National Library
of Canada

Bibliothèque nationale
du Canada

Canadian Theses Service

Service des thèses canadiennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

NL-339 (r 88/04) c

Canada

PERSONALITY VARIABLES AS MEDIATORS OF CAREGIVER BURDEN AND HOME MAINTENANCE OF DEMENTIA PATIENTS

Myrna Feldman Reis

A Thesis

in the Department

of Psychology

Presented in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy at
Concordia University
Montreal, Quebec, Canada

August, 1989

National Library of Canada
Canadian Theses Service
Ottawa, Canada
K1A 0N4

Bibliothèque nationale du Canada
Service des thèses canadiennes

ISBN 0-315-51313-6

Abstract

Personality Variables as Mediators of Caregiver Burden and Home Maintenance of Dementia Patients

Myrna Feldman Reis

Caregiver personality variables were examined to determine their effect on the burden experienced by caregivers of dementia patients residing in the community and upon the caregivers' decision to institutionalize or to continue to maintain the patient at home. A total of 213 dementia patients and their primary caregivers participated in the study. Caregivers were interviewed and were given a battery of standardized measures, including the NEO Personality Inventory, and measures of their appraisals of aspects of caregiving, of their level of burden and of health complaints. Patients' cognitive functioning was measured by the Hierarchic Dementia Scale. Discriminant function analysis was used to determine the variables underlying the decision to institutionalize or to continue home maintenance. A causal model tracing the influence of neuroticism and other variables on burden and health complaints was developed, with path analysis computed via ordinary least squares multiple regression to test the model. The analysis results provided consistent support for the neuroticism model and specified 16 variables, including extraversion and neuroticism, which were important in predicting the decision to institutionalize or to continue home maintenance. The results also indicated the importance of caregiver neuroticism, through its relation to other important variables, reactions to patient problems and appraisal of social support, as a mediator of caregiver burden and health complaints.

Acknowledgements

It would be futile to try to list all those who contributed to this work: caregiver and patient participants, teachers, students, colleagues, friends and referring agencies (Appendix A). To all of them I extend my sincere thanks. My thanks too to the Fonds de recherche en sante de Quebec for the funding which provided the economic basis allowing the development and carrying through of my own original research concerning the caregiver's personality.

Some names require special mention:

David Andres, for his superb statistical expertise and timely aid and support;

Kevin McNeil, for incisive and invaluable comments offered despite urgent involvements elsewhere;

Serge Gauthier, for generous aid in the acquisition of study participants and for his interest and encouragement;

Dolly Dastoor, for referring many study participants and for ongoing support and help;

Claud Senecal, for much essential and intelligent aid with the computer process;

Keith Marchesault, for energetic and insightful help with background analyses;

Beth Sissons, for devoted help with tables and figures at the critical moment;

Marc Hamel, Valerie Takeda and Connie Zieren, the testing team whose work was basic to the study; and,

Ruth Reis, for support and practical help at the last stages, where it counted.

Above all, however, I must confess my indebtedness to Dolores Gold: without her guidance and wisdom this study could never have been accomplished.

Table of Contents

List of Tables

List of Appendices

List of Figures

Introduction

Researchers have not, to date, examined the importance of the personality traits of caregivers in determining the course of home care in dementia patients. Personality traits, defined as the consistent and enduring dispositions of individuals which involve differences in style or content of behaviour (Costa & McCrae, 1986b; Costa & McCrae, 1984a), provide some consistency of response to situations. The caregiver's personality should, therefore, help predict his or her response to the contingencies of caregiving and should help determine the success of home care for the dementia patient.

As will be shown, current literature provides strong support for the notion that personality remains stable over time, across ages, across a wide range of personality characteristics, and as measured by a variety of instruments (Costa & McCrae, 1988; McCrae and Costa, 1987; Siegler, 1987; Costa & McCrae, 1986b; Finn, 1986; McCrae and Costa, 1984a; Costa & McCrae, 1984b). The caregiver situation, though stressful and demanding, is not likely to change caregiver personality (Costa and McCrae, 1986b; Kobassa, 1979; Kobassa, Maddi and Kahn, 1982). Rather, there is a basic stability of adult personality traits which are responsive to potent events and situations (Siegler, 1987).

These traits may determine the caregiver's appraisal of patient variables, of adequacy of support systems and of stress. In turn, stress or stress appraisal may affect physical and psychological health (Sarason and Sarason, 1984; Gentry, 1984) and, ultimately, the ability to continue the home maintenance of the dementia patient. This study investigates the influence of the personality traits of the caregiver, in relation to a large number of other salient caregiver and patient variables, on plans for continued community maintenance or institutionalization of the dementia patient.

Dementia

Home care of a dementia patient is widely recognized as highly stressful for the caregiver (Zarit, 1989). The main characteristic of dementia is the gradual deterioration of memory and of intellectual and physical functioning caused by irreversible brain pathology (Volicer, Seltzer, Rheaume, Fabiszewski, Herz, Shapiro, and Innes, 1986). The decline of functioning includes declines in speech, cooperation, social contacts, communication and movement. Patients become unable to dress or feed themselves, to sleep regularly, to speak meaningfully and to walk without assistance. They wander, hallucinate, become incontinent, and in early and middle stages, may be depressed or aggressive.

This decline places enormous physical, psychological, financial and emotional demands on caregivers, which is usually termed burden. Caregivers experience grief which may be expressed as depression, anger, isolation and hopelessness (Kvale and Bohlen, 1985). Even strong bonds of affection have not been found to produce sufficient stress tolerance to enable at-home caregiving to continue (Jarrett, 1985).

Most dementia patients live with relatives in the community (George, 1984). The common belief that adult children do not take care of their aging parents has not been supported (Matthiesen, 1986; Brody, 1985). Silverstein and Hyde (1986) have concluded that, since respite care, homemaker services, and adult day care are the most frequently requested services for Alzheimer's patients, caregivers are trying to maintain their relatives within the community and to avoid institutionalization. In general, childless patients and those living alone are most at risk for institutionalization (Roy, Folmar & Ford, 1989).

Institutionalization is usually regarded as a last resort, costly in economic and human terms (Shapiro and Tate, 1986). Cognitively impaired elderly persons have been found to be twice as much at risk for nursing home placement as those who are cognitively intact (Cougnlin and Liu, 1989).

The same authors estimate that for the cognitively impaired, the annual cost, in US dollars, of community care is $11,700, that of nursing care, $22,300.

At present, Alzheimer's Disease and other dementias cannot be prevented, arrested or successfully treated. Consequently, efforts at tertiary prevention are crucial. The Canadian Medical Association Task Force on the Allocation of Health Care (1984) suggests the use of community and caregiver support, practical interventions and symptomatic treatment to prevent the worst consequences of dementia disorders. A public health perspective includes various preventative strategies: the modifying of the caregiving environment by increasing social support; and strengthening the caregiver's competence to deal with the stresses of caregiving by teaching specific skills in high-risk and crisis situations (Gesten and Jason, 1987).

The problem is urgent. In Canada, those who develop dementia by age 80 are expected to double over the next 25 years (Denton and Spencer, 1980). Moderate to severe dementia in old age extends from about 6% in the over 65 age group to over 20% for those 80 years and over (Kay and Bergmann,1980). It is predicted that dementia will reach epidemic proportions by 2030, when about 20 percent of the population will be over 65 (Gatz, 1985).

Other Sources of Stress

In addition to the stress caused by the patient's symptoms and behaviors, several other sources of stress have been identified. The degree of relationship between caregiver and patient may also be a factor in mediating stress. Families providing home care to an older unmarried relative have been found to be more vulnerable to disruption than those providing care to more closely related relatives. (Soldo & Myluoma, 1983). On the other hand, Cantor (1983) and George (1984) have found that closely related caregivers such as spouses and children had lower levels of well-being than less closely related caregivers. Similarly, it has been found that spouses exhibit more depressive symptomology than children (Van Winkle, 1987). These various results suggest that a simple link between closeness of relationship and burden can be assumed. Caring for a spouse or parent might precipitate depression while caring for a more distant relative might precipitate hostility. The spouse caregiver may have fewer financial and coping resources due to advanced age and concomitant ill-health. Children-caregivers, on the other hand, may be subject to the conflict associated with role overload.

The quality of the premorbid overall relationship between the caregiver and the dependent has been found to predict burden and the decision to institutionalize for wife caregivers (Zarit, 1983). A caregiver's negative view of the premorbid relationship with the dependent has been found to contribute to caregiver health problems (Gilleard, Belford, Gilleard, Whittock and Gledhill, 1984).

Other sources of stress relate to the time and economic constraints of care-giving. Due to high levels of elder dependency and task demands, female caregivers cited limitations of time for social activities (Miller, 1988). Economic factors include the ability to hire auxiliary home-care personnel, to pay for daycare, or to arrange for nursing home respite care, all of which seem to improve well-being of spouse caregivers (Kvale and Bohlen, 1985). Constraints on the employment of the caregiver, especially daughters (Brody & Schoonover, 1986) and daughters-in-law (Townsend & Noelker, 1984), exacerbate economic pressures, contribute to lack of privacy (Blank & Caro, 1984) and prevent the caregiver from seeking relief through hired help (Wallace & Noelker, 1984). Daughters forced to choose between paid employment and care of an elderly mother have been found to experience disruptions and strain (Brody, Kleban, Johnsen, Hoffman, & Schoonover, 1987). Economic factors also cause disagreements between dependent and caregiver over the desirability of various options (Zweibel, 1984).

The fact that the dependent is of the opposite sex may contribute to the caregiving burden (Townsend & Noelker, 1984), particularly for caregivers looking after elderly parents. The gender of the caregiver, per se, may also be important. Pruchno and Resch (1989) found that there were no significant predictors of burden among husbands, but for wives, burden was associated with poorer health, less emotional investment with the patient, and provision of more help with caregiving tasks. It is worth noting that a review of social support studies concluded that, despite receiving more support, women report more distress than men (Vaux, 1985). Similarly, in a recent study (Kinney, in press), women caregivers have reported more daily caregiving stressors than have men caregivers.

Morris, Morris and Bretton (1988), in a review paper, explore some possible reasons underlying the findings that women find caregiving more difficult than men. The difference may reflect the traditional roles of women, which bring them into greater contact with dementia sufferers. Alternately, women changing their traditional role from homemaker in mid-life may find that caregiving threatens their efforts towards more personal fulfillment. As well, men may distance themselves from the everyday problems of caregiving and may find it easier to share the responsibility of caregiving.

Length of caregiving could be a factor contributing to stress, though findings have been mixed. Prolonged periods of dependency have been found to result in a more negative redefinition of the dyadic relationship (Johnson & Catalano, 1983). However, Novak and Guest (1989) did not find any relationship between the caregiver's subjective feeling of burden and the length of time a caregiver had given care to a patient.

The Caregiver

Stress and Health

Caregiving for dementia patients has multiple effects on the caregiver and the family (Chenauth & Spencer, 1986). Caregiving can have medical and psychological consequences for caregivers, including increased stress and the use of psychotropic drugs (Anthony-Bergstone, Zarit, & Gatz, 1988; George, 1984; Greene, Smith, Gardiner and Timbury, 1982; Kvale & Bohlen, 1985). It is estimated that some 40-50% of caregivers of frail elderly suffer from a depressive disorder (Silven, DelMaestro, Gallagher, Lovett, Rose and Kwong, 1986). Spouse caregivers are more depressed, less satisfied with their lives and have more symptoms of psychological distress than the general population (Pruchno and Potashnik, 1988). Becker and Morrissey (1988, p.303) point out that, "virtually every psychosocial factor reputed to be conducive to depressive reactions occurs within the context of caring for dementia ... patients." As for physical health, caregivers have more than their share of diabetes, arthritis, ulcers and anemia (Pruchno and Potashnik, 1988). Pruchno and Potashnik report that despite relatively high rates of physical illness, they use medical services at rates which are similar to or lower than rates of the less afflicted population. However, this may partly reflect the high cost of U.S. medical care. There is some support for the belief that physical and psychological health are affected by stress factors (Sarason & Sarason, 1984; Gentry, 1984). Stress is widely believed to predict the occurrence of depression and other psychological problems (Willner, 1985) as well as a variety of physical problems including hypertension and migraine (Lazarus & Folkman, 1984; Gentry, 1984). It is interesting to note that high levels of stress, personality factors (including introversion), and absence of social support have together been reported to account for almost all the variance in predisposition toward depression (Willner, 1985). However, a question has been raised concerning the possible confounding of stress and health measures, and a debate has ensued. Schroeder and Costa (1984) found that the reported relationships between stressful events and physical illness may be the result of the contamination of the stressful events' measures by neurotic, subjective and health influences. Schroeder and Costa called for greater procedural care. However, Maddi, Bartone and Puccetti (1987) presented a comprehensive conceptual and empirical reply. Based on a study of men aged 24-69, they concluded that uncontaminated stress items do correlate with illness, consequently supporting the argument that stress and illness are associated independently of methodological confounds.

Impaired physical and psychological health has been shown to result from the burden of caregiving and to influence the caregiver's ability to maintain the demented elderly in the community (Gilhooly, 1984; Gilleard, Boyd and Watt, 1982). The findings of Simson, Wilson and Henry (1982) suggest a strong need for comprehensive, accessible health maintenance programs for caregivers.

Appraisal of Patient Behaviour and Burden

In addition to objective stressors, the subjective appraisal of stress may also be an important determinant of health. In that case, the individual's personality may reasonably be posited to mediate the appraisal of the stress involved in dealing with difficult caregiving contingencies. The appraisal of stress involves an interdependent relationship between the objective stressful event and its subjective interpretation by the individual. The subjective interpretation is of an event that taxes or exceeds the stressed individual's resources and endangers well-being (Lazarus and Folkman, 1984).

Some researchers have found that disruptive behaviours, such as violence or agitation, predict caregiver burden quite well (Gilleard et al, 1982; Kraus, 1984; Haley, Brown and Levin, 1985; Poulshock & Deimling, 1984). Newton and Boyce (1987), for example, have found that the patient behaviors found to be most stressful were: losing things, asking repetitive questions, suspiciousness and embarrassing activities. Kraus (1984) also reports that objective measures reflecting the severity of the dementia rather than measures reflecting the physical burden of care were most important in rendering home care difficult. Poorer cognitive function has generally been found to predict institutionalization for dementia patients (Fisk and Pannill, 1985).

On the other hand, overall, the extent of dementia symptoms has not been found to be the most important variable differentiating patients who remain in the community from those institutionalized. Fillenbaum (1984) has estimated that 5% to 10% of community-based dementia patients are as severely impaired as institutionalized patients. Patient behavioral and cognitive symptoms have also not been found to be good indicators of the burden experienced by caregivers, especially for caregiver wives (Zarit, Reever and Bach-Peterson, 1980; Zarit, Zarit & Reever, 1982).

Institutionalization results from a breakdown in caregiver service more often than from an increase in pathology (Lowenthal, Berkman & Associates, 1967). The continued availability of the caregiver, regardless of the degree of patient impairment, is crucial to at-home maintenance (Bergmann, Foster, Justice & Matthews, 1978; Tobin, Holyrod & Reynolds, 1982).

Caregiver characteristics and well-being, rather than patient variables, have been found to be the most important predictors of the decision to institutionalize a dementia patient (Colerick & George, 1986). The caregiver's subjective appraisal of the patient's behaviour as stress-provoking seems as important as objective measures of the patient's behaviour and symptomology (Gilleard et al, 1984; Greene et al, 1982). It is necessary to take into account the actual degree of patient impairment when examining at-home maintenance. However, patient behaviors do show great variability (Zarit, Orr and Zarit, 1985). In addition, the caregivers' reaction to and tolerance of symptoms varies, perhaps partly as a function of idiosyncratic personality characteristics. Lazarus and Folkman (1984) deemphasize trait variables, but nevertheless agree that appraisals of stress involve characteristics of the person (p.21) as well as environmental factors. They posit coping traits as properties of individuals which predispose them to specific types of reactions, which implies stability of coping dispositions (p. 139).

Personality, Stress And Health

The argument that personality traits are connected to both stress and health is supported by Kobassa (1979), who has proposed hardiness as a personality construct related to stress and illness. Kobassa defined hardiness as a complex, stable trait, based on lower level components of commitment, control and challenge, that enables an individual to withstand high levels of stress with unimpaired health. Hardiness has been found to predict both concurrent and future health even when previous illness is included as an independent predictor (Kobassa et al, 1982). However, Hull, van Treuren and Virnelli (1987) have narrowed the construct by reporting that only lack of control and lack of commitment are psychologically stressful and therefore directly affect health of students. Hardy individuals presumably see life events more positively as well as seeing themselves as being in control (Rhodewalt & Agostsdottir, 1984). When hardy people appraise events as less desirable and less controllable, they too show the impact of stress.

Personality, in terms of the Type A construct, has also been connected to health through the well-known coronary-prone behaviour pattern (Linden, 1987; Costa & McCrae, 1986a). The Type A behaviour pattern is considered an expression of a basic personality disposition to be hard-driving, achievement-oriented and perfectionist. Linden reviews recent empirical evidence that generally does not support the global Type A behaviour-illness hypothesis. Nevertheless, he did find that the hostility trait component of the Type A construct continues to possess validity and is linked with early stage Essential Hypertension and coronary disease. Linden suggests that research should focus on the effects of hostility and the expression of anger on cardiovascular processes.

In a recent prospective study (Rappaport, McAnulty, and Brantley, 1988), Type A personality characteristics were found to be associated with migraine and headaches. In terms of therapeutic implications, it is also noteworthy that changes in the behaviour of Type A's were reported in the more relaxed and less achievement-driven Type B direction for recent retirees with cardiovascular problems (Howard, Rechnitzer, Cunningham, & Donner, 1986). Behaviour may be swayed more readily than personality, though personality may sometimes be influenced by psychotherapy (Costa & McCrae, 1986b). McCrae and Costa (1984a) point out that stability of personality means that most people do not change, not that they cannot change, and that psychotherapy can result in such changes.

Finally, Costa and McCrae have found specific links between neuroticism and health complaints. Neuroticism has been found to be a determinant of unfounded health complaints (Costa & McCrae, 1984b; Costa & McCrae, 1980a) and a correlate of hypochondriasis (Costa and McCrae, 1986a).

Appraisal of Social Support

Lieberman (1982) proposes that the availability of reliable and accessible social support provides buffers which mitigate the chronic stress of caregiving. Support is conceived as buffering or cushioning the individual from the consequences of stress exposure (Dean and Lynn, 1977). Lieberman speculates that enduring personal traits may underlay processes whereby support may help ward off or alter responses to stressful situations. Personality variables such as extraversion and neuroticism may therefore act to buffer the stresses of caregiving. Duckitt (1984), studying six personality factors derived in factor analysis, found that extraverts were more sensitive and receptive to social support. He concluded in favour of an interactionist approach that integrates person and context variables for the prediction of stress.

Many programmes of support to caregivers have been developed to alleviate the stress of caregiving and to encourage the maintenance of the impaired elderly in the community in a cost effective yet humane fashion (Capitman, 1986; Pinkston & Linsk, 1984). As has been indicated, findings show that it is the continued availability of the caregiver, regardless of degree of patient impairment, that is crucial to caregiving maintenance in the home (Bergmann, Foster, Justice and Matthews, 1978; Tobin, Holyrod and Reynolds, 1982). Family and community supports are thought to be of great importance to highly stressed caregivers of dementia victims (Gwyther and George, 1986; Zarit and Zarit, 1982; Zarit, Reever and Bach-Peterson, 1980). The presence of even one close supportive figure may be a significant factor (Levitt, Clark, Rotton and Finley 1987).

