Everyday Problem Solving Among Probable Alzheimer's Patients: Comparing Subjective and Objective Assessments

Rosanna M. Bertrand

Sherry L. Willis

Department of Human Development and Family Studies

The Pennsylvania State University

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Abstract

Routinely, a caregiver's assessment of his or her frail elder's ability to perform everyday tasks is a deciding factor in determining the older adult's status to carry out activities independently. The perspective of the older adult is often given less consideration. The current study assesses the congruence among patient and caregiver ratings of the patient's performance on tasks of daily living (IADLs) and scores on an objective measure of everyday competence, the Everyday Problems Test for the Cognitively Challenged Elderly (EPCCE). The effects of patient and caregiver characteristics on measures of congruence are also examined.

Participants include sixty-three patient/caregiver dyads who were part of a larger, ongoing longitudinal study at the Stanford Aging Clinical Research Center. Significant positive relationships between patient and caregiver ratings and between each of the these ratings and EPCCE scores was revealed. These findings suggest that not only do both informant groups perceive the pattern of decline similarly, but that patients are aware of their own decline. MANOVA results demonstrate main effects for patient age and gender and for the interaction of age by gender on the measures of congruence. Characteristics of the caregiver were not associated with the congruence measures. Post hoc analyses indicate that disease severity mediates the impact of some patient attributes on the measures of congruence of competence.

Everyday Problem Solving Among Problem Alzheimer's Patients:

Comparing Subjective and Objective Assessments

A well established fact that is frequently discussed in the professional and popular literature is the demographic trend in our society towards an expanded population of older adults who are living longer. Concomitant with this trend is a rise in the susceptibility of older adults to chronic illness and diseases associated with dementia (Aneshensel, Pearlin, Mullan, Zarit, & Whitlatch, 1995; Cavanaugh, 1993; Jarrott, 1995; Zarit & Eggebeen, 1995). Like chronic illness the symptoms of dementia manifest slowly, becoming increasingly salient in advanced age (Cavanaugh, 1993). As a result, older adults' risk of long-term disability requiring assistance with daily living is also increased with advanced age (Aneshensel et al., 1995; Zarit & Eggebeen, 1995).

The decision to intervene in the independence of an older adult is largely precipitated by the concerns of the caregiver who question their frail elder's ability to safely and adequately perform instrumental self-maintenance tasks required for everyday living (e.g., preparing meals, making emergency phone calls; handling finances; Lawton, 1969; Willis, 1991). In fact, the reliance on caregiver reports is considered routine when the cognitive competence of the older adult is brought into question (Kiyak, Teri, & Borson, 1994; Loewenstein et al., 1989). That is, once a diagnosis of dementia has been made, assessment of the infirmed adult's functional ability as well as decisions regarding his or her everyday living, are often turned over to the judgment of the caregiver with less consideration for the patient's self-assessment. Ignoring the contribution that impaired adults can make to their own self-assessment in lieu of caregiver reports, especially in the early stages of dementia, may be overlooking an important piece of the functional

assessment puzzle. Lack of congruence between caregiver and patient assessments of competence may result in conflict and behavioral problems with the patient. If the caregiver underestimates areas of competence, the patient may be deprived of the stimulation and efficacy associated with carrying out everyday activities.

The following paper reports on a study designed to examine the congruence of Alzheimer's patients' and caregivers' perceptions of patients' competence to perform instrumental activities of daily living. The research addresses three principal objectives: 1) the congruence between Alzheimer's patients' and caregivers' ratings of patients' performance on cognitively complex tasks of daily living, 2) the congruence between patients' and caregivers' ratings and scores on an objective measure of cognitive tasks of everyday living, and 3) factors that potentially mediate measures of congruence.

Three measures of congruence will be utilized to examine the research questions: (a) Congruence I: The congruence of patient and caregiver perception of competence (Patient IADL ratings - Caregiver IADL ratings); (b) Congruence II: The congruence of Patient IADL ratings and performance on an objective IADL measure of cognitive performance (Patient IADL ratings - EPCCE scores); and (c) Congruence III: The congruence of Caregiver IADL ratings and EPCCE performance (Caregiver IADL ratings - EPCCE).

