of anger control combining A and N,  $n = 224$ ; style of interaction combining A and E,  $n = 189$ ; style of character combining A and C,  $n = 225$ ; and style of attitudes combining A and O,  $n = 233$ . As noted, those who were not classified on a certain style (because they fell within  $\frac{1}{2}$  SD of the mean on a particular trait) were excluded from the analysis.

Three types were associated with physical health among CGs. The “easy-going” (N-, A+) style of anger control ( $B = .399, p = .040$ ) predicted better physical health among CGs, as did the “well-intentioned” (A+, C-) style of character ( $B = .539, p = .011$ ). In contrast, the “leader” (E+, A-) style of interactions was associated with poorer health among CGs ( $B = -.543, p = .003$ ). All associations held after controlling for both CG (age, gender, education, spousal status, coresidence, caregiver strain, five-factor personality) and CR (physical impairment and pain) characteristics.

## **Discussion**

The present study makes theoretical and methodological contributions to the literature on caregiver health that have implications for clinical practice. Whereas prior research spotlights individual-level characteristics of CGs as primary predictors of their own mental and physical health, the results from this study reveal the value of considering the dispositional qualities of the care recipient. Moreover, these findings highlight the need for further exploration of the dyadic and interpersonal nature of the caregiving process and suggest that the inclusion of personality characteristics of both CGs *and* CRs may benefit future studies of CG health and well-being. I first discuss the general trends that emerged for the full CG sample. I then comment on the role of potential moderators and conclude by noting key limitations discussion theoretical and clinical implications.

When considering the full CG sample, preliminary bivariate correlations revealed significant associations between CR Agreeableness and CG subjective physical health as well as CR Conscientiousness and CG subjective mental health. Although the relationship between Conscientiousness and mental health was no longer supported after relevant covariates were controlled, CR Agreeableness remained a significant predictor of better subjective physical health among CGs. Strikingly, GLM analyses showed effect sizes of CR Agreeableness on CG physical health to be comparable to effect sizes of the caregiver's *own* personality on their health, illustrating the critical utility of assessing both CR and CG personality in relation to CG outcomes. Meanwhile, neither CR pain nor physical impairment was related to CG physical health. Concurring with earlier work by Groves (1978), these findings suggest that personal qualities of the CR, more so than physical maladies and suffering, may contribute to differential outcomes in CG physical health.

The selective association between Agreeableness and CG physical health may be viewed in light of prior research documenting the “wear and tear” of the caregiving process (Townsend, Noelker, Deimling, & Bass, 1989). As an additional stressor, a hostile personality in the care recipient may contribute to poorer CG physical health by making the care-giving process more stressful and thus hastening bodily deterioration (Kiecolt-Glaser et al., 2010; Uchino, 2006). Such damaging physiological consequences may affect overall physical health, whereby social stressors ultimately erode physical functioning along with general physical wellness. In contrast, when caring for an individual with a more agreeable personality, CG health may be preserved.

In the present analyses, the trust and compliance facets of Agreeableness were selectively linked with better subjective physical health among CGs. Perhaps qualities such as being forthcoming and non-aggressive, cooperative, and willing to forgive and forget promote

interpersonal harmony within the dyad, which in turn confer beneficial CG outcomes. The findings regarding facet sub-scales not only expose a fine-grained understanding of the factors associated with CG wellness, but also emphasize the importance of using a hierarchical measure of personality such as NEO Personality Inventory-Revised (NEO-PI-R, McCrae and Costa, 2010).

The investigation of specific personality styles in CRs offers a complementary perspective on the relationship between CR personality and CG health. Analyses revealed a negative association between the “leader” style of interaction and CG physical health. Individuals with this personality style “prefer to give orders” and may be especially demanding of others (Costa & Piedmont, 2003). Meanwhile, CRs with an “easy-going” style of anger control tend to be “slow to anger and reluctant to express it when it arises” (Costa & Piedmont, 2003), and thus may be less likely to elicit physiological responses in CGs. Finally, those with a “well-intentioned” style of character show a “sympathetic and genuine” concern for others (Costa & Piedmont, 2003), which was also associated with better physical health within this sample of CGs. Such associations convey the importance of assessing not only the broad five-factor personality dimensions, but also the combination of factor pairs. Future investigations may benefit from further explorations of such trait combinations, especially as they may represent an “integrated portrait” (Costa & Piedmont, 2003) of particular personal qualities within individuals.

