Caregivers’ Judgments of the Functional Abilities of the Alzheimer’s Disease Patient: A Comparison of Proxy Reports and Objective Measures

David A. Loewenstein,1,2,3,4 Soledad Argüelles,1,4 Marina Bravo,2 Rhonda Q. Freeman,1 Trinidad Argüelles,1,2,4 Amarilis Acevedo,1,3 and Carl Eisdorfer1,2,4

1Center for Adult Development and Aging and the Department of Psychiatry and Behavioral Sciences, University of Miami School of Medicine, Florida.
2Wien Center for Alzheimer’s Disease and Memory Disorders and 3Outpatient Cognitive Rehabilitation Program, Mount Sinai Medical Center, Miami Beach, Florida.
4Resources for Enhancing Alzheimer’s Caregiver’s Health (REACH), Miami, Florida.

The assessment of functional capacity is essential for the diagnosis of dementia by DSM-IV criteria and has important implications for patient intervention and management. Although ratings of functional disability by family or other proxy informants are widely used by clinicians, there have been concerns and empirical evidence that potential reporter biases may result in either overestimation or underestimation of specific functional deficits. In this study, we compared family members’ judgments of the functional abilities of seventy-two patients diagnosed with Alzheimer’s disease (AD). These judgments were compared to actual objective functional performance on an array of real-world tasks using the Direct Assessment of Functional Status (DAFS) scale. The results indicate that caregivers were extremely accurate in predicting the functional performance of AD patients who were not impaired during objective evaluation. In contrast, caregivers significantly overestimated the ability of impaired AD patients to tell time, to identify currency, to make change for a purchase, and to utilize eating utensils. Higher patient MMSE scores were associated with caregivers’ overestimation of functional capacity, while the degree of caregivers’ depressive symptoms, as measured by the CES-D depression scale, was not related to either overestimation or underestimation of patients’ functional performance.

The vast majority of clinicians rely on patient self-reports and/or the reports of proxy respondents to assess the impact that cognitive impairment may have upon functional status (Loewenstein & Mogosky, 1999). The reports of close family informants have been viewed as particularly valuable since cognitively impaired and demented patients may be inaccurate in the assessment of their own functional abilities with a tendency to underestimate their deficits (Kiyak, Teri, & Borson, 1994; Ostbye, Tyas, McDowell, & Koval, 1997; Rubinstein, Schairer, Wieland, & Kane, 1984; Weinberger et al., 1992).

While family members have been relatively accurate in judging the functional status of cognitively intact patients, the judgments of the family caregivers of cognitively impaired or demented patients may be compromised to a greater degree. It has been suggested that family caregivers who are depressed and feel burdened may be inaccurate and may underestimate the patient’s actual functional capacity (La Rue, 1992; Loewenstein & Rubert, 1992; Skurla, Rogers, & Sunderland, 1988). There is also evidence that some caregivers may tend to deny the functional impairments of family members despite the fact that such deficits are quite apparent to others within the patient’s environment (Loewenstein et al., 1989; Loewenstein & Mogosky, 1999). Nonetheless, caregivers’ reports of functional decline of Alzheimer’s disease (AD) patients generally correlate with deterioration in cognitive function and are much more useful than the reports of patients themselves (Kiyak et al., 1994).

The recent development of objective, quantitative measures of functional capacity has provided investigators and clinicians with the opportunity to examine the relationship between caregivers’ perceptions of functional capacity and observed functional performance among cognitively impaired patients. One such measure, the Direct Assessment of Functional Status (DAFS, Loewenstein et al., 1989) provides an objective behaviorally-based assessment of a broad range of higher and lower order functional activities among cognitively impaired patients. These results can then be contrasted to both patient and caregiver judgments regarding functional capacities. The DAFS includes subscales for functional domains such as orientation to time and the ability to tell time, use the telephone, prepare a letter for mailing, identify and count currency, write a check, balance a checkbook, make change for a purchase, use eating utensils, dress, and groom. These
subscs have all demonstrated high established interrater and test–retest reliabilities, as well as concurrent and discriminative validity (Loewenstein et al., 1989; Loewenstein & Rubert, 1995).