Methods

Participants

The proposed study involves 63 community-dwelling Alzheimer's patients (i.e., community dwelling at the time of initial EPCCE assessment) who were enrolled in The Stanford Longitudinal Alzheimer's Project (Brooks, Kraemer, Tanke, & Yesavage, 1993) conducted at the

Stanford Medical Center's Aging Clinical Research Center (ACRC) and their primary caregivers. A subset of these participants (n = 44) were also part of an ongoing caregiver investigation (i.e., The Caregiver Project: Gallagher-Thompson, Brooks, Bliwise, Leader, Yesavage, 1992).

Patients. Participants had met the National Institute of Neurological and Communicative Diseases - Alzheimer's Disease and Related Disorders Association (NINCDS-ADRDA; McKhann, Drachman, Folstein, et al., 1984) criteria for probable Alzheimer's disease. The average Mini-Mental Status Examination (MMSE; Folstein, Folstein, & McHugh, 1975) score for this sample (m = 19.7) was below the commonly used cutoff of 24 for a dementia rating.

The patient gender composition is 29 (46%) males and 34 (54%) females. Participants range in age from 50 to 89 years with a mean of 74 years (SD = 8.5). Their educational attainment (M = 13 years) is higher than the U.S. national average of 12 years (U. S. Census, 1989). The sample is predominantly Caucasian (84%). The remaining sample is comprised of 6% Hispanic, 5% Asian, 2% African American, and 3% who were reported as other. Patient demographic characteristics are presented in Table 1.

Insert Table 1 about here

Caregivers. The sample includes the caregivers (N = 63) of the above described sample of community-dwelling Alzheimer's patients. To be eligible for the study, caregivers must be the primary provider of care and must reside with the patient. Sixty-nine percent (N = 43) of the caregivers are female, with a mean age of 63 years (SD = 12.68, Range 35 - 84). Similar to the patient sample, the level of education is higher than the U. S. average (i.e., 12 years; U. S.

Census, 1989) with a mean of 14 years of schooling. Eighty-nine percent of the caregivers are Caucasian with the remaining caregiver participants comprising 2% African American, 5% Asian, and 5% Hispanic. Caregiver attributes of age, gender, education, and race are presented in Table 1.

Demographic data is missing for one caregiver because the patient declined to continue in the study after initial assessment.

Procedures

Patients and caregivers were assessed at 6-month intervals in the Stanford University/VA Alzheimer's Center, Palo Alto, CA on a battery of tests including the IADL Patient and Family Interview Ratings (Lawton & Brody, 1969) and the MMSE (Folstein, Folstein & McHugh, 1975). In conjunction with this assessment regimen, patients were administered the EPCCE (Willis, 1993). The current study includes only first occasion EPCCE testing and patient and caregiver IADL ratings that were collected at that time. MMSE data were gathered within three months of the first administration of the EPCCE.

Patient Measures

The Test of Everyday Problems for Cognitively Challenged Elderly. (EPCCE; Willis, 1993). This 32 item open-ended test was used to measure patient's everyday cognitive competence. EPCCE examinees are presented with a reproduction of an actual form, label, bill, or chart that they may be confronted with in their daily lives (e.g., an over-the-counter medicine label). They are instructed to read the stimulus and are then asked to solve two relevant problems (e.g., how much medication should be given to a child). The test consists of 32 open-ended questions based on 16 stimuli that tap the seven IADL domains (Lawton and Brody, 1969). The

total score range is 0 - 32 with a higher score indicating fewer cognitive difficulties. Test-retest stability of .75 over a six-month interval and split-half reliability of .84 was reported (Allen-Burge et al., 1995) for this sample.

Instrumental Activities of Daily Living Patient Interview Rating. (IADL; Lawton & Brody, 1969). This self-report assessment tool is used to evaluate everyday functional competence in the seven IADL domains. Responses to the following eight Likert scales are obtained from the patient: telephone usage (score range 0-4), food preparation (score range 0-4), housekeeping (score range 0-5), laundry (score range 0-3), mode of transportation (range 0-5), shopping (score range 0-4), ability to handle finances (score range 0-3), and responsibility for own medications (0-3). The total score ranges from 0-31 with lower scores representing fewer limitations.