Although these findings are generally consistent with prior literature, there were some unexpected results. GLM analyses failed to reveal significant associations between CR personality and CG mental health, though empirical evidence (Ruiz, et al., 2006) and theoretical models (Monin & Schulz, 2009) have proposed that the emotional suffering of a care recipient

may elicit psychological distress in CGs. Notably, even bivariate correlations failed to reveal associations between CR Neuroticism and CG health in the full sample. Perhaps replacing the generalized SF-36 measure with more specific markers of mental health (e.g., depression, anxiety, positive emotionality) would yield further insights in future endeavors. However, supplemental analyses employing the SF-36 mental health subscales as outcome measures failed to detect significant associations between CR personality and CG mental health.

Alternatively, the link between dispositional characteristics in the CR and physical health in the CG may represent a direct pathway that is independent of mental health. This is consistent with prior literature suggesting that although emotional well-being affects certain aspects of immune function and wellness, it may not fully explain the association between social relationships and health (Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Only future research assessing both personality and physiology within the same study can disentangle this association.

### **Moderators of the Relationship between CR Personality and CG Health**

**Adult Child versus Spousal Caregivers.** Contrary to expectation, CR personality did not predict differences in adult child versus spousal health after relevant covariates were controlled. Instead, this finding suggests that coresidence may be a key factor in moderating the association between CR personality and CG physical health. This latter finding corroborates prior research suggesting that living arrangement, rather than kinship, predicts CG outcomes (Tennstedt, Crawford, & McKinlay, 1992). Future studies should not only inquire about living arrangement, but also the frequency and quality of contact between the CG and CR. This distinction may be especially important when non-coresiding CGs make concerted efforts to visit or communicate with the patient, thereby disposing themselves to CRs' abrasive or agreeable qualities.



**The role of chronic pain.** Although I had expected that chronic pain in the CR would exacerbate health consequences for the CR, I did not find such effects. This suggests that CR pain may not be a primary predictor of CG well-being when other factors are taken into account.

One reason for the lack of association between CR pain and CG health may be that pain may be seen as a normative experience for older adults, and thus does not confer an additional burden on the caregivers. An additional concern for this particular study is the reliance on a simple single-item measure of chronic pain. Although this measure is endorsed by the American Geriatrics Society Panel on Chronic Pain in Older Persons (1998), a physician diagnosis of a specific pain condition would elicit a more granular assessment of the relationship between CR pain and CG health. Moreover, subsequent studies may benefit from targeting specific pain populations and examine whether caregiver outcomes differ for those caring for family members in severe versus moderate pain.

### **General Limitations**

In addition to the specific issues raised throughout the discussion above, several general limitations should also be noted. First, this study design does not allow for causal inferences. In addition, particular measures in this study could be strengthened. I relied exclusively on subjective health ratings; adding objective health indicators would provide a more nuanced portrayal of caregiver outcomes and increase practical relevance. Thus, future research should incorporate both subjective measures (such as depression) and objective measures (such as newly prescribed medications or diagnoses, number of hospital visits, or objective measures of health conditions, e.g., EKG assessments) for a more comprehensive understanding of the implications of CR personality. Along similar lines, biomarker (e.g., cortisol, IL-6) and personality assessments should be combined in a single study to determine whether there is, in fact, a direct

link between CR personal characteristics and CG physiological functioning. Finally, future work is necessary to uncover whether these findings replicate within more specific CR populations, and whether these results vary by acute versus chronic conditions.