Various studies evaluating caregiver support programs have found that caregiver-focused interventions are essential in enabling caregivers to maintain the demented elderly in the community (Colerick and George, 1986; Gilhooly, 1984; Krause, 1984; Zarit and Zarit, 1982; Bergmann et al, 1978). Burack-Deiss and Silverstone (1982) found that families benefited from learning behaviour management techniques which helped them to deal with their cognitively impaired relatives. Glosser and Wexler (1985) reported that support groups were evaluated as helpful in providing information about medical and behavioral management. A home-based program of cognitive stimulation for patients improved the well-being of caregivers (Quayhagen and Quayhagen, 1989) and maintained better patient functioning in an eight-month post-treatment follow up. A study of an adult day care service showed improvement in the caregivers' perceived degree of burden which, in turn, was thought to extend the time the caregiver could continue to maintain that role (Eddowes, 1988). In one study where caregiver stress did not result in increased psychiatric morbidity, the researchers argue that a local well-developed social service may have made the difference (Eagles, Craig, Rawlinson, Restall, Beattie and Besson, 1987).

However, other studies have reported little or no impact of social support. It has been found that feelings of isolation and lack of support are reported infrequently (Beattie, Scott, Kosarek and Tuokko, 1988), and that only about one-third of caregiving families are in contact with community resource services. It appears that, with the exception of physician services, caregivers do not make much use of already existing programs and services, often because they are not aware of their existence or because they feel no need for the services offered (Gold, Andres, Dastoor, Grauer and Bergman, 1989). Some studies have concluded that the presence of support services did not affect the caregiver's level of stress (Gilleard et al, 1984; Greene et al, 1979). Zarit, Anthony and Boutselis (1987) compared family counselling and support groups for efficacy in implementing stress-management techniques for dementia caregivers. They provided information, taught behavioral techniques and identified potential support. Treatment groups made significant gains over time but did not make significantly better gains than wait-list control subjects. All groups maintained gains in a one-year follow-up.

The absence of significant support service findings has sometimes been attributed to methodological inadequacies or deficits. Toseland and Coppola (1988) compared group intervention methods designed to support adult children caring for parents at home. They found no significant changes among groups in perceived caregiver burden. The authors attributed the lack of significant findings to possible methodological problems, such as insufficient duration of the intervention program and uneven leadership training and experience. Haley, Brown and Levine (1987) examined the effects of support groups on depression, life satisfaction, social support and coping variables and found no improvements linked to treatment. Methodological problems in the study were proposed to explain the absence of improvement. Other reasons advanced for the findings that support programs do not yield effective results include the self-selection of caregivers and the unreliability of self-reports.

However, Lawton, Brody and Saperstein (1989) failed to find significant effects even for a respite care program which was evaluated as being well designed (Callahan, 1989). The program only succeeded in delaying institutionalization for 22 days. Callahan comments that the fact that the caregivers receiving respite services felt relieved and were generally satisfied may not be sufficient justification for the huge expenditure involved. Callahan suggests that further credibility be established for support programs via sophisticated program design and outcome research.

Even the value of social support from family and friends has been questioned. Stull, Montgomery and Scarisbrick-Hauser (1988) speculate that a second family caregiver represents an additional source of help and contributes to the happiness and optimism of the primary caregiver independent of the level of burden he or she may experience. On the other hand, they found that support from a second family caregiver may be to the primary caregiver's advantage only in caregiving contexts where higher levels of burden are experienced by the primary caregiver.

The function and value of outside support for caregivers is still uncertain. Zarit (1989) points out that it is by no means certain that programs reduce either caregiver stress or the probability of institutionalization. Gesten and Jason (1987) summarize findings indicating that support, as assessed by objective methods, does not necessarily correlate with the subjective appraisal of support and that social support is not always helpful in the face of stress. Nevertheless, they point out that social support is generally, if not invariably, helpful, particularly for caregivers of patients with dementia. Both social support and stress appraisal have been found to predict caregiver outcome, even when caregiving stressors are statistically controlled (Haley, Levine, Brown & Bartolucci, 1987).

Many studies of social support have used measures of self-report or appraisal by the caregiver of the value and nature of the outcome rather than observational techniques of measurement. Empirical findings suggest that subjective rather than objective measures of social support are the best predictors of stress tolerance (Gesten and Jason, 1987; Fiore, Coppel, Becker and Cox, 1986; George, 1984). Subjective perceptions of support have been found to be significantly related to loneliness and depression in spousal caregivers of intellectually and physically impaired aged persons (Quails, Norfleet, and Harder, 1986). The extent of emotional upset caused by unmet expectations of support or of negative interpersonal input is a good predictor of depression for stressed caregivers of dementia patients (Fiore, Becker and Coppel, 1983). George (1984) found that the need for the support received was a better predictor than the actual amount of support received.

Lovett, Gallagher and Kwong (1986) concluded that it is important to scrutinize the caregiver's need for support and level of satisfaction with the support when investigating how support affects stress. Support may be viewed as a relative process. Therefore, the perception of being supported by family, friends and community agencies may well be important in addition to the actual amount of assistance received.

Unfortunately, the caregiver usually receives less assistance from family and friends as the illness progresses (George, 1984; Johnson & Catalono, 1983). This results in the increased social isolation of the caregiver and dementia victim (Gates, 1986) and has been found to predict elder abuse (Wolfe, Gaelkin & Pillemer, 1984).

Brief Overview

To summarize to this point, past findings in the stress, health and dementia caregiver literature suggest that the subjective appraisals of relevant aspects of the caregiving situation by the caregiver are important determinants of caregiving outcomes. It is not only objective factors that determine the outcome of efforts to maintain a patient in the community, but also the idiosyncratic appraisal of the caregiving situation, which could well be influenced by enduring personal dispositions. Thus, the caregiver's personality traits could influence some relatively subjective factors in caregiving: reactions to the memory and behaviour problems of dementia care-receivers, the level of satisfaction with social support and the level of stress, commonly called burden, all of which in turn, affect health and health complaints. The caregiver who perceives him/her self to be burdened and ill is more likely to make the decision to discontinue home care of the dementia patient in favour of institutionalization.

Other factors that merit consideration in the study of caregivers and caregiving are: the objectively-measured level of patient impairment; the incidence of memory and behaviour problems; the frequency of use of social and community services; the quality of the prior caregiver-patient relationship; length of caregiving; the caregiver-patient relation; caregiver engagement in leisure activities; employment status; gender of same sex as, or opposite sex to the patient; and income. It is usually also advisable for researchers to take into account background factors such as age and education.

Since caregiver personality has not, prior to this project, been specifically studied, the brief literature review which follows focuses on a few central, but general, personality issues that are relevant to the consideration of personality variables as mediators of caregiving.

Personality

The Trait-State Debate

Kenrick and Funder (1988) reviewed the lengthy person-situation debate concerning the existence of personality traits. They examined the evidence related to the arguments made by behaviorists that personality traits are simply artifacts of factors such as semantic illusion, stereotypes and situational consistencies. Behaviorists conclude that traits, if they exist, have only small relationships to behaviour. Kenrick and Funder found little evidence supporting this behavioral-situational position popularized by Mischel (1968) which argues that responses are primarily situationally, rather than trait, determined. However Kenrick and Funder cautioned that, before predicting from trait measures, one must consider the effects of situations, and interactions between persons and situations. They also suggest that a great deal of accuracy should not be expected in predicting behaviour from trait ratings in `powerful' and clearly normatively scripted situations where the situational influences may take precedence. Perhaps crisis situations in caregiving could sometimes constitute such powerful situations where situations take precedence, though an alternative argument could be made that powerful traits such as neuroticism would become even more salient during crises and that traits would take precedence over situations. Kenrick and Funder do, however, conclude that there can be little doubt as to the existence of traits.

Indeed, genotypes could exert a pervasive effect on behavioral variation. Rowe (1987) examined behavioral genetics, which apportions variability to hereditary and environmental factors. He concluded that behavioral variation is sometimes falsely attributed to situational influences. Rowe advocates opening interdisciplinary communication between behavioral genetics and personality psychology to help shed light on the issue of heritability of personality. He suggests that differences within pairs of adult identical twins be examined to study environmental influences, since such differences are free of genetic effects.

Stability of Personality

In addition to considering person-situation interactions, one must explore the issue of the stability of normal personality throughout adulthood. Current research strongly supports the position that personality remains stable over time, across characteristics, and as measured by various instruments (Siegler, 1987; Costa & McCrae, 1984a; Costa & McCrae, 1986b).

The most recent series of longitudinal examinations of the stability of personality by Costa and McCrae (1988) involves self-reports and spouse ratings on the five NEO Personality Inventory's major dimensions of normal personality; neuroticism, extraversion, openness, agreeableness and conscientiousness. No consistent pattern of maturational effects was found, and Costa and McCrae concluded that the results provide further support for the position that personality is stable after age thirty.

Aging, per se, does not seem to cause changes in personality. Rather, personality is responsive to important life events and situations that occur during the course of aging (Siegler, 1987). Based upon the stress literature (Lazarus and Folkman, 1984) which posits coping traits and emphasizes the importance of the personal appraisal of stress, it can be reasoned that certain personality traits could conceivably help the individual to compensate for problems elsewhere (Ryff, 1982). Personality variables may act as buffer variables to mitigate the appraisal of the stress and burden in caregiving.

Five-Factor Personality Theory

The five-factor personality theory is a model proposing that personality has only five major dimensions which encompass all verbal descriptions of personality. The five-factor model is an important trait approach first described

Rationale for Trait Assessment

Of the five basic dimensions of personality, four were chosen for study in this project . The personality characteristics or domains selected as relevant to the caregiving role and to the study of caregiver personality are neuroticism, extraversion, agreeableness and conscientiousness. These domains are defined as: neuroticism, adjustment versus emotional instability; extraversion, quantity and intensity of interpersonal interaction; conscientiousness, degree of organization, persistence and motivation; and agreeableness, compassion versus antagonism in thought, feeling and action (Costa & McCrae, 1985; Figure 1). It is reasonable to speculate that these qualities affect caregiving at various points in the caregiving history. A fifth personality dimension, openness, was excluded from the project to avoid making excessive demands in testing the already overburdened caregiver (Figure 2). Openness appeared less salient, at face value, than the four dimensions already included.

Brief Description of NEO PI Domains and Facets

Characteristics of the High Scorer	Scales	Characteristics of the Low Scorer
	GLOBAL DOMAINS	
	Neuroticism (N)	
Worrying, nervous, emotional, insecure, inadequate hypochondriacal	Assesses adjustment vs emotional instability. Identifies individuals prone to psychological distress, unrealistic ideas, excessive cravings or urges, and maladaptive coping responses	Calm, relaxed, unemotional, hardy, secure, self satisfied
	Extraversion (E)	
Sociable, active, talkative, person oriented, optimistic, fun loving, affectionate	Assesses quantity and intensity of interpersonal interaction, activity level, need for stimulation, and capacity for joy	Reserved, sober, unexuberant, aloof, task oriented, retiring, quiet
	Agreeableness (A)	
Soft hearted, good natured, trusting, helpful, forgiving, gullible straightforward	Assesses the quality of one's interpersonal orientation along a continuum from compassion to antagonism in thoughts, feelings and actions	Cynical, rude, suspicious, uncooperative, vengeful, ruthless, irritable, manipulative
	Conscientiousness (C)	
Organized, reliable, hard working, self-disciplined, punctual, scrupulous, neat, ambitious, persevering	Assesses the individual's degree of organization, persistence, and motivation in goal directed behavior. Contrasts dependable, fastidious people with those who are lackadaisical and sloppy	Aimless, unreliable, lazy, careless, lax, negligent, weak willed, hedonistic
	FACETS OF NEUROTICISM	
Tense, fearful, worried, apprehensive	Anxiety	Calm, relaxed, stable, fearless
Hot tempered, angry, easily frustrated	Hostility	Amiable, even tempered, slow to take offense
Hopeless, guilty, down hearted, blue	Depression	Seldom sad, hopeful, feels worthwhile
Easily rattled, panicked, unable to deal with stress	Vulnerability	Resilient, cool headed, competent, hardy
	FACETS OF EXTRAVERSION	
Outgoing, talkative, affectionate	Warmth	Cold, distant from others, formal
Convivial, has many friends, seeks social contact	Gregariousness	Avoids crowds, solitary, prefers being alone, self contained
Dominant, forceful, confident, decisive	Assertiveness	Unassuming, retiring, avoids speaking up
Cheerful, high spirited, joyful	Positive Emotions	Unenthusiastic, placid, serious

Figure 1

Brief Description of NEO-PI Domains and Facets

Characteristics of the High Scorer	Scales	Characteristics of the Low Scorer
	GLOBAL DOMAINS	
	Neuroticism (N)	
Worrying, nervous, emotional, insecure, inadequate, hypochondriacal	Assesses adjustment vs. emotional instability. Identifies individuals prone to psychological distress, unrealistic ideas, excessive cravings or urges, and maladaptive coping responses.	Calm, relaxed, unemotional, hardy, secure, self-satisfied
	Extraversion (E)	
Sociable, active, talkative, person-oriented, optimistic, fun-loving, affectionate	Assesses quantity and intensity of interpersonal interaction; activity level; need for stimulation; and capacity for joy.	Reserved, sober, unexuberant, aloof, task-oriented, retiring, quiet
	Openness (O)	
Curious, broad interests, creative, original, imaginative, untraditional	Assesses proactive seeking and appreciation of experience for its own sake; toleration for and exploration of the unfamiliar.	Conventional, down-to-earth, narrow interests, unartistic, unanalytical
	Agreeableness (A)	
Soft-hearted, good-natured, trusting, helpful, forgiving, gullible, straightforward	Assesses the quality of one's interpersonal orientation along a continuum from compassion to antagonism in thoughts, feelings and actions.	Cynical, rude, suspicious, uncooperative, vengeful, ruthless, irritable, manipulative
	Conscientiousness (C)	
Organized, reliable, hard-working, self-disciplined, punctual, scrupulous, neat, ambitious, persevering	Assesses the individual's degree of organization, persistence, and motivation in goal-directed behavior. Contrasts dependable, fastidious people with those who are lackadaisical and sloppy.	Aimless, unreliable, lazy, careless, lax, negligent, weak-willed, hedonistic
	FACETS OF NEUROTICISM	
Tense, fearful, worried, apprehensive	**Anxiety**	Calm, relaxed, stable, fearless
Hot-tempered, angry, easily frustrated	**Hostility**	Amiable, even-tempered, slow to take offense
Hopeless, guilty, down-hearted, blue	**Depression**	Seldom sad, hopeful, feels worthwhile
Ashamed, feels inferior, easily embarrassed	**Self-Consciousness**	Poised, secure, feels adequate, comfortable
Unable to resist cravings, yields to urges	**Impulsiveness**	Resists temptation, self-controlled
Easily rattled, panicked, unable to deal with stress	**Vulnerability**	Resilient, cool-headed, competent, hardy
	FACETS OF EXTRAVERSION	
Outgoing, talkative, affectionate	**Warmth**	Cold, distant from others, formal
Convivial, has many friends, seeks social contact	**Gregariousness**	Avoids crowds, solitary, prefers being alone, self-contained
Dominant, forceful, confident, decisive	**Assertiveness**	Unassuming, retiring, avoids speaking up
Energetic, fast-paced, vigorous	**Activity**	Unhurried, slow and deliberate
Flashy, seeks strong stimulation, takes risks	**Excitement-Seeking**	Avoids overstimulation, cautious, staid, uninterested in thrills
Cheerful, high-spirited, jovial	**Positive Emotions**	Unenthusiastic, placid, serious
	FACETS OF OPENNESS	
Imaginative, enjoys daydreaming, elaborates fantasies	**Fantasy**	Prefers realistic thinking, practical, avoids daydreaming
Values aesthetic experience, moved by art and beauty	**Aesthetics**	Insensitive to beauty, unappreciative of art
Emotionally responsive, sensitive, empathic, values own feelings	**Feelings**	Narrow range of emotions, insensitive to surroundings
Seeks novelty and variety, tries new activities	**Actions**	Prefers the familiar, follows strict routines, set in ways
Intellectually curious, theoretically oriented, analytical	**Ideas**	Pragmatic, factually oriented, does not enjoy intellectual challenges
Broad-minded, tolerant, non-conforming, open-minded	**Values**	Dogmatic, conforming, narrow-minded, conservative

Figure 2

Conscientiousness and agreeableness were studied globally since they do not break down into facets. Eight specific facets within the other two domains, neuroticism and extraversion, were chosen for inclusion in the research (Fig. 1). Facets of neuroticism examined in this study are defined by Costa and McCrae (1985) as: anxiety (tense, fearful, worried, apprehensive); hostility (hot-tempered, angry, easily-frustrated); depression (hopeless, guilty, down-hearted, blue); and vulnerability (easily rattled, panicked, unable to deal with stress). The facets of extraversion which were studied are: warmth (outgoing, talkative, affectionate); gregariousness (convivial, has many friends, seeks social contact); assertiveness (dominant, forceful, confident, decisive); and positive emotions (cheerful, high-spirited, joyful). These facets of extraversion are suggestive of personal resources which may serve to offset the rigours and strain of caregiving.

In a personal communication, Paul Costa states, "The issue of the caregiver's personality and how it might affect the caregiving process is an important and fascinating one ... and you will... be blazing new territory in this regard ... Agreeableness versus Antagonism along with Extraversion-Introversion and Conscientiousness are three domains in particular that bear careful scrutiny."

Neuroticism and extraversion may be especially important as these two domains are found, under different names, in almost all personality theories and measures. To illustrate, neuroticism has been variously labelled as General Anxiety (Cattell, Eber, & Tatsuoka, 1970) and Negative Affectivity (Watson & Clark, 1984). Noller, Law, and Comrey (1987) found the strongest support for the factors of extraversion and neuroticism in their factor analytic study of three personality inventories which attempt to cover the same domains with widely different names. Neuroticism and extraversion have also been found to be predominantly stable in adulthood (Costa, McCrae, Zonderman, Barbano, Leibowitz, & Larson, 1986). Finally, the following empirical findings concerning neuroticism and extraversion, though not specific to caregivers, add to the rationale for the choice of characteristics and traits to be included in the current study.

Neuroticism

McCrae (1987b) describes neuroticism as a broad domain of personality traits which contrasts individuals who are well-adjusted with others who are emotionally unstable. Costa and McCrae (1985) have defined the neurotic personality as being prone to psychological distress, unrealistic ideas, excessive urges and maladaptive coping.

Scores on neuroticism have been found to predict negative affect scores in a Costa and McCrae (1980a) study. The investigators found that all neuroticism facets or traits, as measured by the NEO Personality Inventory, are likely to have an unfavorable balance of positive to negative affect and to be connected with dissatisfaction with life. This is particularly true for the neuroticism facets of anxiety and depression. Neuroticism has been found to be a powerful determinant of life satisfaction, morale, and well-being as well as unfounded health complaints (Costa & McCrae, 1984b; Costa & McCrae, 1980a). Costa and McCrae (1984b, 1986a) cite depression and hypochondriasis as correlates of Neuroticism. After studying an older population, Carp (1985) reported support for the importance of neuroticism in relation to subjective well-being (CAI Happiness Scale; Cavan, Burgess, Havighurst and Goldhammer, 1949).

Caregivers scoring high in neuroticism may therefore comprise an at-risk population prone to negative feelings and evaluations, health complaints and maladaptive reactions which could carry over into many situations, including caregiving. In fact, by becoming caregivers, such persons may risk an increase in health problems and complaints, even as compared to the disproportionate number of health problems of caregivers in general. At the least, they may require increased family and community supports and specialized interventions to help them to continue to maintain their dependent, or to help them with placement, when desirable.