Mini-Mental Status Exam. (MMSE; Folstein, Folstein, & McHugh, 1975). The MMSE is a brief cognitive screening battery used to assess global cognitive ability and is administered to the patient by a staff clinician. Domains of cognitive functioning include orientation, immediate and delayed recall for words, attention and concentration, language, and praxis. Scores range from 0 to 30 with higher scores representing better functioning. A score of 24 is generally used as a cutoff for a dementia rating.

Caregiver Measures

Instrumental Activities of Daily Living Family Interview Rating. (IADL; Lawton & Brody, 1969). A similar version of the patient self-report assessment tool is administered to the caregiver. It is used to evaluate the patient's everyday functional competence in the seven IADL

domains from the caregiver's perspective. Qualities of this scale are identical to the Patient IADL Interview Rating.

Screen for Caregiver Burden. (SCB; Vitaliano, Russo, Young, Becker, & Maiuro, 1991). This 25 item caregiver self-report measure is scored on a 5 point Likert Scale with the following designation: (0) did not occur, (1) occurred but caused no distress, (2) mild distress, (3) moderate distress, (4) severe distress. The total score ranges from 0 - 60 with a low score indicating fewer problems. The SCB was designed to assess the prevalence and self-appraisal of caregivers' distressing experiences.

Arizona Social Support Interview Schedule. (ASSIS; Barrera, M., 1980). The ASSIS is a 26 item, interviewer-administrated questionnaire developed to assess the number of individuals perceived by the caregiver to be available and the actual number of individuals available in the caregiver's network to lend caregiving support.

Results

Variable Transformation

EPCCE and MMSE data were scored according to the number of correct items with the total score representing patients' level of competency. Traditionally, IADL measures were scored in terms of the number of IADL domains in which the subject had a limitation. Each IADL domain was represented by a Likert scale; the number of points on the Likert scale varied across domains (i.e., 4 to 6 points on a scale). Several transformations were performed on the IADL measures (a) to ensure that each IADL domain was weighted equally in the summary score, and (b) to reverse score so that a higher score represented greater competence. Each Likert item was transformed into a 100-point scale. The points on the scale were then reversed so that a higher

point on the scale indicated greater competence. These revised scores were then standardized (M = 50, SD = 10) for the total patient or total caregiver group in order to permit comparison across subgroups (e.g., young-old versus old-old) or between patient and caregiver.

Creating Congruence Scores

To examine the degree of congruence among the three measures of competency (i.e., Patient IADL, Caregiver IADL, EPCCE), three congruence scores were calculated (Congruence I: Patient - Caregiver IADL ratings; Congruence II: Patient IADL ratings - EPCCE scores; and Congruence III: Caregiver IADL ratings - EPCCE scores). Based on the a priori notion that patients overestimate their everyday cognitive competence, caregiver IADL ratings and EPCCE scores were subtracted from patient IADL ratings. In calculating Congruence II and III, the component competency scores were standardized to T-scores (M = 50; SD = 10) before computing the difference score so that the two measures would be in the same metric. For Congruence I the unstandardized, reversed and rescaled component scores were used in computing the difference score because they were in the same metric.

Relationship Among the Competency Measures and their Association with Patient and Caregiver Characteristics

The relationship among the three components that comprise the congruence scores and their association with patient and caregiver characteristics was examined via Pearson correlations. Correlation coefficients appear in Table 2. Analyses reveal a significant association between Patient and Caregiver IADL ratings (r = .47, p < .001), between Patient IADL ratings and the EPCCE (r = .30, p < .05), and between Caregiver IADL ratings and the EPCCE r = .25, p < .05).

Insert Table 2 about here

Table 2 also illustrates the significant relationships among the three measures of congruence of competence. Correlation analyses revealed a significant positive association between the measures Congruence I and II ($r = .39$, $p < .01$) and a significant negative relationship between Congruence I and III ($r = -.46$, $p < .001$). Finally, a significant positive correlation between Congruence II and III ($r = .64$, $p < .001$) was demonstrated.