At present, there is a paucity of literature examining potential biases that may affect the accuracy of the caregiver’s judgments of functional performance. Mangone and associates (1993) first reported that perceived caregiver burden was associated with overestimation of actual functional disability on the DAFS. Shopping, feeding, and dressing were areas that showed the greatest tendency of caregivers to underestimate the patient’s functional abilities. Karagiozis, Gray, Sacco, Shapiro, and Kawas (1998) also found that informants of demented patients had a tendency to underestimate functional capacity as measured by the Direct Assessment of Functional Abilities (DAFA) Scale. One limitation of their study, however, was a very small sample size, 28 cases. In a more recent investigation, Zanetti, Geroldi, Frisoni, Bianchetti, & Trabucchi (1999) attempted to determine the extent to which caregivers’ perception of functional capacity of the patient with AD could be predicted by the patient’s actual performance on the grooming, telephone use, money use, and shopping abilities subscales of the DAFS. The living situation, classified as “independent versus dependent,” was also entered into the model as a predictor variable. The percentage of correct classifications for discriminant function analysis conducted for each functional domain ranged from 49.6% for grooming skills to 64.0% for money use, demonstrating a relatively low concordance between caregiver report and actual functional capacity. Caregivers’ subjective perception of burden rather than self-reported depression was a significant predictor of a caregiver’s judgments of functional capacity independent of the patient’s actual functional performance upon objective testing. Caregivers underestimated performance on the grooming and shopping measures while they overestimated patients’ ability to use the telephone and to manage money. One limitation concerning the interpretation of these data was that an errorless performance on all components of each DAFS task administered was required for an AD patient to be classified as nonimpaired. Loewenstein and Rubert (1995) have presented data that normal controls routinely make errors on more complex tests of the DAFS and that one error on most functional tasks does not constitute an impaired performance.

These previous investigations are extremely valuable because they raise questions regarding the accuracy of caregivers’ judgments of functional capacity. A potential limitation of previous studies, particularly those utilizing the DAFS, has been the tendency to compare rather global caregiver functional judgments (e.g., money use) to summary measures that combine the scores of several functional subtests. Unfortunately, these data have not directly addressed the one-on-one correspondence between the caregiver’s judgments regarding a patient’s ability to perform a particular task (e.g., balancing a checkbook) with the patient’s observed ability on objective evaluation.

In the present study, we directly compared caregivers’ judgment of specific functional abilities to actual DAFS performance on tasks requiring the patient to tell time, prepare a letter for mailing, identify and count currency, write a check, balance a checkbook, make change for a purchase, and utilize eating utensils. Previously established empirically derived cutoffs for functional impairment were based upon previous work (Loewenstein & Rubert, 1995). It was our intention to identify the nature and direction of discrepancies between caregivers’ judgments of functional capacity and AD patients’ functional performance on the DAFS. Further, we attempted to determine the extent to which these discrepancies were related to caregiver characteristics, such as relationship to the patient, and to reported symptoms of depression.

**Methods**

**Participants**

We studied seventy-two patients (37 males and 35 females) with a mean age of 78.37 ± 6.2 years and a mean level of educational attainment of 12.7 ± 3.6 years. Each individual had been evaluated for suspected memory impairment at the Wien Center for Alzheimer’s Disease and Memory Disorders, an affiliated program of Mount Sinai Medical Center of Miami Beach (Florida) and the University of Miami (Florida) School of Medicine. All participants were examined between 1994 and 1997 and met NINCDS-ADRDA (McKhan et al., 1984) criteria for probable or possible AD after extensive medical, neurological, psychiatric, and neuropsychological evaluation. The evaluation also included blood laboratories and magnetic resonance imaging of the brain.

Table 1 presents the demographic characteristics of the sample. The average Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) score was 19.61 ± 5.2, which indicated that this group as a whole evidenced mild to moderate cognitive impairment. It should be noted, however, that MMSE scores demonstrated variability ranging from 2 points to 29 points. Mean Hamilton Depression scores (Hamilton, 1968) were 7.83 ± 6.1. Forty-nine patients spoke English as their primary language and 23 patients spoke Spanish as their primary language.

Thirty-five caregivers were spouses of the AD patient (26 wives and 9 husbands) while thirty-four caregivers were adult children (23 daughters and 11 sons). Caregivers also included one sister, one brother, and one granddaughter.