Extraversion

Extraversion refers to personality traits that include sociability, adventurousness, assertiveness, activity and cheerfulness. It is therefore possible that, to offset problems, extraverts may initiate and receive more outside support than introverts so that extraversion could help provide buffers for stress.

There are fewer studies exploring the mediating effects of extraversion than of neuroticism. However, Costa and McCrae (1980a) have found that personality traits within the domain of extraversion are consistently related to positive affect, as measured by the Positive Affect Scale (Bradburn, 1969). These traits are interpersonal warmth, assertiveness, and predisposition to experience positive emotions. As well, extraversion has been connected to positive life-satisfaction in an older population (Carp, 1985). Based on these findings, it can be reasoned that, for the extravert, sorrows may be offset by the disposition towards feelings of warmth and joy which help caregivers find it easier to continue their task. In that case, extraversion may not only help encourage social support which may buffer stress but may also itself act as a buffer countering stress.

Agreeableness and Conscientiousness

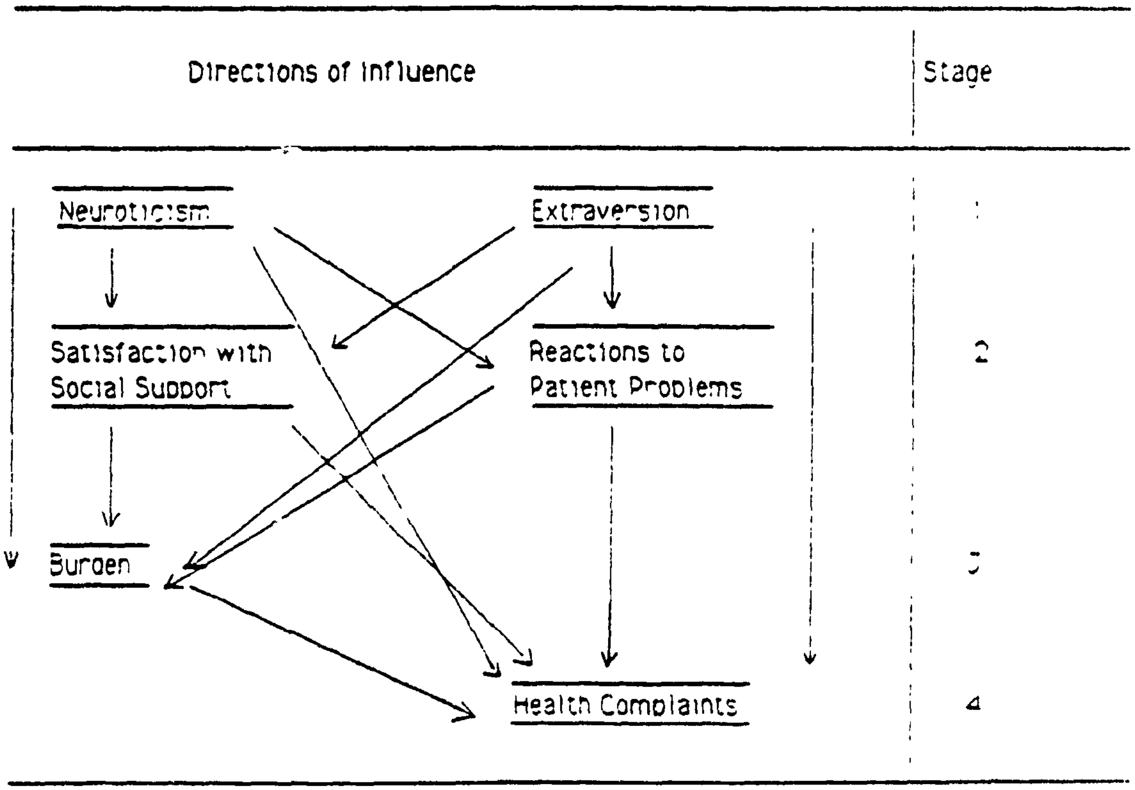
There is no relevant research literature on conscientiousness and agreeableness, but, compared to the population at large, individuals who accept the onerous responsibility of the home care of a dementia patient and who continue long-term home maintenance may be particularly agreeable and conscientious. Caregivers may tend to be generally more agreeable and conscientious than the average person in a wide variety of situations such as work or child-care.

Becoming a caregiver does involve an element of choice. There are spouses and children of dementia victims who decline to accept the enormous responsibility of caregiving or who give it up relatively quickly, while others accept and maintain caregiving for long periods of time. Among a dementia patient's relatives, there is usually one person, generally a spouse, daughter or daughter-in-law, who accepts and maintains the primary caregiving responsibility. Others take on tangential functions and contribute less rather than more as time passes and the disease progresses (Aronson, 1985; George 1984; Johnson and Catalano, 1983). The individual who accepts the primary caregiving responsibility might be expected to have personality characteristics of high agreeableness and conscientiousness. Since personality characteristics are stable and enduring, high agreeableness and conscientiousness might also equally be expected of those who eventually feel compelled to make the decision to place as well as those who are able to continue home maintenance. It can thus be reasoned that the decision to accept caregiving, but not the decision to institutionalize, is mediated by agreeableness and conscientiousness. The decision to institutionalize may be affected instead by caregiver personality variables such as neuroticism and extraversion as well as other caregiver, patient and situational variables.

The Neuroticism/Extraversion Model of Burden

Based on the findings and the reasoning already reviewed in this paper, a theoretical model (Figure 5) was constructed proposing some possible paths of influence between personality characteristics and burden. The basis for the model is recapitulated as follows:

The caregiver's personality remains stable throughout the adult years and may help determine the perceived level of burden and the continued home care of the dementia patient. Neuroticism, extraversion, conscientiousness and agreeableness are probably the most salient characteristics influencing caregiver availability. Caregivers are likely to be individuals who are generally high in conscientiousness and agreeableness compared to the population at large. Their



Personality Model 1: How Caregiver Traits May Influence Burden and Health Complaints

Figure 7

high conscientiousness and agreeableness should predict the initial decision to become a caregiver rather than influence their eventual decision to institutionalize when the burden of caregiving becomes overwhelming. Thus, agreeableness and conscientiousness are external to the specific personality model which addresses the question of continuing home maintenance rather than initially accepting responsibility for caregiving.

On the other hand, the personality characteristics of neuroticism and extraversion are included in the burden model as ones which might affect variables influencing caregiver availability. Neuroticism in the caregiver may create a predisposition toward negative perceptions and appraisals of relevant situational factors and of health. Ultimately, neuroticism may negatively affect the decision concerning institutionalization of the patient. On the other hand, a high level of extraversion may predispose the caregiver toward positive emotions generally and toward general well-being, all of which may temper the external situation. Extraversion may positively influence appraisals, health and, ultimately, availability.

The specific trait-burden-health model was constructed as an exploratory effort oriented towards obtaining initial insights into the dynamics of a few of the variables which might be implicated in a trait-burden-health chain. The model is an initial effort to explore the issues and is not intended as a final theoretical formulation. Additional and alternative models could be constructed and tested either individually or against the present model. For instance, an alternative trait-burden model specifying relatively objectively measured variables could be compared to the present subjectively-oriented model. Indeed, though the model is based on current findings and commensurate logic, the future is likely to necessitate many changes in both.

The present trait model proposes that:

Neuroticism and extraversion are specific personality domains, as defined by the NEO Personality Inventory, which predict caregiver burden and health. The paths proposed by the model are as illustrated in Figure 3.

The caregiver's satisfaction with social support, the caregiver's reactions to the memory and behavioral problems of the patient, the caregiver's appraisal of level of burden and caregiver health complaints are influenced negatively by neuroticism and positively by extraversion. The variables in the model are postulated to influence the other variables in succeeding stages. Lines of influence in the model can be conceived as having four stages: neuroticism and extraversion are at the first stage; satisfaction with support and reaction to patient problems are at the second stage, burden is at the third stage and health complaints are at the fourth and final stage. The reactions to patient problems and satisfaction with social support, the two variables at the second stage, are not connected. Little empirical evidence or rationale was found for postulating spheres of influence between these two variables.

Objectives of the Study

The study has two fundamental objectives: the more concrete aim is to predict institutionalization of dementia patients presently residing in the community, and a relatively theoretical objective is to test the model. A third objective is the hope that the data will provide a basis for practical applications resulting in the improvement of services to caregivers.

1. Identification of Personality and Other Predictors Of the Decision to Institutionalize

A primary purpose of this study is to examine, simultaneously, many variables, including personality variables, that are predictors of institutionalization or of continuation of home maintenance. Kvale and Bohlen (1985) point out that many, but not all, factors entering into the decision to institutionalize are known. A number of variables, including behavioral manifestations of dementia, and social, socioeconomic and community support and resources available to the caregiver, have been studied in relation to dementia caregiving. However, the effects of such factors on patient outcomes, that is, on institutionalization or maintenance in the community, have not been determined. Zarit (1989) points out that burden and its antecedents are multidimensional and have complex relationships. Therefore testing is needed of sophisticated, multivariate models of caregiving.

Relatively few studies of dementia have included sufficient participants to allow for simultaneous examination of the many relevant variables and to sort out the relative effects using multivariate techniques of data analysis. Few have used samples sufficiently heterogeneous to allow contrasts between caregivers who can or cannot manage dementia patients in the community. Only a comprehensive, multifactorial study of a heterogeneous, large sample of caregivers of dementia patients presently residing in the community can provide an adequate basis for the determination of the salient variables that predict patient institutionalization or maintenance in the community.

2. A Test of the Caregiver Personality Model

While many studies have examined caregiver issues, none have studied the influence of the caregiver's personality on caregiving plans. An immediate goal of the research is to test the caregiver personality model which specifies how salient personality traits of the dementia caregiver, along with relevant background and demographic caregiver and patient variables, predict the caregiver's reactions to problems, the appraisal of the adequacy of social support, the self-evaluation of health and the burden of caregiving.

3. Contribution to the Improvement of Caregiver Services

A long-term goal of the current research is its potential contribution to the improvement of social and health care services to help alleviate the stress of those maintaining relatives with dementia in the community. Identification of a model describing a segment of the path toward institutionalization and description of a "high risk profile" should be helpful for tagging and understanding the most vulnerable caregivers and caregiving situations. This would involve the identification of combinations of personality and other variables for early targeting of such situations. The design and implementation of concomitant interventions could follow. In a study of risk factors that predict institutionalization, Shapiro and Tate (1988) concluded that constellations of variables, rather than individual variables are better predictors in screening the elderly most at risk for institutionalization. Early tagging and intervention in problem situations can serve to avert unnecessary emergencies and placements and help make institutionalization, when necessary, a planned process.

Hypotheses of the Study

Predictions of the study follow from the discussion of the findings in the literature upon which the model is based. Predictions are limited to those involving the personality traits. The predictions are as follows:

1. Higher levels of caregiver neuroticism will result in the caregiver's:

    a) less favorable or more extreme emotional reactions to the patient's problems,

    b) lower level of satisfaction with the social support,

    c) less favorable appraisal of the level of burden, and

    d) more health complaints, with burden as an intervening variable between neuroticism and complaints.

2. Higher caregiver neuroticism will predict the decision to institutionalize the dementia patient.

3. There is less basis for predictions based upon caregiver extraversion than neuroticism, but higher caregiver extraversion is generally expected to have positive effects on the caregiver variables. Higher caregiver extraversion is predicted to result in:

a) more favorable or less unfavorable reactions to the patient's problems,

b) receiving of more social support,

c) greater satisfaction with social support,

d) more favorable appraisal of the level of burden, and

e) fewer health complaints.

4. Higher caregiver extraversion will predict the decision to continue home maintenance of the dementia sufferer.

5. Higher conscientiousness and agreeableness are expected for caregivers compared with their sex-matched norms. Caregivers who decide to institutionalize and caregivers who continue home maintenance are both highly conscientious and agreeable, so that these traits will not predict institutionalization.

Method

Subjects

This study examined a sample of 213 caregivers of dementia outpatients and their dependents. Both male and female caregivers of patients who were being maintained in the community with varying levels of impairment and varying degrees of success were included in the study. Some patients were successfully being maintained at home by relatives with only routine medical care. Other patients received supplementary home care, and others were on waiting lists for permanent institutional placements.

Participant referrals were obtained through agencies located in Montreal and Quebec City (Appendix A). Referring agencies were mainly hospitals, day-care centres, CLSC's and the Alzheimer's Society of Montreal. These agencies provided a sample of caregivers and patients from a full range of socioeconomic levels and a variety of backgrounds.

The following criteria were used to select the dementia patient and their caregivers as suitable for inclusion in the study:

1. A primary caregiver was identified who was a relative of the patient and who had the responsibility for providing regular and essential care and support;

2. The patient had received a medical diagnosis of Alzheimer's Disease or dementia associated with multi-infarct stroke or had a dementia whose etiology was unknown;

3. The patient's residence was in a private home within the community or the patient had been institutionalized for less than one month;

4. The patient had no additional physically immobilizing or life-threatening medical conditions.

Participants were interviewed and assessed, either in English or French, in their homes at a time convenient to them by a trained research assistant. Caregivers were interviewed and completed a battery of standard psychological measures during one or two test sessions, requiring a total average time of approximately one and one-half hours. Patients were assessed by a clinically-trained research assistant, using a mental status exam which evaluated the progression of the dementia and the cognitive functioning. The average time of patient assessment was about twenty minutes and varied according to the degree of impairment.

The initial consent of participants was obtained from the caregivers in one of two ways: a phone call originating with the referring agency or a mailed printed consent form sent out through the referring agency. Explanations of the goals of the study and a brief overview of the information required from participants were provided to the caregiver when the research assistant telephoned to arrange the home appointment. Additional written consent was obtained at the beginning of the home meeting (Appendix B).

The crucial dependent variable was the caregiver's decision to institutionalize or to maintain home care (hereafter referred to as `decision'). Near the beginning of each caregiver interview, caregivers were asked if they planned to continue to maintain the patient in the community or if they planned to seek to institutionalize the patient. The question was repeated near the end of the interview to ensure that the test and interview process did not influence that decision. In three cases, the caregiver's decision to continue home maintenance or to institutionalize was changed during the course of the caregiver assessment. Two changes in `decision' were made in the institutionalization' direction, while one change was in the home maintenance direction. These three participants were deleted from the study, leaving 210 remaining participants.

When asked for the decision concerning home maintenance, the caregiver was instructed to assume that desirable and appropriate facilities would be available, so that the decision either for home maintenance or institutionalization primarily reflected the caregiver's assessment of his or her own contingencies instead of concern about the availability of adequate institutional facilities. This procedure was followed to avoid confounding the participant variables with health resource variables.

Caregiver Assessment

A number of newly developed measures were selected to assess the caregiver variables. The measures selected were based largely upon the recommendations of Zarit, Orr and Zarit (1985). These scales were not available in French and were translated and tested (Gold and Andres, in progress, 1987-1989) on a pilot sample of caregivers.

1. Standardized Interview

The caregivers were given a standardized interview (Appendix C) to gather basic caregiver and patient information. The Interview collected demographic, family and social data: age, sex, socioeconomic status, employment status, education, income, relationship to the patient, living arrangements of the patient and marital status.

The Standardized Interview contained a Community Services Interview and a Pleasure Activities and Hobbies interview. These two were developed for an ongoing caregiver study in Toronto (Shulman, Gold, and Cohen, in progress, 1986-9). Using the Community Services Interview, caregivers were asked to state what social services they have used, the frequency of use, the outcome of this usage, and the services they would like to see improved or created to assist with their unmet needs. The questionnaire lists 18 types of community services.

The Pleasure Activities and Hobbies Interview served to assess caregivers' hobbies and leisure activities. It asked about the kind and frequency of leisure activities.

In order to assess the quality of the relationship of the caregiver and the care receiver prior to the onset of the illness, the past Social Interaction Questionnaire (Gilleard et al, 1984) was also included in the Standardized Interview. This scale has been found to correlate with the caregiver's degree of distress and the decisions of caregiving wives to institutionalize their husbands (Zarit, 1983).

2. Perceived Social Support Measure

The Social Support Questionnaire (Appendix D; Sarason, Levine, Basham & Sarason, 1984-5) measures degree of support, comfort and advice received by the caregiver from friends and family. It indicates the kind and number of supporters of the caregiver and the degree of caregiver satisfaction with each. Test-retest reliability coefficients of .90 and .83 have been reported for availability of and satisfaction with social support, respectively. Scores on the scale have been found to be significantly negatively correlated with depression, anxiety, and neurotic symptoms and positively correlated with happiness.

3. Perceived Patient Problems Measure

The Memory and Behaviour Problem Checklist (Appendix E; Zarit, Orr & Zarit, 1985; Zarit, Zarit and Reever, 1982; Zarit, Reever and Bach-Peterson, 1980) evaluates the caregiver's subjective perceptions of the patient's memory and behaviour problems. This checklist was developed specifically for caregivers of dementia patients. It determines the caregiver's estimate of the frequency of the problem behaviours and also the extent of the caregiver's emotional reactions to each of the problem behaviors displayed. Increased numbers of behavioral problems exhibited by the patients were found to be highly correlated with caregiver burden (Ferris, Steinberg, Shulman, Kahn, & Reisberg, 1985; Teri, Larson, & Reifler, 1988). The scale is comprised of 28 items covering problems and behaviors that caregivers are likely to encounter on a day-to-day basis. Caregivers are asked to indicate how frequently each problem has occurred over the past week. Responses range from 0=`never occurred' to 4=`occurred daily or more often'. The reaction rating assessed the degree to which each problem bothered the caregiver and ranged from 0=`not at all' to 4=`extremely'. The scale is reported as correlating with duration of illness and patient impairment in terms of activities of daily living.

4. Caregiver Health Measure

The General Health Questionnaire 28 (Appendix F; Goldberg, 1972, 1978, Goldberg and Hillier, 1979) is a 28 item version of the General Health Questionnaire, North American edition, used for research purposes. The General Health Questionnaire was originally designed for use with a normal population for the screening of psychiatric disorders, focusing on two major areas: inability to carry out normal functions and the appearance of new and distressing symptoms. In its screening function, the questionnaire correctly classifies 89% of general practice patients. The 28-item version contains four scales which yield four scaled scores: somatic symptoms; anxiety and insomnia; social dysfunction; and severe depression. The two scales used in this study are somatic symptoms (items 1-7 inclusive) and social dysfunction (items 15 - 21 inclusive). The use of the anxiety and depression scales was decided against in order to avoid a possible confound with the measure of neuroticism, which also contains anxiety and depression scales.

The Somatic Symptom Scale asks about general health complaints. It taps the overall degree of subjective feeling of somatic well-being. It may reflect some objective health problems in this study's elderly population as well as unwarranted or exaggerated health complaints more closely related to emotional difficulties.

The Social Dysfunction Scale inquires about the respondent's self-evaluation of general ability to function successfully in fulfilling role demands within the community at large. Presumably, the caregiver who is having difficulty in `managing' with ordinary functioning may be experiencing emotional dysfunction which will inhibit the ability to function as a caregiver.

The General Health Questionnaire is based on a factorial validity study of 5000 patients. Scores have been found to correlate significantly with clinical assessments of psychological health. The GHQ has also been shown to be a good measure of health problems related to the stress brought about by the responsibility of caring for a demented relative (Gilleard, et al, 1984).

Test-retest reliability coefficients for the GHQ are reported at the .75 level. Split-half reliability at the .92 level. Validity in an earlier GHQ version, containing 30 items, for the screening of general practice patients, is at the .77 level.