The relationship of the independent variables (i.e. patient age, gender, and education and caregiver age and education) to the components of the congruence measures was also examined. As shown in Table 2, a statistically significant negative correlation is found between patient age and Caregiver IADL ratings ($r = -.48$, $p < .001$). It appears that the caregiver's perception of patient IADL abilities decrease as the patient ages.

Effects of Patient Characteristics on Congruence Scores

A 2 Age X 2 Gender X 2 Education multiple analysis of variance (MANOVA) was conducted to examine the impact of patient characteristics on the measures of congruence. Congruence scores served as the dependent variables in this design.

Based on Wilks' criterion, the combined dependent variables were significantly affected by patient age $F(3,53) = .75$ $p < .01$, patient gender $F(3,53) = .85$, $p < .05$, and the interaction of patient age by gender $F(3,53) = .86$ $p < .05$. The analysis revealed no main effect for patient education. The impact of the main effects on individual dependent variables was examined in three separate MANOVA procedures. The MANOVAs were based on subsamples of participants

who were tested on each of the covariate measures (i.e., MMSE; VBS; ASSIS). Three separate MANOVAs were conducted because the results of each will be compared to corresponding MANCOVA results in the next series of analyses in order to evaluate the effects of covariation. Results of these MANOVA analyses are presented in Table 3.

Insert Table 3 about here

Univariate analysis indicates significant effects for patient age on the Congruence I and the Congruence III measures for all three MANOVA runs. Specifically, for the subsample $n=61$ on Congruence I, $F(1,55) = 8.48$, $p < .01$, and Congruence III, $F(1,55) = 10.40$, $p < .01$; for the subsample $n = 39$ on Congruence I, $F(1,31) = 9.24$, $p < .01$, and Congruence III, $F(1,31) = 9.13$, $p < .01$; and for the subsample $n = 44$ on Congruence I, $F(1,36) = 7.04$, $p < .05$, and Congruence III, $F(1,36) = 7.47$, $p < .01$.

A significant univariate effect was also demonstrated for gender on the Congruence II measure of congruence for all three MANOVAs. The subsample $n=61$, $F(1,55) = 8.71$, $p < .01$; $n=39$, $F(1,31)$, $p < .05$; and $n=44$, $F(1,36)$, $p < .05$. Significant effects for the interaction of patient age by gender on the Congruence III measure of congruence was found for the subsample $n=61$. This interaction reflected mean group differences between young-old women and all other groups (i.e., young-old men; old-old men; old-old women) were revealed (young-old women: $m = 10.72$; young-old men: $m = -1.42$; old-old women: $m = -5.98$; old-old men: $m = -3.18$).

Moderators of the Impact of Patient Characteristics on the Magnitude of Congruence

Analyses were conducted to examine the influence of mediating variables (i.e., disease severity, caregiver burden, caregiver social support) on the effects of patient characteristics on congruence. A series of three, 2 Age X 2 Education X 2 Gender between-subjects multivariate analyses of covariance (MANCOVAs) were performed on the three congruence measures as dependent variables. Patient characteristics served as the independent variables. Univariate results of these analyses are presented in Table 4.

Insert Table 4 about here

Disease Severity as a Covariate. After adjusting for the covariation effects of disease severity (i.e., measured by the MMSE; Folstein, Folstein, & McHugh, 1975), two differences from the pattern of MANOVA results were found. First, the gender main effect for Congruence II was no longer significant. Second, the age X gender interaction for Congruence II was significant; it had not been significant in the MANOVA.

Caregiver Burden and Social Support as Covariates. Univariate results failed to reveal mediation effects for the covariates caregiver burden (i.e., VBS) or caregiver social support (i.e., ASSIS) on any of the measures of congruence of competence.

Effects of Caregiver Characteristics on Congruence Scores

A 2 Age X 2 Education multiple analysis of variance (MANOVA) was conducted to examine the impact of caregiver characteristics on the measures of congruence. Caregiver gender was not considered in this study because of the large proportion of female caregivers (i.e., 69%).