**Procedure**

During the caregiver’s initial visit for the patient’s psychosocial evaluation, we administered a set of questions, taken from the Caregiver’s Perceptions of Functional Status Scale (CPFS; Loewenstein & Argüelles, 1990), regarding

<table>
<thead>
<tr>
<th>Table 1. Characteristics of Alzheimer’s Disease Patients in the Current Sample</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>78.37</td>
<td>6.2</td>
<td>65–91</td>
</tr>
<tr>
<td>Education (years)</td>
<td>12.70</td>
<td>3.6</td>
<td>6–20</td>
</tr>
<tr>
<td>MMSE</td>
<td>19.61</td>
<td>5.2</td>
<td>2–29</td>
</tr>
<tr>
<td>Hamilton Depression scale</td>
<td>7.83</td>
<td>6.1</td>
<td>1–25</td>
</tr>
</tbody>
</table>
the caregiver’s judgments of the patient’s ability to perform a broad array of activities of daily living. The CPFS is a clinical instrument that was originally developed to determine the extent to which cognitively impaired patients’ performance on each DAFS task corresponded to caregiver expectations. Information provided by the caregiver on the CPFS was subsequently compared to the patient’s performance on the DAFS. We evaluated only the functional judgments made by the caregiver on the CPFS which corresponded and could be directly compared to relevant DAFS tasks. For example, both clinical experience and pilot work had indicated that global judgments of caregivers on tasks such as using the telephone were problematic as a result of the variability of caregivers’ interpretation as to what was meant by functional performance. For example, some caregivers assumed that merely picking up the telephone when it rang represented intact abilities in this area, while others perceived that successfully using the telephone depended on looking up numbers in the phone book and dialing many different telephone numbers. Similarly, the total score on the dressing subtest of the DAFS is based upon many disparate components of function (e.g., buttoning clothing, zipping garments, washing one’s face, and brushing one’s teeth). Thus, performance on these measures could not be meaningfully related to caregivers’ global judgments regarding dressing abilities. Shopping with a written list is another area in which caregivers were quite disparate as to their interpretation of the elements involved and their criteria for successful functional performance.

For each functional activity, such as telling time, preparing a letter for mailing, identifying currency, counting currency, writing a check, balancing a checkbook, making change for a purchase, and eating skills, the caregiver was asked whether the patient could perform a particular functional activity by indicating “yes,” “no,” or “sometimes.” For example, with respect to the skill of counting currency, the caregiver was required to respond to the question regarding the patient: “Can the person count currency?” by giving one of the three response choices listed above.

The results of the caregiver assessments were compared to objective functional evaluation of the patient using the DAFS. The DAFS was administered to the patient during neuropsychological testing performed within an eight-week period from the time that the caregiver had completed the CPFS. Previous work with the DAFS has indicated stable test–retest reliability using a similar interval (Loewenstein et al., 1989). The mean time of the difference between administration of the questionnaire to the caregiver and the administration of the DAFS in this investigation was 3.35 ± 2.2 weeks. Examiners administering the DAFS were unaware of the purpose and nature of the study and were blind to results regarding the caregiver’s judgments. A description of the component of each DAFS subtest is provided below with cutoffs for impairment and the exact wording of the question as asked of the caregiver related to patient’s functional performance.

**Measures**

Direct Assessment of Functional Status (DAFS) Scale.—The DAFS is a well validated and widely used clinical instrument that provides objective, performance-based data regarding an older person’s ability to perform a number of higher and lower order activities required for daily living. High interrater and test–retest reliabilities for each functional task have been established. In addition, the test has excellent convergent validity since the measures present the identical functional tasks and tap the requisite functional skills which are required in the patient’s home environment (Hochrein et al., 1996; Loewenstein et al., 1989; Zanetti, Frisoni, Rozzini, Bianchetti, & Trabucchi, 1998).

The following is a brief description of each functional task of the DAFS that was utilized in the current investigation. The cutoff for impairment for each DAFS task is based on previous work by Loewenstein and Rubert (1995) with normal elderly adults.

*Reading a Clock:* This scale consists of four items with a maximum score of eight points. The cutoff score for impairment is 4 or fewer points. Researchers ask patients to tell time at each of four progressively difficult clock settings. Performance on this test was related to caregivers’ response to the following question regarding the patient: “Can the person tell time on a clock with hands?”