## **Conclusion**

Despite these limitations, the results from this study may have clinical value. Prior literature recognizes personality as an integral component in CR treatment adherence (Booth-Kewley & Vickers, 1994; McCrae & Löckenhoff, 2010) and overall recovery (Wiebe & Christensen, 1996). My findings extend these trends: CR personality appears critical not only in predicting a patient's own response to treatment, but also in determining the health of their CGs. A comprehensive assessment of patient personality may therefore assist practitioners and clinicians in providing appropriate care to the ailing individual as well as the CG. For example, because CGs of "leaders" may be at risk for poor physical health, efforts should be made to limit physical decline by providing support early on. Moreover, tailoring existing interventions with regard to specific personality types has the potential to enhance both CR and CG outcomes in a targeted and systematic fashion.

This study provides a foundation for future research exploring the individual and interpersonal aspects of the caregiving experience. Although this is the first attempt to explore the impact of CR personality on adult child versus spousal health, in-depth qualitative research may add additional insight into the distinct reactions and responses of these groups. By incorporating assessments of CR and CG personality, small focus group studies would help discern the personal and dyadic qualities of each relationship, and further expose how personality may influence outcomes in adult children versus spouses, or coresiding versus non-coresiding caregivers. In addition, future investigations should examine whether CR personality is a

stronger predictor of CG health (as compared to CR pain or disability) in acute versus chronic illnesses. This undertaking would not only uncover systematic differences in CGs' own health across CR conditions, but also offer rich insight into appropriate care and treatment for CGs of specific patient populations. It is certain that additional research is necessary; however, these findings offer theoretical and methodological guidance for future inquiries, and hold clinical utility in tailoring targeted interventions for patients and their informal caregivers.

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Table 1.

*Participant Characteristics (N = 269 Dyads)*

Variable	Mean/%	SD	Minimum	Maximum
CG characteristics ( <i>N</i> = 269)				
Age	63.5	(14.0)	33	96
Education	3.6	(1.2)	1	6
Sex (% female)	71%			
Relationship status (% spouse)	41%			
Coresidence (% coresiding)	59%			
CG total strain	2.0	(0.4)	1.1	3.4
SF-36 physical	44.0	(11.5)	13.9	66.8
SF-36 mental	50.2	(10.0)	13.1	68.2
Neuroticism	51.4	(9.5)	26.0	78.0
Extraversion	48.2	(9.0)	17.8	75.6
Openness	46.2	(9.9)	17.0	81.2
Agreeableness	54.8	(9.0)	16.3	80.8
Conscientiousness	49.3	(9.6)	12.4	81.2
CR characteristics ( <i>N</i> = 269)				
Age	80.6	7.6	66	102
Education	2.8	1.4	1	6
Sex (% female)	69%			
Chronic pain status (% with pain)	55%			
ADL/IADL impairment	2.1	(0.9)	1	4
Neuroticism	52.7	(8.7)	28.2	77.7
Extraversion	45.9	(7.6)	25.2	79.6
Openness	42.7	(8.0)	20.4	70.8
Agreeableness	55.4	(9.3)	22.6	86.7
Conscientiousness	46.2	(8.7)	19.5	77.0

*Note.* ADL/IADL impairments are split into quartiles. Education levels were coded 1 = less than high school, 2 = some high school, 3 = high school graduate, 4 = some college, 5 = college degree, 6 = more than college degree

Table 2.