5. Perceived Stress Measure

The Burden Interview (Appendix G; Zarit et al, 1985; Zarit, Zarit and Reever, 1982; Zarit, 1983; Zarit, Reever and Bach-Peterson, 1980) assesses the stress or burden experienced by the caregiver. It is a 20 item questionnaire on which caregivers rate, for each item, the extent of their feeling of burden. The range of responses extends from `not at all' to `extremely'. A total score is obtained by summing the items endorsed.

The Burden Interview examines the extent of burden that caregivers experience: it has been found to correlate highly with patient institutionalization (Deimling and Bass, 1986; Eagles, Craig, Rawlinson, Restall, Beattie & Besson, 1987; Gilhooly, 1984). Burden also correlates with social support and problem behaviours (Zarit, Todd and Zarit, 1986). Adequate reliability and validity were reported for this test.

6. Caregiver Personality Measure

The NEO Personality Inventory, abridged (Appendix H; Costa and McCrae, 1985) was used to evaluate the selected caregiver personality traits. The NEO Personality Inventory is the only instrument based on the five-factor personality theory which also been validated for use with the full adult age range for individual prediction. It therefore has psychometric properties which suggest its suitability for use in this study whose aim is to scrutinize various traits of adult caregivers of all ages in terms of possible effects on burden and on the decision concerning institutionalization.

The NEO Personality Inventory has a total of twenty-three scales (Figure 2) which measure five global personality characteristics or domains, and eighteen facets or traits within domains. The five global personality domains are: neuroticism, extraversion, openness, agreeableness and conscientiousness.

As previously described, four NEO domains were chosen for scrutiny in this study: neuroticism, extraversion, agreeableness and conscientiousness. Global ratings were obtained for agreeableness and conscientiousness. For each of neuroticism and extraversion, an estimated global rating was obtained using four out of the six available scales or facets for each of those domains. Ratings were also obtained for each of the four facets within neuroticism and extraversion. For neuroticism, the four facets measured were: depression, anxiety, hostility and vulnerability. For extraversion, they were: warmth, positive emotions, gregariousness and assertiveness. As the caregiver interview and tests were lengthy and many caregivers were elderly and heavily burdened, the other domains and facets of the NEO were not included in the study.

To complete the NEO Personality Inventory, caregivers were asked to rate themselves on each of 101 items. The range of responses varied on a five-point scale, from "strongly agree" to "strongly disagree".

Test-retest reliabilities for the NEO Personality Inventory range from .86 to .91. Convergent and discriminant validity with the Eysenck Personality Inventory (Eysenck and Eysenck, 1964) is between .44 and .75, and with the Guilford-

Zimmerman Temperament Survey (Guilford, Zimmerman and Guilford, 1976), between .30 and .60. Consensual validity ranges from .45 and .72 and provides evidence of similarity of self-reports with ratings by external observers. The NEO has been validated for use with an older population for individual prediction.

Patient Assessment

Basic demographic and background data were collected for the patient, including age, sex, education, socioeconomic status, past employment and marital status. The Diagnostic and Statistical Manual of Mental Disorders (DSM III-R, 1987) diagnosis was obtained from the referral agency.

Mental Status Measure

The Hierarchic Dementia Scale (Appendix I; Cole, Dastoor & Koszycki, 1983; Dastoor & Cole, 1983, 1985-1986) was used to assess the severity of the dementia. This scale is based on the hierarchical nature of functional decline following Piagetian concepts in reverse. The instrument has 20 subscales measuring various aspects of cognitive functions such as orientation, memory, praxic and gnostic abilities, and language and motor abilities. Scores on each subscale range from 0, indicating `poor functioning', to a score of 10, meaning `no impairment'. The Hierarchic Dementia Scale is administered to the dementia patient verbally. It is the most detailed of all available validated tests for assessing dementia.

The test has good test-retest reliability (.84) and inter-rater reliability (.89) and correlates well with other assessments of dementia. Concurrent validity with the Blessed Dementia Scale is .72, ($p<.001$), (Robinson, 1961) and with the Crichton Scale, .74, ($p<.001$), (Dastoor & Cole, 1983). The alpha coefficient of internal consistency is .97.

Results

The data analysis for this study uses two basic methods, discriminant function analysis (DFA) and path analysis (PA). The details of the requirements for DFA and PA are discussed in Appendix J. Two participants who were found to be outliers (Tabachnick & Fidell, 1989) were eliminated from the study, leaving a total N of 208.

The DFA is used to determine membership in either the group making the decision to institutionalize the patient or the group deciding to maintain the patient at home. Discriminant function analysis indicates which participant variables are important for prediction of the decision. Questions of causality are not answered in this particular analysis, as the assignment of cases in groups in this project is not random.

Path analysis is a causal model procedure which is used to test the applicability of the obtained data to the personality model generated in this project. The method of PA in this study is that of a series or stages of ordinary least squares multiple regression analyses (Pedhazur, 1982). At each stage, a variable taken as a dependent variable is regressed on the variables upon which it is assumed to depend. The relations among the variables are examined to determine whether the data are consistent with a specified set of structural relations among variables (Salthouse, Kausler and Saults, 1988).

Path analysis enables the decomposition of effects to provide an estimate of the relative magnitudes of the direct, the indirect and the total effects of caregiver personality traits on burden and health complaints. Hypotheses are also tested concerning the effects of the caregiver's personality traits on intervening variables such as the reactions to the patient's problem behaviors. Information concerning indirect effects serves to indicate the proportional contribution of each intervening variable. In this model, the predicted indirect effects are through the influences of the caregivers' appraisals of their reactions to patient behaviors, their appraisals of satisfaction with social support and their appraisals of the burden of caregiving. The two exogenous personality variables, neuroticism and extraversion, are the `givens which cannot be decomposed.

The path coefficients are the standardized regression coefficients (Betas) obtained in the ordinary regression analysis. The Beta is the regression weight obtained when the scores are standardized prior to the regression analysis and indicates the expected change in the dependent variable, expressed in standard scores, associated with a one standard deviation change in an independent variable, while holding the remaining variables constant. The path coefficients are the important parameters in a path analysis model.

PA requires an a priori theoretical model specifying the hypothesized relationships between the predictor and criterion variables. It then evaluates the adequacy of a model, and can use non-experimental data to test the model and improve it (Kline, Kantor and Robin, 1987). Such a procedure may help generate a more precise theoretical framework. The improved model can help to guide program planning, modification and implementation.

To the extent that the data in a study are found to be characterized by a model, the model receives support. One can then conclude that the underlying theory or reasoning in generating the model has received support. If only parts of the model are found to be consistent with the observed data, then the model receives commensurate limited support. If few or no parts of the model are found to provide a reasonable fit to the data, then explanations must be provided and other solutions must be sought. Doubt is cast on the theory or logic underlying the model and questions are asked concerning the interpretation of previous findings supporting the model.

The procedures of path analysis thus allow investigation of the viability of this study's model and its parts; for instance, the prediction that the path coefficient between a caregiver's level of neuroticism and the caregiver's appraised burden is not equal to zero. In order to calculate a path coefficient, an equation is constructed consisting of the variables upon which it is assumed to be dependent, along with a term representing residuals or other variables not under consideration in the model.

As in discriminant function analysis, it is difficult to strongly infer causation in path analysis since this study is a non-experimental field study in which variables were neither manipulated or randomized. A causal explanatory scheme is tentatively arrived at on the basis of the related past findings, theoretical formulations and logical analysis offered as explanations by the researcher in formulating the model rather than on the basis of the data (Pedhazur, 1982).

General Preliminary Analyses

Before the calculation of the central analyses, the DFA and the PA, preliminary analyses were performed. MANOVA, followed by ANOVA, were computed to specify the differences between the Anglophone and Francophone participants. No significant differences were found between Anglophones and Francophones on any of the variables in the study, with the exception of age. Anglophone caregivers and care receivers were 7.3 and 4.3 years older, respectively, than their Francophone counterparts. On the basis of the analyses, Anglophone and Francophone subjects were judged to be, on the whole, similar, and were combined for all data analyses. Age was not a significant predictor in any of the subsequent analyses.

Prior to analysis, MANOVA followed by ANOVA were also calculated to specify the differences between those caregivers whose dependents were assessed for dementia and those caregivers whose dependents were not assessed for dementia. All of the patients had been medically diagnosed prior to their acceptance for participation in the study. However, in 32 cases, the Hierarchic Dementia Scale assessment of the patient's functioning was not performed during the study. In these cases, the caregiver typically refused the assessment on behalf of the patient because of anxiety that the assessment would upset the patient. However, those caregivers who refused to allow their dependents to be assessed were not significantly different on the ANOVA from caregivers who did permit the patient assessment either in terms of neuroticism, which contains anxiety, or extraversion, which includes assertiveness. No significant differences were found between those caregivers whose dependents were assessed and those whose dependents were not assessed on any other variables in the study. On the basis of these findings, the two groups were judged to be similar and were combined for further data analysis.

Another preliminary analysis was the computation of cross-tabulations to specify the relationship of the caregivers to the patients. The caregiver-patient relationship as spouse or child was compared to the caregiver-patient relationship as being of the same sex or of the opposite sex. The cross-tabulations showed that the overwhelming majority of same-sex caregivers were children of the patient, while almost all opposite-sex caregivers were spouses. On this basis, the spouse-child relationship measure was retained in the study and not the same-sex or opposite-sex variable.

T-tests were performed to compare the caregivers' mean personality scores to the population means, as estimated from NEO Personality Inventory norm means. No significant differences were found, indicating that the caregivers' mean scores for neuroticism, extraversion, agreeableness, and conscientiousness are within the average range. The fact that caregivers' agreeableness and conscientiousness are within the average range is contrary to the study's expectations that those who consent to be caregivers are particularly agreeable and conscientious individuals.

Finally, differences in conscientiousness and agreeableness between spouse or child caregiver was analyzed by an ANOVA. It was reasoned that spouses and children who are caregivers could differ in terms of conscientiousness and agreeableness. However, no significant differences were found between spouses and children, and spousal and child caregivers were analyzed together.

Caregiver Profile

Table 1 shows the means and standard deviations for the major variables in the study, based on the 208 participant pairs who remained in the study after deletion of the three participants whose decision was uncertain and the two who had extreme scores. Of these caregivers, 70% are female and 30% are male. The primary caregiver has been looking after the patient for an mean of 3.2 years with a range of one month to 16 years. For the caregiver, the mean age is 63.10 years and the mean educational level is 11.0 years. Sixty percent of the caregivers are spouses, 28% are children, 5% are siblings, and 7% are other relatives.

Patient Profile

Of the sample of 208 care receivers, 60% are females and 40% are males. A mean total score of 135 on the Hierarchic Dementia Scale (Dastoor and Cole, 1983) indicated that the majority of the care receivers included in the study are moderately impaired. The patient's mean age is 75.16 years and mean educational level is 9.3 years. In this sample, 92% of the patients are diagnosed as having senile dementia of the Alzheimer's type, 7% from dementia associated with multi-infarct strokes, while, in 1% of the cases, the etiology of the patients' memory problems is unknown.

Table 1

Means and Standard Deviations (N=208)

Variable	Mean	Standard Deviation
Neuroticism	83.3	14.1
Extraversion	106.9	10.7
Frequency of Problem Behaviors	10.4	6.7
Agreeableness	67.1	5.8
Reactions to Problem Behaviors	26.0	17.2
Satisfaction with Social Support	5.3	0.9
Health Complaints	12.8	4.2
Burden	35.7	15.7
Income	27.879	21.417
Caregiver Education	11.0	4.0
Patient Level of Impairment	135.4	49.4
Prior Caregiver-Patient Relationship	42.6	7.9
Years of Caregiving	3.2	2.8

The DFA: Determinants of the Decision

A preliminary DFA was performed in order to eliminate some of the variables which did not contribute or contributed minimally to the prediction of group membership regarding future caregiver plans (Appendix K). Following the preliminary DFA, the main DFA was performed to specify the most parsimonious set of variables underlying the decision concerning future caregiver plans and to test the hypotheses that neuroticism and extraversion predict the decision re institutionalization. A two-group direct entry discriminant function analysis was performed on the subjects for whom complete sets of data were available. Of the original 208 cases, 85 were dropped from analysis owing to missing data on one or more variables. The results of ANOVA indicated that missing data were randomly assigned over groups and predictors. For the remaining 123 cases retained, 96 were 'maintain' caregivers and 27 were 'institutionalize' caregivers. The subject:variable ratio was 8:1 and the sample size of the smaller group exceeded the number of variables, as required for this analysis (Tabachnick and Fidell, 1989).

Table 2 presents the means and the standard deviations for the variables in the DFA. Table 3 presents the intercorrelations among variables in the study and the significance of the coefficients, using the Bonferroni procedure of adjustment for large numbers of intercorrelations. Some of the pooled within-group correlations in Table 3 reach statistical significance at the .05 level after the Bonferroni procedure. Contrary to the expectation in the study, extraversion does not correlate with frequency of use of social services. Because the emphasis here is on the combination of personality together with caregiver, patient and demographic variables, only those correlations involving personality variables or personality variables along with caregiver, patient or demographic variables are highlighted. Among the personality predictors, three neuroticism correlations are statistically significant when tested individually. There are significant relationships between neuroticism and health complaints (r =.32), prior patient-caregiver relationship (r=-.26) and burden (r=.26). Caregivers who score higher in neuroticism are more likely to view the prior relationship with the care receiver negatively, to appraise their health less favorably and to feel highly burdened by caregiving. There were no significant relationships between the other personality variables and the other variables in the study.

Table 2

The Main Discriminant Function Analysis: Means and Standard Deviations

	Group 1 Maintain N=96		Group 2 Institutionalize N=27		Total N=123	
Variable	Mean	(S D)	Mean	(S D)	Mean	(S D)
Neuroticism	82.63	(14.91)	88.41	(13.21)	84.67	(14.63)
Extraversion	106.90	(10.40)	101.59	(12.86)	105.73	(11.15)
Agreeableness	67.52	(6.11)	66.33	(5.78)	67.26	(6.04)
Frequency of Problem Behaviors	40.94	(18.59)	54.26	(15.97)	43.87	(18.81)
Reactions to Problem Behaviors	22.38	(17.80)	36.04	(12.30)	25.37	(17.17)
Frequency of Use of Services	9.83	(6.33)	13.46	(7.89)	10.63	(6.84)
Health Complaints	12.43	(6.65)	14.30	(4.97)	12.84	(4.03)
Burden	31.92	(14.71)	47.07	(12.41)	35.24	(15.52)
Income	25,115	(19,280)	37,111	(76,683)	27,748	(22,127)
Relationship to Patient	1.35	(.48)	1.56	(.51)	1.40	(.49)
Caregiver Education	10.89	(3.73)	12.37	(5.33)	11.21	(4.16)
Length of Caregiving	3.37	(2.61)	2.67	(1.81)	3.21	(2.47)
Level of Impairment	138.67	(48.81)	138.76	(41.75)	138.73	(47.18)
Occupational Status	36.42	(24.20)	35.55	(20.28)	26.23	(23.52)
Quality of Prior Relationship	43.36	(8.13)	40.37	(8.54)	42.71	(8.28)
Employment Status	2.88	(1.10)	2.44	(1.12)	2.78	(1.11)

Relationship (1= spouse, 2= other)
Employment Status (1= employed, 2= not employed)
Reactions to Problem Behaviors (high score = more negative reactions)

Table 3

Pearson Correlations for Variables in the Study (N=213)

Variable	Combined Income	Caregiver Education	Level of Impairment	Occupational Status	Prior Patient-Caregiver Relationship	(b) Employment Status	(bb) Relation to Patient	(bbb) Reactions to Patient Problems	Frequency of Problem Behaviors	Frequency of Use of Services	Neuroticism	Health Complaints	Burden	Extraversion	Agreeableness	Length of Caregiving	Satisfaction with Support
Combined Income	1 00																
Caregiver Education	45***	1 00															
Level of Impairment	01	12	1 00														
Occupational Status	18**	41***	-05	1 00													
Prior Patient-Caregiver Relationship	-12	-13	-24	08	1 00												
(b) Employment Status	-32***	-26***	06	-59***	02	1 00											
(bb) Relation to Patient	32***	30***	14	-07	17**	-26***	1 00										
(bbb) Reactions to Patient Problems	13	13	08	03	-28***	01	-02	1 00									
Frequency of Problem Behaviors	11	10	-11	-03	-22**	02	01	75***	1 00								
Frequency of Use of Services	-01	12	-14	08	02	-03	03	06	11	1 00							
Neuroticism	-02	-09	22**	-08	-26***	04	-01	23**	08	-05	1 00						
Health Complaints	-01	-08	01	-07	-16	04	-03	47***	38***	03	32***	1 00					
Burden	14	22**	08	-26***	04	-06	-04	64***	56***	05	26***	49***	1 00				
Extraversion	-05	-01	-04	-04	21**	-05	-09	-09	-11	03	-45***	-09	-09	1 00			
Agreeableness	11	04	-01	-05	-12	-01	11	-12	04	-04	-33	-02	-06	.31	1 00		
Length of Caregiving	06	14	-23**	12	11	-09	-06	-02	-05	07	-04	-09	01	01	05	1 00	
Satisfaction with Support	05	04	06	-05	12	08	01	01	-03	00	02	-17	-21**	12	05	-01	1 00

** p< 01
*** p< 001 and p< 05 after Bonferroni procedure

(b) relationship to patient (1=spouse 2=child or other)
(bb) employment status (1=employed, 2= not employed)
(bbb) reactions to problem behaviors (high score= negative reaction)

Sixteen variables were entered in the DFA. The variables were examined for their power to correctly classify caregivers into the groups representing those planning institutional placement and those planning to continue home care. The personality variables entered were the caregiver's personality traits of neuroticism, extraversion, and agreeableness. The caregiver's conscientiousness contributed minimally to the decision, which warranted its early deletion from the study, and which is consistent with the study's prediction that conscientiousness does not predict decision. The central caregiver variables were the appraisals of the frequency of occurrence of patient problem behaviors and of the reactions to them, the frequency of the use of community services, the level of appraised burden in the caregiving situation and somatic health complaints. The demographic and background variables retained for entry into the DFA were: the caregiver's socioeconomic status, employment status, education, relationship to the patient, quality of the prior patient-caregiver relationship, length of caregiving in years and the patient's level of impairment as indexed by the HDS. A variable common to both the patient and the caregiver, their combined income, was also entered into the DFA.

The DFA produced a significant 16 variable function (Canonical Correlation=.57.16, Wilks' Lambda=.67, $\underline{x}^2$(16df)=44.70, $\underline{p}$<.001). This function correctly classifies 83.74% of cases into their respective groups, which indicates reliability of the function in separating the group of caregivers who are determined to maintain their dependent at home from the group of caregivers who have decided to institutionalize. The discriminant function is somewhat more successful in correctly classifying the `maintain' group (84.4% correct classification) than the `institutionalize' (81.5% correct classification) group.

Table 4 reports the details of the discriminant function analysis. As can be seen in this table, seven of the variables add significantly to the function and 3 variables approach significance. The table reports the loading or structure matrix, which indicates the correlations between the discriminant function and the 16 discriminating variables, in descending order of magnitude of correlation.

Variables having loadings of .30 and above in the loading matrix are called primary predictors (Tabachnick and Fidell, 1989) and are the important determinants in the function. Such variables are statistically significant as well as having relatively high loadings.