*Preparing a letter for mailing:* This scale consists of six items with a maximum score of seven points. The cutoff score for impairment is 4 or fewer points. Researchers provide each patient with a piece of paper, an envelope, and a stamp, as well as a written name and address, and ask the patient to do everything needed to prepare a letter for mailing. Performance on this test was related to caregivers’ response to the following question regarding the patient: “Can the person prepare a letter for mailing?”

*Identifying Currency:* This scale consists of seven items with a maximum score of seven points. The cutoff score for impairment is 6 or fewer points. Researchers ask the patient to identify a penny, nickel, dime, quarter, one-dollar bill, five-dollar bill, and ten-dollar bill. Performance on this test was related to caregivers’ response to the following question regarding the patient: “Can the person identify currency?”

*Counting Currency:* This scale consists of four items with a maximum score of four points. The cutoff score for impairment is 2 or fewer points. Researchers ask the patient to count change and paper currency on four different trials, increasing in difficulty. Performance on this test was related to caregivers’ response to the following question regarding the patient: “Can the person count currency?”

*Writing a Check:* This scale consists of five items with a maximum score of five points. The cutoff score for impairment is 3 or fewer points. Researchers ask the patient to write out an actual check in the amount of four hundred dollars. The elements required are: a) paying to the order of the correct party; b) recording the correct written amount; c) recording the correct numeric amount; d) providing a date; and e) providing a signature on the appropriate line. Performance on this test was related to caregivers’ response to the following question regarding the patient: “Can the person write a check?”

*Balancing a Checkbook:* This scale consists of four items with a maximum score of four points. The cutoff score for impairment is 2 or fewer points. Researchers ask the patient to balance a checkbook at four different levels of difficulty. Performance on this test was related to caregivers’ response
to the following question regarding the patient: “Can the person balance a checkbook?”

Making Change for a Purchase: This scale consists of one item with a maximum score of two points. The cutoff score for impairment is 0 points. Researchers ask the patient to count out the correct change that should be received from a grocery purchase. Performance on this test was related to caregivers’ response to the following question regarding the patient: “Can the person make change for a purchase at a cash register?”

Eating skills: This scale consists of five items with a maximum score of 10 points. The cutoff score for impairment is 8 or fewer points. The patient is presented with eating utensils and is then required to pour water into a glass; drink from a cup; and use a fork, a spoon, and a knife. Performance on this test was related to caregivers’ response to the following question regarding the patient: “Can the person use eating utensils?”

Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975).—The MMSE is one of the most widely used cognitive screening tests to quantify the degree of global cognitive impairment in older adults. The scale ranges from 0–30 and primarily taps memory, language, and attentional factors. In an extensive review of the literature, Tombaugh and McIntyre (1992) concluded that the measure has demonstrated high interrater and test–retest reliability as well as concurrent and discriminative validity.

Hamilton Depression Scale (Hamilton, 1968).—This is a 17-item interview-administered scale which is designed to measure the degree of depressive symptoms in adult populations. The test has been adapted for use with AD populations and has high intraclass correlations as well as concurrent and discriminative validity.

Center for Epidemiological Studies in Depression (CES-D) Scale (Radloff, 1977).—The CES-D is a 20-item scale that requires the subject to report the frequency with which symptoms of depression have been experienced during the previous week. It was administered to caregivers in the current investigation. Studies by Radloff (1977) as well as Baker, Velli, Friedman, and Wiley (1995) indicate that the instrument has relatively high internal consistency and predictive validity. Cutoff scores of 16 or more have been utilized to identify adults at risk for clinical depression.

RESULTS
It was our intention to judge the correspondence between caregivers’ judgments regarding functional abilities with the AD patients’ objective functional performance. In those cases where a caregiver answered “yes” or “no” as to the ability of a patient to perform a specific functional task, these data were compared to functional performance on the DAFS using cutoffs for impairment established by Loewenstein and Rubert (1995). This resulted in scores indicating correspondence or a lack of correspondence between caregivers’ judgments and objective functional performance on each DAFS measure. In those cases where a caregiver judged the patient as being “sometimes” able to perform a particular functional task, the actual correspondence between objective functional performance and caregiver report could not be meaningfully compared with regards to their degree of correspondence. These cases were classified in subsequent chi-square analyses as “unable to determine.”