The measures of congruence represented by difference scores served as the dependent variables in this design. Main effects for caregiver age or education on the combined dependent variables were not observed. Therefore, MANCOVA post hoc analyses were not conducted for caregiver characteristics.

DISCUSSION

The major findings of this study were twofold. First, the three components of the congruence measures were positively related. In addition, a significant relationship among all three measures of congruence of competence was revealed. Second, the characteristics of the patient, not the caregiver were associated with the three measures of congruence of competence.

Association Among the Variables

A significant, positive association was found between Patient and Caregiver IADL ratings, between Patient IADL ratings and EPCCE scores, and between Caregiver IADL ratings and EPCCE scores. These findings support the work of Cavanaugh et al. (1989) and Kiyak, Teri, & Borson (1994) who found that in addition to the caregivers' awareness of AD patients' cognitive decline, patients themselves are aware of their deterioration and express it in their self-assessment. Although patients' ratings are positively biased, at least in the early stages of the disease, they may be able to contribute to their own functional evaluation and treatment plan. The current findings also support those of Loewenstein et al. (1989) who found a significant relationship between performance on the Direct Assessment of Functional Status (Loewenstein et al., 1989) and caregiver ratings of patients' functional ability.

All three measures of congruence of competence were significantly related. For example, a significant, positive relationship between the Congruence I and Congruence II measures were

revealed. This finding supports hypothesis that patients overestimate their competence compared to both the caregivers' subjective ratings (i.e., IADL scores) and scores on an objective measure (i.e., EPCCE).

A significant association between the EPCCE and the MMSE was revealed. This finding lends support to a previous study (Dolan, Bertrand, & Willis, 1995) which established the validity of the EPCCE measure with the MMSE in a cognitively normal, low SES sample of rural old adults. The present finding serves to reiterate the usefulness of the EPCCE as a tool to complement existing measures of cognitive decline or disease severity.

Patient age was the only patient or caregiver characteristic that was significantly correlated with any of the components of the congruence measures. Patient age demonstrated a significant negative association with Caregiver IADL ratings. It is likely that because disease severity increases concurrently with age, caregivers' IADL ratings reflect patients' cognitive degeneration that is associated with the disease.

Impact of Patient and Caregiver Characteristics on the Measures of Congruence

Multiple analyses of variance were used to examine the impact of patient and caregiver characteristics on the measures of congruence of competence. Overall, patient characteristics were shown to impact the measures of congruence whereas caregiver characteristics were not. Results showed significant main effects for patient age on the measures Patient IADL - Caregiver IADL and Caregiver IADL - EPCCE. Patient gender impacted Congruence II. An interaction of patient age by gender was significant for Congruence III. It appears that when the patient is young-old, there is greater agreement on IADL ratings between the patient and caregiver than when the patient is old-old. Two possible explanations may help to explain this finding. First,

older patients may not have as realistic a perspective concerning their IADL abilities as younger patients due to the progression of the disease associated with older age. Therefore, the ratings of young-old patients will be more accurate, ergo more in sync, with caregivers' ratings than old-old patients. Second, caregivers, on one hand, may rate the cognitive performance of younger patients as higher than they rate the performance of older patients regardless of the severity of the disease. That is, in the early stages of the disease caregivers may deny the full extent of disability that encumbers their relation. On the other hand, researches have noted that as disease severity progresses (i.e., as the patient ages), caregivers may become so overwhelmed by grief and burden that they exaggerate the cognitive loss of their relations (Cohen, Kennedy, & Eisdorfer, 1984).

Additional evidence to support these interpretations is provided by the finding that demonstrates age group differences on the measure Caregiver IADL - EPCCE. When the patient is young-old the caregiver tends to
overestimates patient IADL abilities and when the patient is old-old, the caregiver generally underestimates patient ability compared to EPCCE scores.

It was also found that female patients overestimate their IADL abilities relative to the EPCCE and that male patients underestimate their IADL abilities relative to the EPCCE. In other words, female patients believe that they are functioning at a cognitively higher level than scores on the objective test (i.e., EPCCE; Willis, 1993) indicate, whereas male patients believe the opposite; males believe that they are functioning lower than their test scores indicate. It is likely that among this cohort of older adults, women have more experience than men with the majority of instrumental activities that are assessed by the IADL measure (i.e., telephone use, food preparation, housekeeping, laundry, shopping, handling medication), and consequently view

themselves as more competent. It is also possible that because of the social pressure traditionally placed on women of this cohort to be good housekeepers, they are reticent to acknowledge a decline in these abilities.