Table 4

The Main DFA Coefficients and Loading Matrix (N=123)

Variable	Structure Matrix	Standardized Discriminant Function Coefficient
Burden	-.64	-.58***
++Reactions to Patient Problems	-.50	-.37***
Frequency of Behavior Problems	-.44	.07**
Income	-.33	-.07**
Frequency of Use of Services	-.33	-.49*
Extraversion	.29	.39*
Health Complaints	-.28	.20*
+Relation to Patient	-.25	-.04@
++Employment Status	.23	.62@
Quality of Prior Relationship	.22	.06@
Caregiver Education	-.22	-.11
Caregiver Neuroticism	-.20	.06
Length of Caregiving	.17	.35
Agreeableness	.12	.11
Occupational Status	.02	.51
Patient Level of Impairment	-.01	.20

@ $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$
\+ Relationship (1=spouse, 2=other)
\+\+ Employment Status (1=employed; 2=not employed)
\+\+\+ Reaction to Problems (High score=negative reaction)

The personality domain of agreeableness is not significant and is not a primary predictor of the `decision', having a loading below .30. Neuroticism, like agreeableness, contributes to the overall prediction, but does not reach significance. The extraversion variable does reach significance and predicts `decision', as expected, though it is not a primary predictor as its matrix loading of .29 is just under the suggested .30 cut-off point for primary predictors.

The most important significant primary predictors are the caregiver's appraisal of burden and the caregiver's reactions to the patient's problem behaviors. Those caregivers who decide to maintain the patient within the community react less strongly to problem behaviors of the patient and feel less burdened by caregiving than those who decide to institutionalize.

The other central variables which are significant and are primary predictors in the discriminant function are the frequency of patient problem behaviors, the frequency of the use of social services and income. More problems, greater use of social services and higher income predict the planning of institutionalization.

The caregiver's health complaints and the degree of relation to the patient are also predictors which are significant or approach significance, though they are not primary predictors. Caregiver employment status, quality of the prior patient-caregiver relationship and length of caregiving approach significance. Income is the sole demographic factor which is a significant primary predictor.

DFA on the Follow-Up Data

An additional DFA was performed, using telephone interview follow-up data, to provide a check on the results of the main DFA. The brief follow-up telephone interview with the caregivers was conducted after an average delay of 6.3 months following the home interview and testing. In the telephone follow-up, caregivers were asked if the patients were still being maintained at home, if they had been placed in institutions, or if placement was planned but not had yet taken place. It was determined whether on not caregivers had remained firm in their original plans either to maintain the patient at home or to institutionalize.

The follow-up DFA was computed for its power to correctly classify the caregivers reached in the follow-up telephone interview into two groups: those caregivers who remained firm in their original decision to maintain the patient at home (persistent maintainer, N=60), and those caregivers who remained firm in their original decision to institutionalize (persistent institutionalizer, N=12). It was also determined whether classification in these two groups would mirror classification in the `maintain' and `institutionalize' groups. The `persistent maintain' group was taken as analogous to the original `maintain' group; the `persistent institutionalize' group to the original `institutionalize' group. There were insufficient participants in the follow-up sample to permit the analysis of other aregivers who did not persist in their original decision, but rather changed their minds about either institutionalization or home maintenance.

Starting with the 16 variables used in the main DFA, it was possible to delete 6 variables with non-significant values in a preliminary DFA of the follow-up data (Appendix L), including agreeableness. The 10 variables entered into the follow-up DFA were: neuroticism, extraversion, frequency of patient problem behaviors, reaction to problem behaviors, frequency of use of social services, burden, health complaints, caregiver education, income and patient impairment level.

For the follow-up interview, 107 of the original participant group could be reached by telephone. Thirty-five of these cases were dropped from analysis owing to missing data. The results of ANOVA indicated that missing data were randomly assigned over groups and predictors. For the remaining 72 caregivers, 60 were `persistent' maintainers' and 12 were `persistent institutionalizers'. The subject:variable ratio for the follow-up DFA was 7:1 and the number of subjects exceeded the number of variables in the smaller group.

For the follow-up differential function, the 10 variables entered into the analysis produced a significant function, (Canonical Correlation=.52, Wilks' Lambda=.73, $\underline{x}^2(10df)=20.71$, $\underline{p}<.02$). This function correctly classifies 80.6 % of cases into their respective groups, which indicates reliability in separation of groups. The follow-up function separates the group of caregivers who persist in their decision to maintain their dependent at home from the group of caregivers who remain determined to institutionalize. The follow-up discriminant function is somewhat more successful in correctly classifying the `institutionalize' group (83.3% correct classification) than the `maintain' (80.0% correct classification) group.

Table 5 reports the means and standard deviations of the follow-up DFA and Table 6 reports its details. Table 6 shows that, of the four personality variables, only extraversion and neuroticism are retained in the significant function. Neither variable makes an independently significant contribution to the function or is a primary predictor in that function. The same four central caregiver variables as in the main DFA are the ones that do add significantly to the function and also are primary predictors. The most important of these four variables is the caregiver's appraisal of burden. The other three significant variables are the frequency of the patients' problem behaviors, the reactions of the caregivers' to the problems and the frequency of the use of services. As in the main DFA, caregivers who perceive patients as highly problematic, who have stronger negative reactions to patient problems, who use services more frequently and who feel more burdened are more likely to institutionalize. Unlike the main DFA, income is not a particularly strong variable in the follow-up DFA.

Table 5

The Follow-up DFA: Means and Standard Deviations

	Group 1 Maintain N=60		Group 2 Institutionalize N=12		Total N=72	
Variable	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
Income	24,504	(18,891)	29,083	(25,900)	25,267	(20,066)
++Assessment of Impairment	134.13	(49.72)	125.75	(49.08)	132.74	(49.37)
Extraversion	106.50	(10.25)	102.08	(12.70)	105.76	(10.72)
Frequency of Use of Services	9.70	(6.44)	14.17	(8.12)	10.44	(6.89)
Caregiver Education	11.03	(3.87)	12.00	(6.94)	11.19	(4.48)
+Reactions to Patient Problems	21.83	(16.96)	34.08	(8.61)	23.88	(16.48)
Frequency of Behavior Problems	40.27	(18.44)	51.75	(10.38)	42.18	(17.83)
Neuroticism	82.63	(17.13)	88.00	(12.22)	83.53	(16.46)
Health	12.45	(4.16)	14.08	(5.02)	12.72	(4.32)
Burden	28.92	(13.37)	46.75	(11.79)	31.89	(14.66)

+Reaction (High score = negative reaction)
++Assessment (High score = less impairment)

Table 6

The Follow-up DFA: Coefficients and Loading Matrix (N=72)

Variable	Structure Matrix	Standardized Discriminant Function Coefficient
Burden	84	1.02***
+ Reactions to Patient Problems	47	32*
Frequency of Use of Services	41	45*
Frequency of Behavior Problems	41	.20*
Extraversion	-.26	- 05
Health Complaints	.23	- 37
Neuroticism	20	- 10
Income	14	13
Caregiver Education	13	-.34
Assessment of Patient Functioning	- 10	- 12

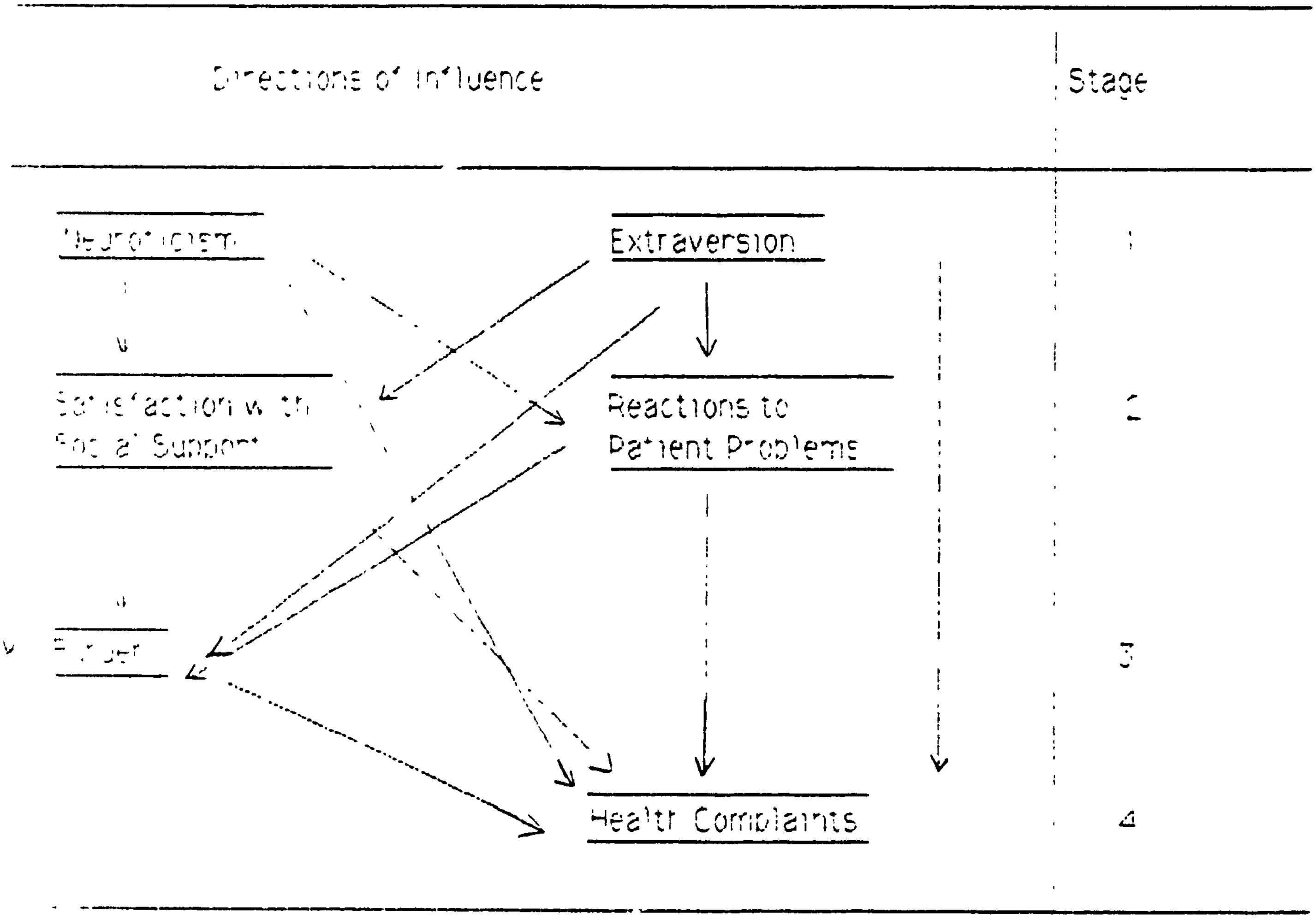
* $p<$ 05
** $p<.01$
*** $p<$ 001
+Reactions to Patient Problems (High score = negative reaction)

The Path Analysis

A path analysis was performed to test the model (Figure 3) and its concomitant predictions concerning personality. Mean scores were substituted for missing values: the results of ANOVA indicate that the missing data are randomly distributed over groups and predictors.

A minimum of ten subjects for each variable in a model is a suggested minimum for path analysis. This PA subject:variable ratio is 35:1. The model is an overidentified one; that is, some of the path coefficients are presumed to be equal to zero and are consequently deleted from the model. The restrictions in the model concerning paths are based on theory, previous findings and logic, as already described.

Analyses performed prior to the PA indicated that the demographic and background variables exogenous to the model contributed minimally to the prediction of burden and health complaints within the model (Appendix K). Therefore background and demographic variables were not entered into the principal analysis. The PA includes only the central variables specified in the model.



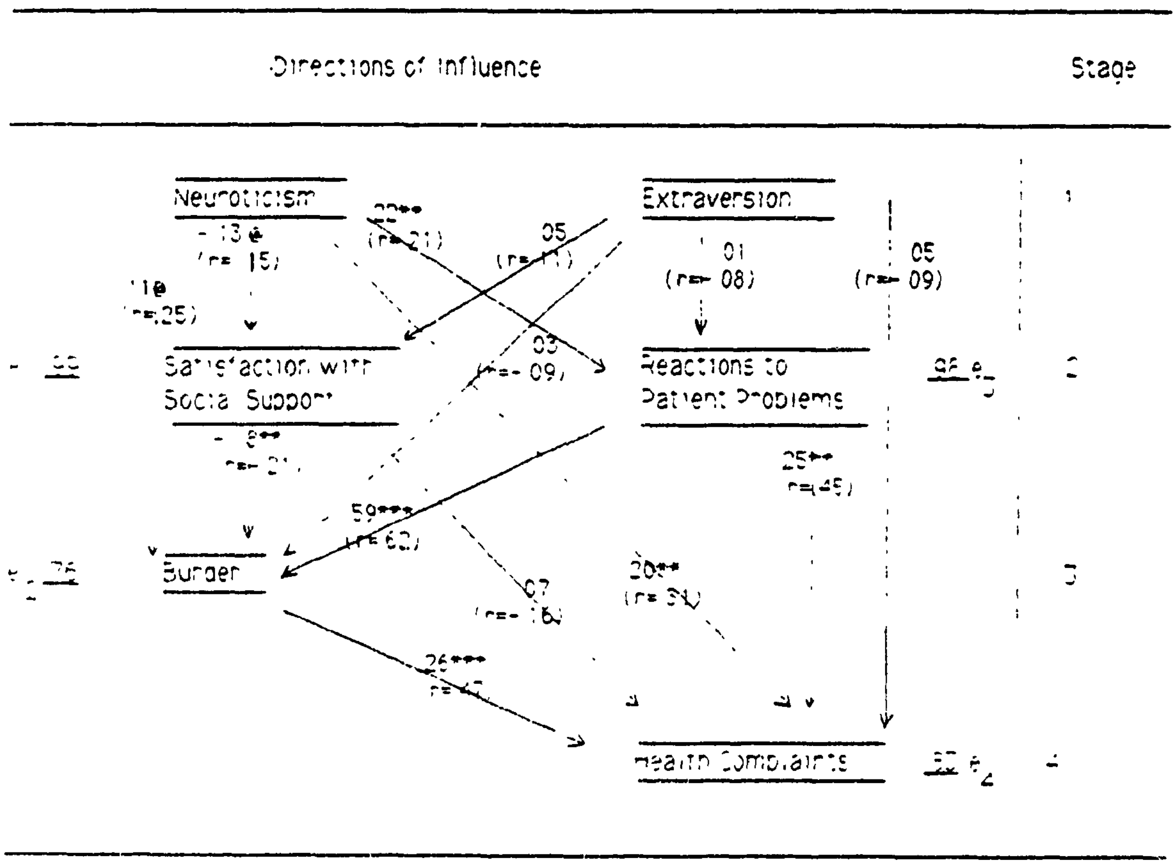
Personality Model 1: How Caregiver Traits May Influence Burden and Health Complaints

Figure 3

Path Analysis: The Direct Effects

Presented in Figure 4 and Table 7 are the path analysis findings, including the estimates of the direct, indirect and total effects of the variables at each stage of the model. Correlations reported in Figure 4 are for the values of this analysis, which permits mean substitution of missing values: these values are very similar to the ones reported in Table 3. As predicted, the neuroticism of the caregiver has significant path coefficients, or coefficients approaching significance, for all of its direct paths on succeeding variables. Higher neuroticism predicts: the caregiver's greater emotional reaction to the patient's problem behaviors ($\beta=.22$, $p<.01$); more health complaints ($\beta=.2$ $p<.01$); less satisfaction with social support ($\beta=-.13$, $p<.10$) and appraisal of greater burden ($\beta=.11$, $p<.10$). The more neurotic the caregiver, the greater the reaction to problems and the more health complaints. At a weaker level approaching significance, the more neurotic the caregiver, the less the satisfaction with the social support from family and friends and the more negative the appraisal of the burden.

On the other hand, contrary to the study's predictions, higher extraversion does not significantly affect any of the model's lower-stage variables. In fact, the four direct coefficients for extraversion are all at about .05, or less. Such values are considered to be close enough to zero to warrant their exclusion from a model (Pedhazur, 1982).



@ p < .1
* p < .05
** p < .01
*** p < .001
e = residual

Personality Model 1: Path Coefficients, Correlation Coefficients and Residuals (N=208).

Figure

Table 7

Personality Model 1: Path Analysis Direct, Indirect, and Total Effects (N=208)

Path Description	Direct Effect	Indirect Effect	Total Effect
Neuroticism *to* Satisfaction with Support	-.13@		- 13
Neuroticism *to* Reactions to Patient Problems	.22**		22
Neuroticism *to* Health Complaints	.20**	10	30
Neuroticism *to* Burden	11@	15	26
Satisfaction with Support *to* Burden	- 18**		- 18
Satisfaction with Support *to* Health Complaints	-.07	- 05	- 12
Reactions to Patient Problems *to* Burden	.59***		59
Reactions to Patient Problems *to* Health Complaints	.25**	16	40
Burden *to* Health Complaints	.26***		26
Extraversion *to* Satisfaction with Support	05		05
Extraversion *to* Reactions to Patient Problems	01		01
Extraversion *to* Health Complaints	.05	01	.03
Extraversion *to* Burden	03	- 01	.02

@ *p*< 10
* *p*< 05
** *p*< 01
*** *p*< 001

Tests of statistical significance are for direct effects.

A stage 2 variable, reactions to problem behaviors, has the strongest direct path within the model in its connection with burden ($\beta=.59$, $p<.001$). The caregivers' reactions to the problems also predict health complaints ($\beta=.25$, $p<.01$). The greater the caregiver's reactions to patient problems, the greater the assessment of burden and the greater the health complaints.

Satisfaction with social support, also a second stage variable, shows less effect than emotional reactions to patient problems. Higher satisfaction with social support predicts the appraisal of less burden ($\beta=-.18$, $p<.01$).

Path Analysis: The Indirect Effects

Table 7 shows that for burden, the indirect effect(.15) of neuroticism is larger than the direct effect (.11), which approaches significance. The indirect effect operates through the satisfaction with support, and particularly, through the reactions to patient difficult behaviors. For health complaints, the indirect effect of neuroticism is smaller than the direct effect (.10), and is mediated by reactions to problem behaviour and by burden. Like the direct effect, the indirect effects of extraversion on burden are so small as to be negligible (-.01), as is the indirect effect of extraversion on health (.01).

Path Analysis: Overall Effects

The four-variable regression equation predicting burden is significant (F=35.60, p<.0001). The amount of the variance explained by the four variables predicting burden is 41.43%. Neuroticism, extraversion, reactions to problem behaviors and satisfaction with support jointly account for 41.43% of the variance in burden scores.

The five-variable regression equation predicting health complaints is also significant (F=17.65, p<.0001). Neuroticism, extraversion, reactions to problem behaviors, satisfaction with social support and burden jointly account for 28.68% of the variance in health complaint scores.

The semi-partial correlation coefficients yielded by each regression calculated in the path analysis expresses the unique contribution of the independent variable by partialling out the variability from both the predictor variable of interest and the dependent variable. It is a useful measure of the importance of an independent variable. The semi-partial correlation coefficients indicate that neuroticism accounts for 1% of the variance in satisfaction with support, 4% of the variance in reactions to problems and 1% in burden. In turn, the reactions to problems account for 37% and satisfaction with support accounts for 5% of the variance in burden.

The semi-partial correlation coefficient between neuroticism and health indicates that 4% of the variance in health is attributable to the effects of neuroticism, 4% of the variance in health is attributable to the reactions to problem behaviors and 5% of the variance to burden. The semi-partial coefficients between extraversion and burden and between extraversion and health complaints are not significant.

By examining the total effects, or Effect Coefficients (EC), for each variable relative to the total effects for each of the other variables (Table 7), it is possible to identify which variables have the greatest relative total impact on burden and on health. This total effect is an important indicator of the overall effects of a variable (Pedhazur, 1982).