*Correlations among Caregiver Subjective Health, Personality and Relevant Covariates*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>CG Characteristics</i>															
1. Age															
2. Female	-0.31**														
3. Education	-0.22**	-0.01													
4. Spouse	-0.81**	0.27**	0.30**												
5. Coresidence	-0.55**	0.17**	0.15**	0.71**											
6. CG total strain	0.02	0.08	0.05	0.00	-0.13										
7. SF-36 physical	-0.32**	0.09	0.20**	0.28**	0.21**	-0.22**									
8. SPF-36 mental	0.12*	-0.01	0.03	-0.04	0.03	-0.33**	0.13*								
9. Neuroticism	-0.09	0.13*	-0.08	0.07	-0.04	0.24**	-0.18**	-0.44**							
10. Extraversion	-0.16**	0.15**	0.08	0.16**	0.12*	-0.01	0.08	0.12*	-0.13*						
11. Openness	-0.23**	0.15**	0.35**	0.25**	0.14*	0.08	0.12*	0.02	-0.11*	0.15*					
12. Agreeableness	0.09	0.22**	-0.05**	0.02	-0.04	-0.12	-0.04	0.11*	-0.07	0.14*	0.00				
13. Conscientiousness	0.00	-0.03	0.19**	0.08	0.07	0.00	0.18**	0.15**	-0.09	0.16**	0.09	-0.02			
<i>CR Characteristics</i>															
14. Pain status	-0.07	-0.11	0.01	-0.09	0.04	0.01	-0.04	-0.02	0.01	-0.08	-0.05	-0.04	0.10		
15. ADL/IADLs	0.01	0.03	0.05	0.04	0.01	0.27**	0.00	-0.06	-0.01	0.01	0.02	0.07	0.04	-0.03	
16. Neuroticism	-0.09	-0.03	0.01	0.07	0.02	0.14*	-0.04	-0.16	0.21**	-0.04	-0.05	-0.09	-0.09	0.08	0.06
17. Extraversion	0.01	-0.10	0.01	0.00	-0.00	0.05	-0.06	-0.08	-0.03	0.14*	-0.03	-0.03	-0.00	-0.10	-0.01
18. Openness	0.07	-0.08	0.21**	-0.12*	-0.07	-0.08	0.08	0.01	-0.07	-0.05	0.31**	-0.03	0.04	-0.02	-0.01
19. Agreeableness	-0.07	-0.15**	0.19**	-0.17**	0.15**	-0.07	0.19**	0.03	-0.62	0.15**	0.06	0.10	0.20**	-0.15	0.02
20. Conscientiousness	0.15**	-0.05	0.01	-0.12*	-0.10	-0.03	0.02	0.16**	-0.16**	0.08	0.02	0.23**	0.28	-0.03	-0.02

 $p^* < .05, p^{**} < .01$

Table 3.

*General Linear Model Predicting Caregiver Subjective Mental Health*

Variable	B	SE	t
<i>CG Characteristics</i>			
Age	0.01	0.01	1.48
Female	6.80	1.11	6.15
Education	-0.01	0.05	-0.19
Spouse	-0.07	0.27	-0.30
Coresidence	-0.07	0.17	-0.39
Total Strain	-0.88***	0.78	-4.92
Neuroticism	-0.04***	0.01	-6.65
Extraversion	-0.01	0.01	0.72
Openness	0.00	0.01	0.57
Agreeableness	-0.00	0.01	-0.25
Conscientiousness	-0.02	0.01	2.04
<i>CR Characteristics</i>			
Pain status	0.02	0.01	0.19
ADL/IADL impairment	0.02	0.01	-0.30
Neuroticism	-0.00	0.01	-0.38
Extraversion	-0.01	0.01	-1.13
Openness	-0.01	0.01	-0.99
Agreeableness	-0.00	0.01	-0.20
Conscientiousness	0.00	0.01	0.42

Note.  $R^2 = .57$

$p^* < .05$ ,  $p^{**} < .01$ ,  $p^{***} < .001$



Table 4.

*General Linear Model Predicting Caregiver Subjective Physical Health*

Variable	B	SE	t
<i>CG Characteristics</i>			
Age	-0.02***	0.01	-2.25
Female	5.82	1.20	4.87
Education	0.05	0.06	0.86
Spouse	-0.21	0.27	-0.79
Coresidence	0.16	0.18	0.85
Total Strain	-0.73***	0.19	-3.80
Neuroticism	-0.02**	0.01	-3.21
Extraversion	-0.00	0.01	-0.14
Openness	-0.01	0.01	-0.67
Agreeableness	-0.02*	0.01	-2.49
Conscientiousness	0.02**	0.01	3.51
<i>CR Characteristics</i>			
Pain status	0.21	0.13	1.67
ADL/IADL impairment	0.12	0.07	1.67
Neuroticism	-0.00	0.01	-0.55
Extraversion	-0.02	0.01	-1.76
Openness	0.01	0.01	1.03
Agreeableness	0.02**	0.01	2.74
Conscientiousness	-0.00	0.01	-0.58

Note.  $R^2 = .29$

$p^* < .05$ ,  $p^{**} < .01$ ,  $p^{***} < .001$