The Moderating Effects of Underlying Mechanisms

Multiple analyses of covariance with disease severity as a covariate demonstrated mediating effects on patient characteristics. For example, univariate analysis revealed changes in magnitude of mean gender group differences on the measure of Patient IADL - EPCCE scores before and after adjustment for disease severity. Prior to covariation, there was a significant mean group difference between female and male patients on this measure of congruence of competence; female patients overestimated and male patients underestimated IADL abilities relative to EPCCE scores. However, after covariation patients were not differentiated by gender on self-reports of IADL competence compared to EPCCE scores. A possible explanation for this finding is that there is a disparity in disease severity (i.e., MMSE scores) by gender; on average women scored lower than men on this measure of disease severity (female: $\underline{m} = 18.39$; male: $\underline{m} = 21.25$). Once the difference in disease severity is controlled, gender group differences are no longer a statistically significant. This finding suggests that when men and women are at the same level of cognitive decline, they view their everyday cognitive competence similarly.

Most surprising, and contrary to previous rationale, is the finding that the age of the patient is an influential characteristic regardless of the stage of the disease. The most obvious explanation for this phenomenon is that patient age and disease severity are so highly associated that adjusting for the progression of the disease does not impact the measures of congruence beyond the influence of patient age. However, as demonstrated in the correlation analyses, the

relationship between patient age and MMSE scores did not reach statistical significance. This explanation may still be valid however, given that the latter finding may be a function of the small sample size; a larger sample may reveal different results. In addition, the lack of mitigating influence of disease severity may be due in part to the limited variability of the scores on the MMSE (i.e., Range = 12 - 27).

Caregiver burden and support did not demonstrate mitigating effects on the impact of patient attributes on the measures of congruence of competence in this sample of AD patients.

Implications

The results of this study have shown that individuals with moderate cognitive decline may still be able to evaluate their abilities and contribute to their own treatment plan. The clinical practice of ignoring the impaired adult's contribution to self-assessment and relying on caregiver assessments may fail to identify critical information and result in a biased perspective. According to Rubenstein, Schairer, Wieland, and Kane (1984), when proxies alone are used for data collection, one must be aware of the risk of bias and inaccurate reporting. Furthermore, providing the patient's physician with misinformation could lead to inappropriate treatment and the oversight of simple household interventions (e.g., labeling cabinets) on the one hand, or the premature implementation of drastic interventions, such as nursing home placement, on the other.

Underestimating the ability of the patient and ignoring his or her wishes could lead to excess disability which in turn could hasten decline. To avoid learned helplessness and to maximize autonomy, any opportunity to allow the Alzheimer's patient to exercise control over his or her life, including the self-evaluation of abilities to perform everyday tasks, should be employed.

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Table 1

Patient and Caregiver Demographic Characteristics

	Patient n = 63	Caregiver n =63*
Gender (Female)		
n	34	43
P	54	69
Age (years)		
M	74.14	63.34
SD	8.50	12.68
Range	50-89	35-84
Education (years)		
M	13[a]	14
Race		
Caucasian		
n	53	55
P	84.13	88.71
African American		
n	1	1
P	1.59	1.61
Hispanic		
n	4	3
P	6.35	4.84
Asian		
n	3	3
P	4.76	4.84
Other		
n	2	0
P	3.17	0

[a]This mean was derived from a categorical variable. The categorical mean for patient education was 4.87 with 4 = HS graduation; 5 = partial college. *Demographic information was not available for one caregiver.