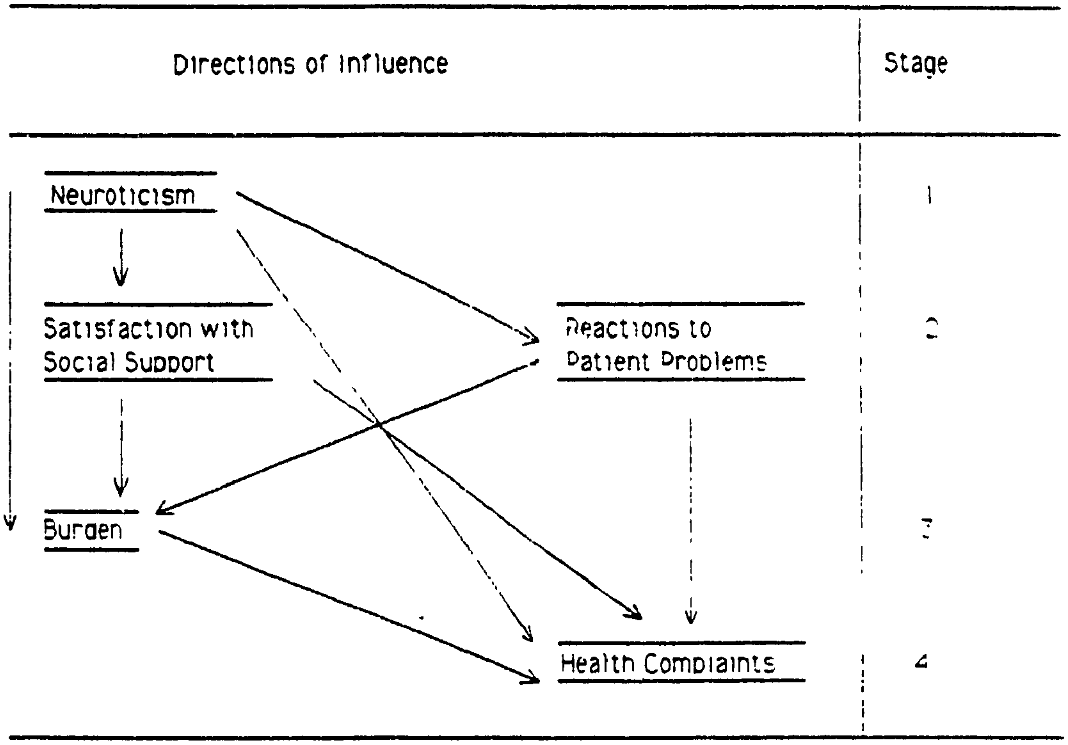
The emotional reactions to problem patient behaviors (EC=.59) and neuroticism (EC=.26) have the largest total effects on burden. As indicated above, the effect of neuroticism operates through reactions to problem behaviour rather than the satisfaction with the support.

The largest total effects on health are also by reactions to problems (EC=.40) and by neuroticism (EC=.30), and additionally, by burden (EC=.26). Thus, higher neuroticism and, particularly, strong negative reactions to patient problems have a relatively high negative impact on burden and on health. High burden, in turn, also negatively impacts on health.

Path Analysis: Model 2

On the basis of the overall findings of the model, which indicated considerable support for the effects of neuroticism and virtually no support for the effects of extraversion, a second model (Model 2; Figure 5) was postulated. Such a procedure is considered justifiable as a strategy to gain insight at an exploratory stage of research (Pedhazur, 1982). This study is exploratory in the sense that it is a first attempt to study the caregiver's personality and its influence on plans concerning institutionalization, and a first attempt at formulating and testing a caregiver personality model.

Caregiver extraversion and its paths were deleted in Model 2 since extraversion had only minimal effects on each of the two major criteria variables, burden and health, and on the other variables. All of the path coefficients for the direct paths of extraversion were close to or less than .05, which is suggested as a cut-off point for theory trimming (Pedhazur, 1982). All of the paths leading from neuroticism in the overidentified first model were retained as they all reached or approached significance. The second model is also an overidentified model.



Personality Model 2 - Trimmed Model How Neuroticism May Influence Burden and Health Complaints

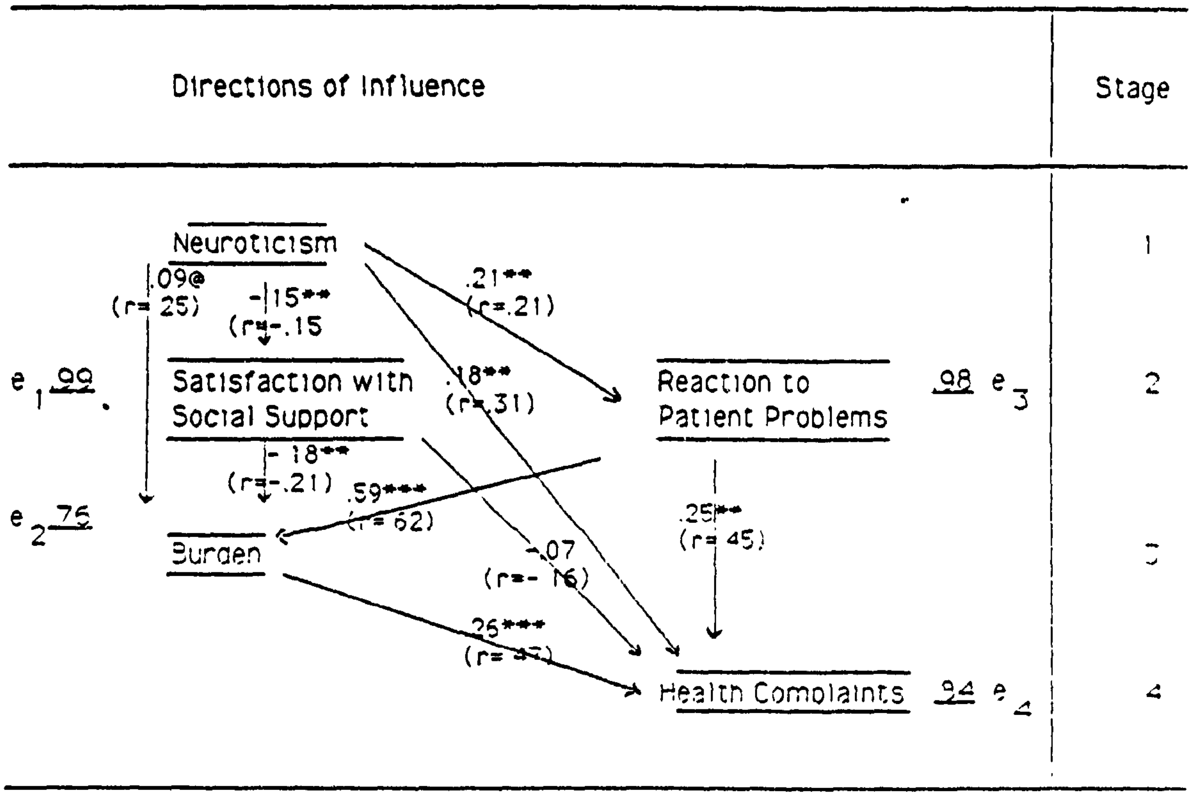
Figure 5

A path analysis of Model 2 was calculated to examine the relations among the variables to determine whether the data are consistent with the specified set of structural relations. The results of the second path analysis are illustrated in Figure 6 and Table 8.

As might be expected, the results are very similar to those for neuroticism in the first path analysis. In Model 2, almost all of the postulated paths have coefficients that are significant or that approach significance.

Model 2: Direct, Indirect and Total Effects

Table 8 describes the direct, indirect and total effects of the path analysis of Model 2. As in the first model, neuroticism has a small direct effect approaching significance on burden ($\beta=.09$, $p<.10$). The indirect effect of neuroticism on burden (.15) is larger than the direct effect, making a relatively large total effect or effect coefficient (EC=.25), with the intervening `reactions to problems' variable having a heavy influence. The two segments of the neuroticism-reaction-burden path are both significant: similarly, the two segments in the neuroticism-satisfaction-burden path are both significant.



@ p<.10
* p<.05
** p<.01
*** p<.001
e= residual

Personality Model 2: Path Coefficients, Correlations Coefficients, and Residuals (N=208)

Figure 6

Table 8

Personality Model 2: Path Analysis Direct, Indirect, and Total Effects (N=208)

Path Description	Direct Effect	Indirect Effect	Total Effect
Neuroticism *to* Satisfaction with Support	-.15*		-.15
Neuroticism *to* Reactions to Patient Problems	21**		21
Neuroticism *to* Burden	.09@	.15	.25
Neuroticism *to* Health Complaints	18**	.13	.31
Satisfaction with Support *to* Burden	- 18**		- 18
Satisfaction *to* Health Complaints	- 07	-.05	-.11
Reactions to Patient Problems *to* Burden	.59***		.59
Reactions to Patient Problems *to* Health Complaints	.25**	.16	.40
Burden *to* Health	.26***		25

@ *p* < 10
* *p* < 05
** *p* < 01
*** *p* < 001

Tests of statistical significance are for direct effects.

The direct path from neuroticism to health complaints is also significant (ß=.18, p<.01): the indirect effect through satisfaction with support is .13, and the total effect is EC=.31. Like the burden paths, the segments of the neuroticism-health path are significant, including the burden-health path (ß=.26, p<.001). An exception is the path leading from satisfaction with support to health complaints, where the path coefficient does not reach significance. The effects for satisfaction with support are generally not as strong as for the other variables, consistent with the deletion of this variable in DFA preliminary analysis as contributing only minimally. In contrast, the reactions-health total effect is relatively strong, with a total effect of EC=.40.

The relative magnitude of the first four total effects, in descending order, is: the effect of reactions to patient problems on burden (EC=.59), reactions to patient problems on health (EC=.40), neuroticism on health (EC=.31) and burden on health (EC=.26). It is interesting that high neuroticism, elevated reactions to patient problems and high appraised burden all predict health complaints. In sum, the level of the caregiver's neuroticism affects both burden and health complaints, in varying degrees, and burden also affects health complaints. Also in varying degrees, neuroticism affects the satisfaction with support and the reactions to problem behaviors, both of which, in turn, affect burden. The reaction to problems also marginally affects health complaints. Thus, the caregiver's burden and appraised health are affected by neuroticism both directly and indirectly.

However, in general, the magnitude of the effects of neuroticism is relatively small, as might be expected considering the nature of the two criterion variables, burden and health complaints, which have multiple determinants. The amount of variance explained by the significant three variable equation ($F=50.26$, $\underline{p}<.0001$) predicting burden is 41.6%. Neuroticism, reaction to problem behaviors and satisfaction with social support jointly accounted for 41.6% of the variance in burden scores. For health complaints, a four-variable regression equation was significant ($F=28.8$, $\underline{p}<.0001$). Neuroticism, reaction to problem behaviors, satisfaction with support and burden jointly accounted for 28.8% of the variance in health complaints.

Test of the Model

A chi-square test was performed to test the goodness of fit of Model 2 to the data. The chi-square test was not significant for Model 2 ($\underline{X}^2(5)=1.63$, $\underline{p}=.90^{ns}$) suggesting that the model provides a good fit to the data obtained in the study and a good characterization of the relations between neuroticism and the endogenous variables. This finding is of interest as the chi-square test is extremely sensitive when using large samples. When samples are large, as in this study, significant findings, indicating poor fit of the model to the data, are almost guaranteed (Pedhazur, 1982). On the other hand, Model 2 is a post-hoc design derived from the present data, so that it is not particularly surprising if the fit of the model to the data is good. An a priori test of Model 2, using new data, is needed to more definitively test it.

Discussion

The results of this study are discussed with regard to its three goals: the prediction of the caregiver's decision concerning future caregiving plans by simultaneous examination of many variables, with emphasis on the personality predictors; the identification and testing of a model describing a segment of the path to the decision to institutionalize; and, the potential contribution of the results in helping in the conceptualization of support services which will render home maintenance of dementia patients less onerous.

The Predictors of the Decision

A primary goal of the study is to further the understanding of how the decision to institutionalize is arrived at by examining the factors that influence the decision. As hypothesized, the prediction of the decision is multidetermined, with the personality variables, neuroticism and extraversion, playing their roles. Neuroticism affects the decision directly and also indirectly through burden. The results of the main DFA suggest that it is possible to predict which caregivers are most likely to decide to institutionalize and which are likely to decide to continue home maintenance in about 84% of cases, by consideration of a combination of 16 variables, including neuroticism, extraversion and agreeableness. Similarly, the results of the follow-up DFA suggest that, in about 80% of cases, ten variables, including neuroticism and extraversion, are important in determining which caregivers will persist in their original plan, whether to institutionalize or to maintain.

In comparing the magnitude of the effect of extraversion with that of neuroticism on the caregiver's planning, extraversion shows a slight edge. It is possible that neuroticism would be more salient for the less consistent caregivers who changed their mind about persisting in their original decision. Unfortunately, there was an insufficient number of inconsistent caregivers (those who changed their mind about their decision) to allow statistical analysis. Further study of this issue is also suggested.

Nevertheless, as was predicted, neuroticism and extraversion, and not conscientiousness, are the traits that are salient in the `decision'. On the other hand, agreeableness does marginally help determine the decision though not the persistence in it. However, agreeableness is among the least important variables among the personality and other predictors. It is also less important than neuroticism in predicting decision and may therefore be worth consideration only in combination with other predictors for overall classification.

The finding that caregivers are no more conscientious or agreeable than most other people is contrary to expectation. Perhaps caregivers deserve even more credit for assuming and maintaining caregiving of dementia patients since they do not have these enduring dispositions which might predispose them toward that role. Perhaps some are constrained to become caregivers by family, social and financial pressure as indicated, for instance, by the fact that it is daughters and daughters-in-law rather than sons who become primary caregivers.

The four most important factors signaling a high-risk situation in caregiving, in terms of both the original decision and in persisting with the decision, are: the caregiver's appraisals of the frequency of patient problem behaviors; the reactions to the patient's problem behaviors; the frequency of the use of social services; and the appraisal of the level of burden in caregiving. The caregiver who reports many problem patient behaviors, who has a strong negative reaction to those problems, who uses many social services and who complains of feeling heavily burdened by caregiving is the caregiver who is more likely to decide to institutionalize and who will probably persist in that decision.

Of these four variables, burden has the most effect, closely followed by the emotional reactions to the patient problems. Some possible explanations for this finding are based on three approaches, the behavioral, the cognitive-behavioral and the psychodynamic. Behaviorists might argue that the caregivers' appraisals of burden and reactions to problem patient behaviors are governed by the situational contingencies at the point of planning to institutionalize: the more frequent the difficulties, the greater the likelihood that there will be a decision to institutionalize. A psychodynamic explanation would stress the internal dynamics of the caregiver. Such an explanation might posit that the feelings of burden and negative response to patient problems become conscious prior to institutionalization, while such negative affect was previously defended against. The conscious expression of feelings of burden and frustration with problems could help with the emotional preparation of the caregiver to encourage himself or herself with what is typically a difficult decision to institutionalize, a decision having complex emotional and, likely, defensive ramifications.

The cognitive-behavioral approach would consider both internal and external contingencies of the individual caregiver, and might stress ongoing cognitive appraisals as governing the adaptive patterns of coping with stressors

(Meichenbaum & Jerenko, 1982). The caregiver identifies stressors and flexibly evaluates useful strategies for coping with stress, adapting to the changing environmental demands and personal needs. Adaptation may mean the decision to institutionalize or the decision to maintain the patient at home. For the decision to institutionalize, the caregiver may evaluate the burden and his/her own reactions to the problems as exceeding resources, which are depleted (Lazarus and Folkman, 1984).

Whatever interpretation is preferred, it is interesting that the subjective reactions to patient problem behaviors have a greater magnitude of effect than the more objective variable, the frequency of patient problem behaviors. This indicates the relative importance of the subjective versus the objective factors, thus favouring cognitive and psychodynamic rather than behavioral explanations.

The finding that the frequent use of social services predicts the decision regarding institutionalization and persistence in the decision is also of interest, and may reflect the needs of the caregivers at a more difficult point in caregiving just prior to `giving up'. Our sample of caregivers report that they typically do not use social supports or agencies other than physicians, except at that point just prior to placement. Such greater use of community services probably reflects the seeking of outside help in effecting the institutionalization. This increased use of social services may thus imply new and increased caregiver needs rather than reflect on ongoing social service effectiveness in averting or delaying institutionalization and enabling home maintenance. The effectiveness of a service at this point may be in terms of an intervention that has been highly successful in helping the caregiver to effect a necessary and appropriate placement. If this is the case, then the encouragement of the caregiver to heavier use of services at earlier periods in the course of caregiving could be equally effective, perhaps in terms of helping the caregiver with his or her burden and in continuing home maintenance, when desired. It may be worthwhile to investigate why caregivers don't use services at earlier stages of caregiving and to encourage the further development of innovative, salient services for earlier stages, their evaluation and the widespread dissemination of information to caregivers concerning the existence of such services and their entitlement to their use.

The increase and improvement of community-based services is probably worthwhile in easing the burden of caregiving. While the Lawton et al (1989) finding was that there were no outstanding effects for even a well-designed respite care program, which only delayed institutionalization for an average of 21 days, they did find, like many others, that caregivers consistently expressed satisfaction with the program. Similarly, the present study includes the scrutiny of subjective satisfaction with social support, though, in this case, support is from personal sources rather than from social service agencies. The findings indicate that satisfaction with support does ease burden, though it does not make any direct difference in placement. The easing of burden is, however, an important goal in itself, as burden predicts the caregiver's somatic health complaints and the personal and social costs of health problems and complaints must be considered. In addition, both burden and health complaints predict the decision to institutionalize, which is suggestive of the possible indirect, if not direct, beneficial effects of satisfactory social service support.

Aside from the personality variables and the four particularly important high risk factors, other variables influence both the caregiver's decision and persistence in it, and thus are worthy of particular consideration. Those variables are: the caregiver's health complaints, the caregiver-patient income and the patient's formally-assessed level of functioning.

Health complaints may reflect real health problems, particularly since many caregivers are older than the population at large. Health complaints may also have a basis in emotional dysfunction. In either case, it is not surprising that the caregiver who feels unwell is somewhat more likely to institutionalize. Health care services are warranted to focus on the idiosyncratic health care needs of caregivers, especially since caregivers are functioning productively in society in assuming a burden which would otherwise fall partially on the taxpayer.

A higher income also signals a slight increase in likelihood to decide to institutionalize and to persist in that decision. This finding is in contrast to the previous findings which suggest that more income smooths the path of home maintenance. However, both may be true, and further study is suggested to identify how more income may encourage home maintenance and how it may also promote institutionalization, depending on circumstances. For instance, source of income may make a difference, and results may vary depending on whether the caregiver, the patient, the caregiver and the patient together or someone else is the income source. Some caregivers in this study may have benefitted from their role in the sense that their income, which depended on welfare, was supplemented by the caregiver's pension which would have been forfeited if institutionalization took place. In any case, the findings of this study suggest that, even in a country with a national health service, the greater the resources of caregivers to make alternative suitable arrangements, the more likely they are to do so, particularly when more problems develop, more care is required, trained paid caregivers are scarce and more personal rather than financial help is needed. The greater financial resources may then be diverted toward the effecting of institutionalization, rather than in continued home maintenance, so that higher income may partially reduce the committment to home caregiving. Such placements may be in private and expensive institutions, may be earlier in the course of the dementia than could be made through government agencies and may be effected more quickly than is usual when applying to government institutions.