Table 2

Correlation Matrix of Demographic, Everyday Competence, Cognitive and Psychological Measures (n = 63 patients & 63 caregivers).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Patient's Age													
2. Patient's Education	-.12												
3. Caregiver's Age	-.01	.04											
4. Caregiver's Educ	-.11	.46***	-.40***										
5. Patient IADL[a]	-.09	.21	-.12	.09									
6. Caregiver IADL[b]	-.48***	.19	-.06	.09	.47***								
7. EPCCE	.07	.09	-.004	-.16	.30*	.25*							
8. Congruence I[c]	.39**	.02	-.06	.003	.51***	-.51***	.05						
9. Congruence II[d]	-.14	.10	-.10	.22	.59***	.19	-.59***	.39**					
10. Congruence III[e]	-.45***	.08	-.05	.21	.14	.61***	-.61***	-.46***	.64***				
11. MMSE	-.19	.17	.21	-.15	.07	.24	.51***	-.16	-.37**	-.23			
12. Burden Scale	.26	-.43**	.12	-.55***	.11	-.36*	.12	.42**	.003	-.36*	-.08		
13. Social Network	-.12	.02	.04	.06	.13	.07	.19	.06	-.04	-.09	.21	-.007	

Note. To maximize n for each set of correlations, analyses were run using pairwise deletion. Caregiver Age (n=62); Caregiver Education (n=61); MMSE (n=61); Burden Scale (n=39); Social Network (n=44). * $p < .05$; ** $p < .01$; ***$p < .001$; Patient IADL[a] = Patient IADL total reversed, rescaled to 100. Caregiver IADL[b] = Caregiver IADL total reversed, rescaled to 100; Congruence I[c] = Total reversed, rescaled to 100 patient IADL less total reversed, rescaled to 100 caregiver IADL; Congruence II[d] = Total reversed, rescaled to 100, standardized patient IADL less standardized EPCCE total; Congruence III[e] = Total reversed rescaled to 100, standardized caregiver IADL less standardized EPCCE total.

Table 3

Multiple Analysis of Variance for Effects of Patient Characteristics on the Measures of Congruence of Competence

Effect	n=61 Congruence I[a]	n=61 Congruence II[b]	n=61 Congruence III[c]	n=39 Congruence I[a]	n=39 Congruence II[b]	n=39 Congruence III[c]	n=44 Congruence I[a]	n=44 Congruence II[b]	n=44 Congruence III[c]
Patient Age (A)									
MS Error	29207.66	119.36	120.83	29547.08	139.40	123.39	30804.23	138.78	134.30
F(df)	7.13(1,53)**	.33(1,53)	8.58(1,53)**	9.24(1,31)**	.11(1,31)	9.13(1,31)**	7.04(1,36)*	.20(1,36)	7.47(1,36)**
Patient Gender (G)									
MS Error	29207.66	119.36	120.83	29547.08	139.40	123.39	30804.23	138.78	134.30
F(df)	1.55(1,53)	8.43(1,53)**	3.17(1,53)	2.58(1,31)	7.03(1,31)*	1.96(1,31)	2.91(1,36)	5.84(1,36)*	.96(1,36)
Patient Education (E)									
MS Error	29207.66	119.36	120.83	29547.08	139.40	123.39	30804.23	138.78	134.30
F(df)	.36(1,53)	.54(1,53)	.04(1,53)	.07(1,31)	.03(1,31)	.18(1,31)	.002(1,36)	.03(1,36)	.02(1,36)
Patient Age X Gender									
MS Error	29207.66	119.36	120.83	29547.08	139.40	123.39	30804.23	138.78	134.30
F(df)	.71(1,53)	3.52(1,53)	6.79(1,53)*	1.68(1,31)	.89(1,31)	4.58(1,31)	.81(1,36)	.75(1,36)	2.74(1,36)
Patient Age X Education									
MS Error	29207.66	119.36	120.83	29547.08	139.40	123.39	30804.23	138.78	134.30
F(df)	2.17(1,53)	2.40(1,53)	.06(1,53)	3.32(1,31)	.34(1,31)	.96(1,31)	1.64(1,36)	.53(1,36)	.13(1,36)
Patient Gender X Education									
MS Error	29207.66	119.36	120.83	29547.08	139.40	123.39	30804.23	138.78	134.30
F(df)	.12(1,53)	.53(1,53)	.18(1,53)	1.26(1,31)	.00(1,31)	.95(1,31)	.33(1,36)	.84(1,36)	2.03(1,36)
Patient Age X Gender X Education									
MS Error	29207.66	119.36	120.83	29547.08	139.40	123.39	30804.23	138.78	134.30
F(df)	.11(1,53)	.39(1,53)	.10(1,53)	1.14(1,30)	.000(1,30)	.84(1,30)	.30(1,36)	.01(1,36)	.32(1,36)