Patient impairment level also contributes somewhat to prediction of the decision concerning institutionalization. However, consistent with the general outlook in the literature and in this study, the objective assessment of level of patient functioning is far less important in prediction than the relatively subjective appraisals of frequency of problem behaviors and reactions to the problems. The objective assessment of patient functioning determines impairment, what the patient can't do, while the caregiver appraisals are of the problem behaviors - what the patient, unfortunately, does. The decision to institutionalize is predicted not so much by level of cognitive impairment as by the caregiver's view of how extensive and how troubling difficult patient behaviors are.

Background and Demographic Variables in Decision

Though some background and demographic variables have been discussed, a few additional words on this topic are warranted. It is worth emphasizing that this study, like most others, failed to find important effects for the patient's age, sex or education in predicting institutionalization. Rather, as already discussed, the important factors are caregiver variables. Fifteen of the 16 key variables identified as contributing to the prediction of the decision are caregiver-oriented.

In terms of caregiver background variables, the number of leisure pursuits of the caregiver does not make a difference. Neither do cultural differences matter: Francophone and Anglophone caregivers are comparable on all relevant dimensions. Two variables that are signals of impending decision to institutionalize, but are not signs of persistence in the decision, are a longer duration of caregiving and a higher occupational status level. It may initially appear surprising that duration of caregiving does not have an even stronger effect, considering the continuous deterioration of the patient and the depletion of resources of the aging caregiver over time. However, longer-term caregivers may be maintaining later-stage dementia victims who are more immobile and are less aware. Such later-stage patients may be beyond the stage where they are likely to display the most troublesome kinds of behaviours such as aggression, wandering, paranoia and depression. Their caregivers may thus have more control over the patient activities and contend with fewer of the problem behaviors which are predictive of the decision to institutionalize. Supporting this supposition is the finding that there is no significant relationship between duration of caregiving and the frequency of patient problem behaviors, so that patients do not display more problem behaviours as time goes by and level of deterioration presumably worsens. As for higher occupational status, it could be that occupational status advantages helps to mediate access to the social service and institutional system - the upper classes may know better how to `play the system' and may be more assertive in their demands. At the same time, the relatively advantaged may lose much by protracted caregiving; for instance, loss of freedom to engage in productive, prestigious work, and loss of freedom to travel, dine out, and generally enjoy the good things in life they have attained. As well, the caregiver with more formal education may also be somewhat more likely to institutionalize, perhaps as a function of a wider knowledge of the social service system and its institutions. Wider education could also imply knowledge of entitlement to use such services.

Finally, results of this study also suggest that the sex of the caregiver as well as the caregiver's sex relative to the patient's sex may not be particularly important factors in determining the caregiver's plans regarding institutionalization. The relationship of the caregiver (spouse or child) overlaps with the effects of the same-or-opposite sex status of the caregiver. The difficulty in caring for a person of the opposite sex, which has been found in previous studies, may be an artifact of the situation that many caregivers are spouses, spouses are more closely related to the patient than other relatives, and those more closely related to the patient find caregiving more difficult. However, despite difficulty, spousal caregivers are less likely to institutionalize their dependents, which probably reflects a greater committment to the relationship, since most of the spousal caregiving occurs within the context of long-lasting marriages. A more positive premorbid caregiver-patient relationship was found to encourage the decision to continue home maintenance. Spousal caregivers are less also likely to be employed than other caregivers, and it is the employed caregiver who is more likely to institutionalize.

The question of the relative importance of the three variables, caregiver sex, caregiver's sex relative to the patient's sex, and spousal versus other relationship to the patient may be worthy of further study. However, on the whole, it appears that some of the background and demographic variables found important in previous univariate studies largely or completely lose their salience when competing with many other variables in multivariate analysis.

Thus, combinations of patient, situational, and, particularly, caregiver variables have been identified which can predict quite well the decision concerning institutionalization and persistence in that decision. The remaining unpredictable aspects of the decision may reflect the fact that the decision to institutionalize can happen rather suddenly due to emergencies which are themselves unpredictable. Participants in the study frequently reported extraneous factors that suddenly disrupted the caregiving situation, such as the illness of another close relative or the physical illness of the patient.

The urgency of these situations may also, at times, affect the impact of caregiver personality, either to enhance or diminish the effects of these traits. On the one hand, such emergency situations are likely to be ones which are powerful, so that traits such as high extraversion, which is found to favour home maintenance, could become less salient. The situation may take precedence over the traits, as specified by Kenrick and Funder (1988). On the other hand, traits could sometimes become even more salient than usual in times of emergency. For instance, the behavioral effects of neuroticism could become more pronounced in emergency situations if the more neurotic caregiver approaches his or her limits in terms of emotional arousal, coping strategies and adaptive resources. The study of the interaction between the caregiver's traits and emergency situations might be rewarding in explaining why some emergencies result in institutionalization, and others don't.

The Model: Neuroticism, Extraversion In Burden and Health Complaints

The second goal of the study was the evaluation and testing of the model designed in this study describing a segment of the process toward institutionalization. There is support for the trimmed model, as a whole, and support, in varying degrees, for all of its predictions concerning the negative effects of high neuroticism on burden and health complaints, as well as on the reactions to patient problems and satisfaction with support. It is not surprising that a stable, powerful, negative, inner determinant such as neuroticism negatively affects these subjectively-driven appraisals and reactions.

The findings concerning the trimmed model, Model 2, are also, in many respects, in accord with many of the findings concerning the overall prediction of decision. For instance, in both the model and the DFA, neuroticism has a limited but significant place in prediction. Other areas of accord in the model and in the more global prediction of decision are the central positions of burden and the reactions to the patient problems, while demographic variables are less salient.

Two of the five variables in the models, neuroticism and health complaints, are not among the most important predictors of decision to maintain or institutionalize, and a third variable, satisfaction with support, is of minimal importance in the prediction of `decision' and was eliminated as a competing variable in preliminary analysis. Thus, the model seems to be a good characterization of the dynamics it describes, but it is limited to the exploration of only a few traits in the gamut of variables, and some of them peripheral ones, predicting decision. The findings in the model do contribute to the personality-stress-health literature. Findings indicate a negative effect of neuroticism on burden and health complaints, which is consistent with the literature more generally connecting personality, stress and health. The present findings provide support for the contention that high neuroticism negatively affects health complaints via reactions to problems and burden. It is possible that a pattern of excessive emotional responding leads to excessive reactions to problems which influences excessive experiencing of stress and burden. Burden, in turn, has a negative effect on health.

Finally, the finding that extraversion is not important as a predictor of greater satisfaction with social support, fewer health complaints and lesser degrees of burden is contrary to the study's expectations. These findings are consistent with another unexpected result, that the more extraverted caregiver does not use services more frequently. It had been reasoned that the more extraverted caregivers would be able to obtain more support from community agencies, but the assumption that extraverts would be more at ease and effective in dealing with community resources was not supported. The fact that higher extraversion predicts home maintenance is suggestive of a buffering effect of extraversion which shelters the caregiver from some of the stress and burden of caregiving. Though the results of this study do not indicate how this effect might take place, the results are helpful in indicating how the effect does not take place. Extraversion does not help to buffer stress through some of the intermediary processes which had been expected to mediate chronic stress, satisfaction with services, reactions to the patient problems and the frequency of use of services.

The unexpected results for extraversion in the model probably reflect limitations in its conception, which, as a first and exploratory attempt, did not have an extensive empirical basis. Other extraversion models might be postulated and tested, for instance, models specifying paths for extraversion buffering stress and burden via other interactive intermediaries like satisfaction with support from community agencies and support at the various stages of caregiving and in a variety of crisis situations. Similarly, the trait of agreeableness could be proposed as a stress buffer, and comcommitant models could be devised and tested. Extraversion could be an intrinsic buffer inasmuch as extraverts might be capable of gaining more joy in life even in chronically distressing situations. As reported, extraverts experience more positive affect (Bradburn, 1969) and life satisfaction (Carp, 1985). Recent research examining uplifts in caregiving as well as hassles found that patient characteristics predicted hassles, while caregiver characteristics, involving positive appraisals or perceptions, predicted uplifts (Kinney and Stephens, in press). Perhaps caregivers are capable of perceiving and appreciating more uplifts.

Contribution to Improvement of Services, Directions for the Future

The third goal of this study is to contribute to the improvement of services. The research does contribute, indirectly, by indicating directions for future research, the results of which could encourage debate to stimulate application of findings for salient service design. This study is only the first to examine the influence of the caregiver's personality traits on the course of caregiving. Its replication might include a clinical screening measure for the assessment of emotional health in addition to a somatic health measure to determine the possible effects of personality on both emotional and physical health. More studies and longitudinal research are also needed to clarify the role, degree and mechanisms whereby the caregiver's personality affects the continued home care and the institutionalization of the dementia patient. For instance, due to the central position of burden in the decision to institutionalize, it may be useful to focus on aspects of the caregiver's personality to clarify the differential effects of a variety of traits on various kinds and sources of stress. It might also prove enlightening to examine the various themes of caregiving burden and of the decision regarding home maintenance over time, in terms of the interaction with the caregiver's traits at different stages of caregiving. Such a study is now planned (Gold et al, 1989).

Also in terms of future directions, Zarit (1989) stresses the need for multi-method approaches to measurement rather than exclusive reliance on self-report. Many of the measures used in this study and in the study of caregivers, in general, rely on self-report. Self-report is helpful in enabling the relatively economical collection of a large body of data. However, the simultaneous study of many variables by multi-method approaches, though more costly, may be worthwhile in terms of obtaining confirming evidence as well as for clarifying issues. Further exploration of the existing measures commonly in current use in the study of caregivers is also needed though the pressing needs of the caregiver preclude the luxury of waiting to test with perfectly polished instruments. The measures used in this study, for instance, to assess community services, patient problem behaviors and burden, have been used successfully in previous caregiver research. Nevertheless, the additional investigation of the psychometric properties of these measures, now in progress, is appropriate.

The findings of the study also contribute more directly to the third goal of the study, to provide an improved theoretical and empirical basis for interventions and programs to support caregivers. As these results are based on a large heterogeneous sample, including Francophone and Anglophone caregivers and dementia patients at all levels of functioning, they are widely generalizable in terms of potential use in improving caregiver service.

It is important to identify the potential high-risk signals, suggesting which caregivers require services, and to effect this identification at a reasonable cost. Results of this study therefore have a specific practical implication in indicating a considerable ability to predict the placement decision about 84% of the time from sixteen variables, including neuroticism and extraversion. Another potential practical guideline for services is the model's indication that, among the variables predicting the decision, there is at least one sub-group or constellation of variables with multiple causal paths explaining some of the processes involved in the decision. Such knowledge enriches the understanding of the situation as a complex interplay of issues and may help to discourage the seeking of simplistic formula-driven remedies in favour of thoughtful solutions for individual caregivers. The support found for the model can also encourage further model-building and model testing concerning caregiver personality and planning for institutionalization, which may further contribute toward theory development and basic understandings.

Despite the complexity of caregiving, however, most of the 16 predictive variables can be determined by measurement involving questionnaires and self-report by the caregiver, which is relatively less costly compared to observation techniques. It also may be possible to devise an even more cost-efficient screening test, based on the findings of this study, which would identify the most vulnerable situations. For instance, using factor analytic techniques, one might extract factors from the 16 variables which were found in this study to contribute to classification in `decision' groups to design a relatively brief screening measure. Such an instrument would then require validation.

Intervention and service improvement also depend on dissemination of knowledge to alert both service-providers and service consumers to the high-risk signals. Knowledge of the predictors of caregiver burden and health complaints, and of the high-risk patterns for decision to institutionalize could help orient caregivers, their relatives, friends and health-care professionals toward the vulnerability of a caregiving situation and toward need for intervention. Such vulnerable situations can then be carefully monitored and salient services and interventions could be attempted to ease or bridge the situation. Institutionalization, when desirable, would be planned and effected relatively smoothly.

In addition, effective service implies careful service design and also good service evaluation. The fact that neuroticism is a stable trait could influence the possible design of interventions to alleviate the caregiver's burden: for instance, interventions planned for caregivers higher in neuroticism may need to be earlier and stronger in order to be effective. They may also need to be focused more on the caregiving situation than on the caregiver, since traits are stable and situations may be more flexible. It is possible that some kinds of interventions will prove to be effective for emotionally stable, reflective individuals who are low in defensiveness. Still other kinds of interventions may be suitable to those who tend to be more anxious, sad, hostile and vulnerable or who are extraverted. Zarit (1989) suggests that more controlled intervention studies are a general pressing need, and studies might benefit from consideration of personality traits among other variables. It is quite conceivable, for instance, that some of the mixed findings of service outcome and evaluation studies may be partly due to the inadvertant inclusion of less well-adjusted caregivers in interventions. Perhaps some outcomes have been less favorable than expected for groups that included a confounding subgroup of caregivers with poorer emotional adjustment. Such a subgroup could be less receptive to a particular intervention or less responsive to a service. The success of an intervention might be therefore enhanced and the study of its outcome made more meaningful if the salient personality variables, like neuroticism and extraversion, are taken into consideration.

In summary, the results of this study are useful in the prediction of the caregiver's decision concerning future caregiving plans, highlighting the personality predictors, and in the identification and testing of a model describing a segment of the path to the decision to institutionalize. Both the model and the ability to predict plans could contribute to improvement of support services to sustain the efforts of caregivers either to maintain the patient within the community or to institutionalize.

References

American Psychiatric Association. (1987). Diagnostic and Statistical Manual of Mental Disorders (3rd ed.). Washington, DC: Author.

Anthony-Bergstone, C., Zarit, S.H., & Gatz, M. (1988). Symptoms of psychological distress among caregivers of dementia patients. Psychology and Aging, 3, 245-248.

Aronson, J.C. (1985). Family care of the elderly: Underlying assumptions and their consequences. Canadian Journal on Aging, 4, 115-126.

Beattie, B.L., Scott, J.M. Kosarek, E. & Tuokko, H. (1988). Caregiver coping; The subjective experience of burden in caring for the demented elderly at home. Presented at the 41st Annual Scientific Meeting of the Gerontological Society of America.

Becker, J., & Morrissey, E. (1988). Difficulties in assessing depressive - like reactions to chronic severe external stress as exemplified by spouse caregivers of Alzheimer patients. Psychology and Aging, 3, 300-306.

Bergmann, K., Foster, E.M. Justice, A.W., and Matthews, V. (1978). Management cf the demented elderly patient in the community. British Journal of Psychiatry, 132, 441-449.

Blank, A.E., and Caro, F.G. (1984). Burden experienced by informal providers for home care of the elderly. Paper presented at the 37th Annual Scientific Meeting of the Gerontological Society of America, San Antonio.

Bradburn, N.M. (1969). The Structure of Psychological Well-Being. Chicago: Aldine.

Brody, E.M. (1985). Parent care as a normative family stress. The Gerontologist, 25,(1), 19-29.

Brody, E.M., Kleban, M.H., Johnsen, P.T., Hoffman, C. & Schoonover, C.B. (1987). Work status and parent care: A comparison of four groups of women. The Gerontologist, 27,(2), 201-208.

Brody, E.M. & Schoonover, C.B. (1986). Patterns of parent care when adult daughters work and when they do not. The Gerontologist, 26, 372-381.

Burack-Deiss, A. & Silverstone, B. (1982). Gerontological social practice in long-term care. Journal of Gerontological Social Work, 5, 7-33.

Calahan, J.J. Jr.(1989). Play it again Sam - There is no impact. The Gerontologist, 29,(1), 5-6.

Canadian Medical Task Force Report (1984). Health. A need for reduction. A task force on the allocation of health care resources. Report presented by Dr. J. Watson.

Cantor, M. (1983). Strain among caregivers: A study of experience in the United States. The Gerontologist, 23,(6), 597-604.

Capitman, J.A. (1986). Community-based long-term care models, target groups and impact on service use. The Gerontologist, 26, 389-397.

Carp, F.M. (1985). Relevance of personality traits to adjustment in group living situations. Journal of Gerontology, 40(5), 544-551.

Cattell, R.B., Eber, H.W., & Tatsuoka, M.M. (1970). Handbook for the sixteen personality factor questionnaire (16 pf). In G.L. Maddox (Ed.) The Encyclopedia of Aging, (p.483). New York: Springer Publishing Company.

Cavan, R.S., Burgess, E.W., Havighurst, R.J., & Goldhammer, H. (1949). Personal Adjustment in Old Age, Science Research Associates, Chicago.

Chenauth, B., & Spencer, B. (1986). Dementia: The experience of family caregivers. The Gerontologist, 26, 267-272.

Cole, M., Dastoor, D., & Koszycki, D. (1983). The Hierarchic Dementia Scale. Journal of Clinical Experimental Gerontology, 3, 219-234.

Colerick, E.J. & George, L.K. (1986). Predictors of institutionalization among caregivers of patients with Alzheimer's disease. Journal of the American Geriatrics Society, 34(7), 493-498.

Costa, P.T., Jr. & McCrae, R.R. (1980a). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. Journal of Personality and Social Psychology, 38, 668-678.

Costa, P.T., Jr. & McCrae, R.R. (1980b). Somatic complaints in males as a function of age and neuroticism: A longitudinal analysis. Journal of Behavioral Medicine, 3, 245-251.

Costa, P.T., Jr. & McCrae, R.R. (1984a). Emerging Lives, Enduring Dispositions. Boston, Little, Brown and Company.

Costa, P.T., Jr. & McCrae, R.R. (1984b). Personality as a lifelong determinant of wellbeing. In C.Z. Malatesta & C.E. Izard (Eds.), Emotion in Adult Development. Beverley Hills, CA: Sage.

Costa, P.T. Jr. & McCrae, R.R. (1985). The NEO Personality Inventory. Odessa, FL: Psychological Assessment Resources.

Costa, P.T. Jr., & McCrae, R.R. (1986a). Personality assessment in psychosomatic medicine. Advanced Psychosomatic Medicine, 29(9), 1-10.

Costa, P.T. Jr., & McCrae, R.R. (1986b). Personality, stability and its implications for clinical psychology. Clinical Psychology Review, 6, 407-423.

Costa, P.T., Jr., & McCrae, R.R. (1988). Personality in adulthood: A six-year longitudinal study of self-reports and spouse ratings on the NEO personality inventory. Journal of Personality and Social Psychology, 54(5), 860--863.

Costa, P.T, Jr., McCrae, R.R., Zonderman, A.B., Barbano, H.E., Liebowitz, B. & Larson, D.M. (1986). Cross-sectional studies of personality in a national sample: 2. Stability in neuroticism, extraversion, and openness. Psychology and Aging, 1, 144-149.

Coughlin, T.A. & Liu, K. (1989). Health care costs of older persons with cognitive impairments. Gerontologist, 29,(2), 173-183.

Dastoor, D.P., & Cole, M.G. (1983). Hierarchic Dementia Scale. Journal of Clinical and Experimental Gerontology, in press.

Dastoor, D.P., & Cole, M.G. (1985-86). The cause of Alzheimer's disease: An uncontrolled longitudinal study. Journal of Clinical Experimental Gerontology, 7 (4). 289-299.

Dean, A. and Lynn, N. (1977). The stress-buffering role of social support: Problems and prospects for systematic investigation. *Journal of Nervous and Mental Disease*, *165*, 403-417.

Deimling, G.T. and Bass, D.M. (1986). Symptoms of mental impairment among elderly adults and their effects on family caregivers. *Journal of Gerontology*, *41*, 778-784.

Denton, F.T. & Spencer, B.G. (1980). Canada's population and labour force. In V.W. Marshall (Ed.). *Aging in Canada*. Don Mills: Fitzbury and Whiteside.