Note. Congruence I = Difference score of total reversed, rescaled to 100, patient IADL less total reversed, rescaled to 100 caregiver IADL total. Congruence II = Total patient IADL, reversed & standardized less total EPCCE standardized. Congruence III[c] = Total caregiver IADL, reversed & standardized less total EPCCE standardized. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 4

Multiple Analysis of Covariance for Effects of Patient Characteristics on the Measures of Congruence of Competence

Effect	MMSE[d] (n=61)			VBS[e] (n=39)			ASSIS[f] (n=44)		
	Congruence I[a]	Congruence II[b]	Congruence III[c]	Congruence I[a]	Congruence II[b]	Congruence III[c]	Congruence I[a]	Congruence II[b]	Congruence III[c]
Patient Age (A)									
MS Error	29751.82	107.13	110.34	27571.89	144.02	116.87	31003.06	142.68	136.64
F(df)	6.53(1,52)*	1.30(1,52)	12.27(1,52)***	4.69(1,30)*	.07(1,30)	4.77(1,30)*	7.44(1,35)**	.18(1,35)	7.63(1,35)**
Patient Gender (G)									
MS Error	29751.82	107.13	110.34	27571.89	144.02	116.87	31003.06	142.68	136.64
F(df)	1.19(1,52)	3.64(1,52)	.74(1,52)	2.89(1,30)	6.79(1,30)*	1.97(1,30)	3.25(1,35)	5.67(1,35)*	.78(1,35)
Patient Education (E)									
MS Error	29751.82	107.13	110.34	27571.89	144.02	116.87	31003.06	142.68	136.64
F(df)	.37(1,52)	.92(1,52)	.14(1,52)	.91(1,30)	.04(1,30)	1.10(1,30)	.000(1,35)	.02(1,35)	.03(1,35)
Patient Age X Gender									
MS Error	29751.82	107.13	110.34	27571.89	144.02	116.87	31003.06	142.68	136.64
F(df)	.69(1,52)	4.17(1,52)*	7.75(1,52)**	1.25(1,30)	.83(1,30)	3.95(1,30)	.74(1,35)	.74(1,35)	2.60(1,35)
Patient Age X Education									
MS Error	29751.82	107.13	110.34	27571.89	144.02	116.87	31003.06	142.68	136.64
F(df)	2.08(1,52)	2.02(1,52)	.003(1,52)	1.36(1,30)	.33(1,30)	.15(1,30)	1.54(1,35)	.51(1,35)	.11(1,35)
Patient Gender X Education									
MS Error	29751.82	107.13	110.34	27571.89	144.02	116.87	31003.06	142.68	136.64
F(df)	.12(1,52)	.76(1,52)	.29(1,52)	.38(1,30)	.25(1,30)	1.19(1,30)	.28(1,35)	.83(1,35)	1.91(1,35)
Patient Age X Gender X Education									
MS Error	29751.82	107.13	110.34	27571.89	144.02	116.87	31003.06	142.68	136.64
F(df)	.09(1,52)	.17(1,52)	.01(1,52)	1.14(1,30)	.000(1,30)	.84(1,30)	.35(1,35)	.007(1,35)	.35(1,35)

Note. Congruence I[a] = Difference score of total reversed, rescaled to 100, patient IADL less total reversed, rescaled to 100 caregiver IADL total. Congruence II[b] = Total patient IADL, reversed & standardized less total EPCCE standardized. Congruence III[c] = Total caregiver IADL, reversed & standardized less total EPCCE standardized. MMSE[d] = Mini Mental Status Exam; VBS[e] = Vitaliano Burden Scales; ASSISI[f] = Arizona Social Support Interview Schedule. *$p < .05$; **$p < .01$; ***$p < .001$.