Digman, J.M. & Innouye, J. (1986). Further specification of the five robust factors of personality. *Journal of Personality and Social Psychology*, *50*(1), 116-123.

Duckitt, J. (1984). Social support, personality and the prediction of psychological distress: An interactionist approach. *Journal of Clinical Psychology*, *40*(5), 1199-1205.

Eagles, J., Craig, A., Rawlinson, D., Restall, D., Beattie, J., & Besson, J., (1987). The Psychological well being of supporters of the demented elderly. *British Journal of Psychiatry*, *150*, 293-298.

Eddowes, J.R. (1988). Caregivers of demented elders: The impact of adult day care service on reducing perceived degree of burden. Paper presented at the Forty-first Annual Scientific Meeting of the Gerontological Society of America, San Francisco, California.

Engler, M. (1988). Patients and caregivers: A profile of victims of Alzheimer's disease. Paper presented at the Gerontological Society of America's Annual Scientific meeting, San Francisco, California.

Eysenck, H.J., & Eysenck, S.B.G. (1964). *Manual of the Eysenck Personality Inventory*. London: University Press.

Ferris, S.H., Steinberg, G., Shulman, E., Kahn, R., & Reisberg, B. (1985). Institutionalization of Alzheimer's patients: Reducing precipitating factors through family counselling. *Archives of the Foundation of Thanalogy*, *12*(7).

Fillenbaum, G.G. (1984). Assessing the well-being of the elderly. Duke University. *Centre Reports on advances in Research*, *8*, 1-10.

Finn, S.E. (1983). Structural stability of the MMPI in Adult Males. *Journal of Consulting and clinical psychology*, *54*(5), 703-707.

Fiore, J., Becker, J. & Coppel, D.B. (1983). Social network interactions: A buffer or a stress. American Journal of Community Psychiatry, 11(4), 423-439.

Fiore, J., Coppel, D.B., Becker, J., Cox, C.B. (1986). Social support as a multifaceted concept: Examination of important dimensions for adjustments. American Journal of Community Psychology, 14, 93-111.

Fisk, A., and Pannill, F.C. (1985). Assessment and care of the community-dwelling Alzheimer's disease patient. Paper presented at the 38th Annual Scientific Meeting of the Gerontological Society of America, New Orleans.

Fiske, D.W. (1949). Consistency of factorial structures of personality ratings form different sources. Journal of Abnormal and Social Psychology, 44, 329-344.

Gates, K. (1986). Dementia: A family problem. Gerontonion, 1, 12-17.

Gatz, M. (1985). Prevention and aging: Community programs. Presented at the MNHA commission on the prevention of mental and emotional disability. Alexandria, VA.

Gentry, W.D. (Ed.), (1984). Handbook of Behavioral Medicine. New York: Guilford Press.

George, L. (1984). The burden of caregiving: How much? What kinds? For Whom? Duke University. Centre Reports on Advances in Research, 8, 1-8.

Gesten, E.L., and Jason, L.A.(1987). Social and community interventions. Annual Review of Psychology, 38, 427-60.

Gilhooly, M. (1984). The impact of care giving on care givers: Factors associated with the psychological well-being of people supporting a demented relative in the community. British Journal of Medical Psychology, 57, 35-44.

Gilleard, C.J., Belford, H. Gilleard, E., Whittick, J.E., and Gledhill, K. (1984). Emotional distress amongst the supporters of the elderly mentally infirm. British Journal of Psychiatry, 145, 172-171.

Gilleard, C.J., Boyd, W.D., and Watt, G. (1982). Problems in caring for the elderly mentally infirm at home. Archives of Gerontology and Geriatrics, 1, 151-158.

Glosser, G., & Wexler, D. (1985). Participants' evaluation of educational/support groups for families with Alzheimer's disease and other dementias. The Gerontologist, 25(3), 232-236.

Gold, D., & Andres, D. (1987-89). In Progress.

Gold D., & Andres, D. (1989 -). In Progress.

Gold, D., Andres, D., Dastoor, D., Grauer, H. & Bergman (1989). The Final Report: Dementia patients residing in the community: Predictors of outcome. FRSQ dossier #861365.

Goldberg, D.P. (1972). The Detection of Psychiatric Illness by Questionnaire. New York, Oxford University Press.

Goldberg, D.P. (1978). Manual of the General Health

Questionnaire. Windsor, NFER - Nelson Publishing Co.

Goldberg, D.P., and Hillier, V.F. (1979). A scaled version of the General Health Questionnaire, Psychological Medicine, 9, 139-145.

Greene, J.C., Smith, R., Gardiner, M., and Timbury, G.C. (1982). Measuring behavioral disturbance of elderly demented patients in the community and its effects on relatives: A factor analytic study. Age and Aging, 11, 121-126.

Guilford. J.S., Zimmerman, W.S. & Guilford, J.P. (1976). The Guilford-Zimmerman Temperament Survey Handbook: Twenty-five years of research and application. San Diego, CA: EdITS Publishers.

Gwyther, L.P. & George, L.K. (1986). Caregivers for dementia patients: Complex determinants of well-being and burden. Gerontologist, 26(3), 245-266.

Haley, W.E., Bartolucci, A.A., Levine, E.G., and Brown, S.L. (1987). Stress, appraisal coping and social support as predictors of adaptational outcome among dementia caregivers. Psychology and Aging, 2 (4), 323-330.

Haley, W.E., Brown, S.L., and Levine, E.G. (1985). Behavioral problems of elderly dementia patients: Prevalence and family caregiver appraisals of target behaviour. Paper presented at the 38th Annual Scientific Meeting of the Gerontological Society of America.

Haley, W.E., Brown, S.L. & Levine, E.G. (1987). Experimental evaluation of the effectiveness of group intervention for dementia caregivers. The Gerontologist, 27(3), 376-381.

Howard, J.H., Rechnitzer, P.A., Cunningham, D.A., & Donner, A.P.(1986). Change in type A behaviour a year after retirement. The Gerontologist, 26(6), 643-649.

Hull, J.G., Van Treuren, R.R., & Virnelli, S. (1987). Hardiness and health: A critique and alternative approach. Journal of Personality and Social Psychology, 53(3), 518-530.

Jarrett, W.H. (1985). Caregiving within kinship systems: Is affection really necessary? Gerontologist, 25, 5-10.

Johnson, C.H., and Catalano, D.J. (1983). A longitudinal study of family supports to impaired elderly. Gerontologist, 23, 612-618.

Kahan, J., Kemp, B., Staples, F.R., & Brummel-Smith, K. (1985). Journal of the American Geriatrics Society, 33(10), 664.

Kay, D.W.K., & Bergmann, W. (1980). Epidemiology of mental disorders among the aged. In J.E. Birren & R.B. Sloane (Eds.). Handbook of Mental Health & Aging. Englewood Cliffs, N.J. Prentice-Hall Inc.

Kenrick, D.T. & Funder, D.C. (1988). Profiting from controversy, lessons from the person situation debate. American Psychologist, 43(1), 23-34.

Kinney, J.M. (in press). Hassles and uplifts of giving care to a family member with dementia. Psychology and Aging.

Kline, R.B., Cantor, W.A. and Robin, A. (1987). Parameters of teenage alcohol use: A path analytic conceptual model. Journal of Consulting and Clinical Psychology, 55,(4), 521-528.

Kobassa, S.C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. Journal of Personality and Social Psychology, 37, 1-11.

Kobassa, S.C., Maddi, S.R., & Kahn, S. (1982). Hardiness and health: A prospective study. Journal of Personality and Social Psychology, 42, 168-177.

Kraus, A.S. (1984). The burden of care for families of elderly persons with dementia. Canadian Journal on Aging, 3, 45-51.

Kvale, J.N., and Bohlen, J.G. (1985). Intimacy in families of patients with Alzheimer's disease. Paper Presented at the 38 Annual Meeting of Gerontological Society of America, New Orleans.

Lawton, M.P., Brody, E.M., & Saperstein, A.R. (1989). A controlled study of respite services for caregiver's of Alzheimer's patients. The Gerontologist, 29,(1), 8-17.

Lazarus, R.S. & Folkman, S. (1984). Stress, Appraisal and Coping, New York: Springer Publishing Company.

Levitt, M.J., Clark, M.C., Rotton, J. & Finley, G. (1987). Social support, perceived control and well being: A study of an environmentally stressed population. International Journal of aging and Human Development, 25(4), 247-258.

Lieberman, M.A. (1982). The effects of social supports on responses to stress. In L. Goldberger and S. Breznitz. (Eds.). Handbook of Stress: Theoretical and Clinical Aspects. The Free Press, New York.

Linden, W. (1987). On the impending death of the Type A construct: Or is these a phoenix rising from the ashes? Canadian Journal of Behavioral Science/Revised Canadian science Composition, 19(2), 177-190.

Lovett, S.B., Gallagher, A.T. & Kwong, K.L. (1986). Caregiver stress, self-efficacy and social support. Paper presented at the 39th Annual Convention of the Gerontological Society of America, Chicago, Illinois.

Lowenthal, M.F., Berkman, P., and Associates (1967). Aging and mental disorders in San Francisco, San Francisco: Jossey and Bass.

Maddi, S.R., Bartone, P.T., & Puccetti, M.C. (1987). Stressful events are indeed a factor in physical illness: Reply to Schroeder and Costa (1984). Journal of personality and Social Psychology, 52(4), 833-843.

Matthiesen, V.J. (1986). Adult daughters' relationships with their institutionalized mothers. Paper presented at the 39th Annual Scientific Meeting of the Gerontological Society of America, Chicago, Illinois.

McCrae, R.R. (1987a). Extraversion. In G.L. Maddox (Ed.). The Encyclopedia of Aging, (p.367). New York: Springer Publishing Company.

McCrae, R.R. (1987b). Neuroticism. In G.L. Maddox (Ed.). The Encyclopedia of Aging, (p. 483). New York: Springer Publishing Company.

McCrae, R.R. & Costa, P.T., Jr. (1984). Emerging Lives, Enduring Dispositions: Personality in Adulthood, Boston, MA: Little, Brown.

McCrae, R.R. & Costa, P.T., Jr. (1987). Validation of the five-factor model of personality across instruments and observers. Journal of Personality and Social Psychology, 52(1), 81-90.

Meichenbaum, D., and Jerenko, M.(eds.). (1982). Stress Prevention and Management. A Cognitive Behavioral Approach, New York: Plenum.

Miller, B. (1988). Predictors of limitations in social activities of family caregivers. Presented at the Annual Meeting of the Gerontological Society of America, San Francisco, California.

Mischel, W. (1968). Personality and Assessment. New York: Wiley.

Morris, R.G., Morris, L.W. and Britton, P.G. (1988). Factors affecting the emotional wellbeing of the caregivers of dementia sufferers. British Journal of Psychiatry, 153, 147-156.

Newton, J., & Boyce, L. (1987). The validity of caregiver reports in a geriatric day hospital. Presented at the Annual Meeting of the Canadian Association of Gerontology.

Noller, P. & Law, H. & Comrey. (1987). Cattell, Comrey, and Eysenck Personality factors compared. More evidence for the five robust factors? Journal of Personality and Social Psychology, 53(4), 775-782.

Norman, W.T. (1963). Toward an adequate taxonomy of personality attributes. Journal of Abnormal and Social Psychology, 66, 574-583.

Novak, M., and Guest, C. (1989). caregiver response to Alzheimer's disease. International Journal of Aging and Human Development, 28(1), 67-79.

Pedhazur, E.J. (1982). Multiple Regression in Behavioral Research, second edition, New York: Holt, Rinehart and Winston.

Pinkston, E.M., and Linsk, N.L. (1984). Behavioral family intervention with the impaired elderly. The Gerontologist, 24 (6), 576-583.

Poulshock, S.W., and Deimling, G.T. (1984). Families caring for elders in residence: Issues in the measurement of burden. Journal of Gerontology, 30,(20), 230-239.

Pruchno, R.A. & Potashnik S.L. (1988). Caregiving spouses: physical and mental health in perspective. The Gerontologist, 28, In press.

Pruchno, R., & Resch, N.L. (1989). Husbands and wives as caregivers: Antecedents of depression and burden. Gerontologist, 29,(2), 159-166.

Quails, S.H., Norfleet, D. and Harder E. (1986). Loneliness in spousal caregivers of the intellectually and physically impaired aging. Paper presented at the annual meeting of the Gerontological Society of America, Chicago, Illinois.

Quayhagen, M.P., & Quayhagen, M. (1989). Differential effects of family-based strategies on Alzheimer's disease. Gerontologist, 29(2), 150-156.

Rappaport, N.B., McAnulty, D.P., and Brantley, P.J. (1988). The exploration of the Type A behaviour pattern in chronic headache sufferers. The Journal of Consulting and Clinical Psychology, 56(4), 621-623.

Rhodewalt, F.& Agostdottir, S. (1984). On the relationship of hardiness to the Type A behaviour pattern: Perception of life events versus coping with life events. Journal of Research in Personality, 18, 212-223.

Robinson, R. (1981). Some problems of clinical trials in elderly people. *Gerontologia Clin.*, *3*, 247-257.

Rowe, D.C. (1987). Resolving the person-situation debate. Invitation to an interdisciplinary dialogue *American Psychologist*, 218-227.

Roy, A.W., Folmar, S.J. & Ford, M.D. (1989). The elderly and risk factors for institutionalization: Evidence from the Cleveland GAO study. Case Western Reserve University, Cleveland OH 44106.

Ryff, C.D. (1982). Successful aging: A developmental approach. *The Gerontologist*, *22*(2), 209.

Salthouse, T.A., Kausler, D.H. and Saults, J.S. (1988). Utilization of path-analytic procedures to investigate the role of processing resources in cognitive aging. *Psychology and Aging*, *3*,(2), 158-166.

Sarason, I.G., Levine, H.M., Basham, R.B., and Sarason, B.R. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology*, *44*, 127-139.

Sarason, I.G. & Sarason, B.R. (1984). Life changes, moderators of stress and health. In A. Baum, S.E. Taylor, & J.E. Singer (Eds.), *Handbook of Psychology and Health*, (vol.4, pp.279-299), Hillsdale, NJ: Erlbaum.

Schroeder, D.H. & Costa, P.T. (1984). Influence of life event stress on physical illness: Substantive effects or methodological flaws? Journal of Personality and Social Psychology, 43, 853-863.

Shapiro, E. & Tate, R. (1988). Who is really at risk of institutionalization? The Gerontologist, 28(2), 237-245.

Shulman, K., Gold, D. & Cohen (1986 - 9). In Progress.

Siegler, I.C. (1987). Personality. In G.L. Maddox (Ed. The Encyclopedia of Aging (p. 520), New York: Springer publishing Company.

Silven, D., DelMaestro, S., Gallagher, D., Lovett, S., Benedict, A., Rose, J. & Kwong, K. (1986). Changes in depressed caregivers' symptomology through psychoeducational interventions. Presented at the 39th Annual Meeting of The Gerontological Society of America, Chicago, Illinois.

Silverstein, N.M. & Hyde, J. (1986). Utilizing an existing service system to aid Alzheimer's victims and their families: The Massachusetts home care network. Presented at the 39th Annual Meeting of The Gerontological Society of America, Chicago, Illinois.

Silverstone, B., & Hyman, H.K. (1982). You and your Aging Parent. New York: Panthion Books.

Simson, S., Wilson, L.B. & Henry, S. (1982). Creating comprehensive gero-psychiatric care in the community. Social Work in Health Care, 7(4), 53-65.

Soldo, B.J., & Myluoma, J. (1983). Caregivers who live with dependent elderly. The Gerontologist, 23(6), 605-611.

Straw, L.B. (1987). An Alzheimer support group program for caregiver well-being. Paper derived from the author's doctoral research in the Department of Psychology, Columbus, Ohio.

Stull, D.E., Montgomery, R.J.V., & Scarisbrick-Hauser, A. (1988). Caregiver well-being: the importance of two caregivers. Paper presented at the 41st Annual meeting of The Gerontological Society of America, San Francisco, California.

Tabachnick, B.G., and Fidell, L.S. (1989). Using Multivariate Statistics, New york: Harper and Row.

Teri, L., Larson, E.B., & Reifler, B.V. (1988). Behavioral disturbance in dementia of the Alzheimer's type. Journal of the American Geriatrics Society, 34, (7), 493-498.

Tobin, D., Holyrod, K., & Reynolds, R. (1982). The assessment of coping: Psychometric development of the coping strategies inventory. Paper presented at The Association for the Advancement of Behaviour Therapy, Dayton, Ohio.

Toseland, R.W. & Coppola, M. (1987). A comparison of group intervention methods to support adult children who are caring for parents at home. Presented at the Annual Scientific Meeting of The Gerontological Society of America, Chicago, Illinois.

Townsend, A.L., and Noelker, L.S. (1984). Caring for elder parents: The impact of gender on children's perceptions. Paper presented at the 37th Annual Scientific Meeting of the Gerontological Society of America, San Antonio.

Van Winkle N.W. (1987). Depressive symptomatology of spouses and children caring for a relative with dementia. Presented at the 40th Annual Scientific meeting of The Gerontological Society of America, Washington, D.C.

Vaux, A. (1985). Variations in social support associated with gender, ethnicity and age. Journal of Social Issues, 41 (1), 89-110.

Volicer, L., Seltzer, B., Rheaume, Y., Fabiszewski, K.J., Herz, L., Shapiro, R., & Innis, E.R., (1986). Progression of Alzheimer Type Dementia in Institutionalized Patients: A Cross-Sectional Study. Paper presented at the 39th Annual Scientific meeting of The Gerontological Society of America, Chicago, Ill., November.

Wallace, R.W, and Noelker, L.S. (1984). Conceptualizing family caregiving: An application of role theory. Paper presented at the 37th Annual Scientific Meeting of the Gerontological Society of America, San Antonio.

Watson, D. & Clark, L.A. (1984). Negative affectivity: The disposition to experience aversive emotional states. Psychological Bulletin, 96, 465-490.

Willner, P. (1985). Depression: A Psychobiological Synthesis. New York: John Wiley & Sons.

Wolf, R.S., Gaelkin, M.A., and Pillemer, K. (1984). Elder abuse and neglect: Final Report from three model projects. University Centre on Aging, University of Massachusetts, Worchester, Mass.

Zarit, J.M. (1983). Predictors of burden and distress for caregivers of senile dementia patients. Doctoral dissertation, University of Southern California. Dissertations Abstracts International, 43, 892.

Zarit, S.H. (1989) Do we need another "stress and caregiving" study? Gerontologist, 29,(2), 147.

Zarit, S.H., Anthony, C.R. & Boutselis, M. (1987). Interventions with caregivers of dementia patients: Comparison of two approaches. Psychology and Aging, 2(3), 225-232.

Zarit, S.H., Orr, N.K., and Zarit, J.M (1985). The Hidden Victims of Alzheimer's Disease. New York: New York University Press.

Zarit, S.H., Reever, K.E., and Bach-Peterson, J. (1980). Relatives of impaired elderly: Correlates of feelings of burden. The Gerontologist, 20(6), 649-655.

Zarit, S.H. & Zarit, J.M. (1982). Families under stress: Interventions for caregivers of senile dementia patients. Psychotherapy, Theory, Research and Practice. 19, 461-471.

Zarit, S.H., Zarit, J.M., and Reever, K.E. (1982). Memory training for severe memory loss: Effects on senile dementia patients and their families. Gerontologist, 22, 373-377.

Zweibel, N.R. (1984). Analysis of decision-making in selection of alternatives to institutionalization: A tool for service planners and providers. Paper presented at the 37th Annual Scientific Meeting of the Gerontological Society of America, San Antonio.