Table 2 presents the correspondence between caregiver judgments and objective functional performance for those patients with no objective deficits on the DAFS versus those

Table 2. Caregiver Judgments of Functional Capacity Versus Actual Functional Performance of the Alzheimer’s Disease Patient on the Direct Assessment of Functional Status Scale

<table>
<thead>
<tr>
<th>Actual Patient Performance</th>
<th>Caregiver Agreement</th>
<th>Caregiver Disagreement</th>
<th>Unable to Determine</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telling time (normal n = 64)</td>
<td>90.6%</td>
<td>1.6%</td>
<td>7.8%</td>
<td>50.29****</td>
</tr>
<tr>
<td>Telling time (impaired n = 7)</td>
<td>14.3%</td>
<td>85.7%</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>Letter preparation (normal n = 44)</td>
<td>72.7%</td>
<td>9.1%</td>
<td>18.2%</td>
<td>3.32</td>
</tr>
<tr>
<td>Letter preparation (impaired n = 26)</td>
<td>53.8%</td>
<td>23.1%</td>
<td>23.1%</td>
<td></td>
</tr>
<tr>
<td>Identifying currency (normal n = 63)</td>
<td>90.5%</td>
<td>1.6%</td>
<td>7.9%</td>
<td>40.93****</td>
</tr>
<tr>
<td>Identifying currency (impaired n = 6)</td>
<td>0.0%</td>
<td>66.7%</td>
<td>33.3%</td>
<td></td>
</tr>
<tr>
<td>Count currency (normal n = 50)</td>
<td>96.0%</td>
<td>0.0%</td>
<td>4.0%</td>
<td>52.42****</td>
</tr>
<tr>
<td>Count currency (impaired n = 14)</td>
<td>7.1%</td>
<td>78.6%</td>
<td>14.3%</td>
<td></td>
</tr>
<tr>
<td>Writing check (normal n = 50)</td>
<td>72.0%</td>
<td>6.0%</td>
<td>22.0%</td>
<td>3.54</td>
</tr>
<tr>
<td>Writing check (impaired n = 13)</td>
<td>61.5%</td>
<td>23.1%</td>
<td>15.4%</td>
<td></td>
</tr>
<tr>
<td>Balance checkbook (normal n = 23)</td>
<td>60.9%</td>
<td>21.7%</td>
<td>17.4%</td>
<td>2.22</td>
</tr>
<tr>
<td>Balance checkbook (impaired n = 35)</td>
<td>65.7%</td>
<td>8.6%</td>
<td>25.7%</td>
<td></td>
</tr>
<tr>
<td>Making change (normal n = 37)</td>
<td>67.6%</td>
<td>10.8%</td>
<td>21.6%</td>
<td>25.25****</td>
</tr>
<tr>
<td>Making change (impaired n = 31)</td>
<td>16.1%</td>
<td>67.6%</td>
<td>16.1%</td>
<td></td>
</tr>
<tr>
<td>Eating skills (normal n = 66)</td>
<td>97.0%</td>
<td>0.0%</td>
<td>3.0%</td>
<td>60.62****</td>
</tr>
<tr>
<td>Eating skills (impaired n = 5)</td>
<td>0.0%</td>
<td>80.0%</td>
<td>20.0%</td>
<td></td>
</tr>
</tbody>
</table>

Notes: The chi-square analyses are based on the comparative percentage of agreement of caregivers who correctly judged a patient’s ability to perform a task between patients who were impaired versus unimpaired upon objective evaluation. In cases where the caregiver was uncertain as to the patient’s ability to perform a particular task, the response was coded as “unable to determine.”

****p \leq .0001.
demonstrating objective functional impairment. As depicted in Table 2, a series of $2 \times 3$ chi-square analyses indicated that caregivers were accurate 90.5% to 97.0% of the time in correctly identifying individuals who evidenced a successful performance on the functional tasks of telling time, identifying and counting currency, and utilizing eating utensils. On the other hand, 21.7% of caregivers did not believe that the patient could balance a checkbook, even though they were actually able to perform this task on the DAFS. Caregivers were less certain about the presence or absence of impairment indicating “sometimes” for the patient’s ability to write a check (22.0%) or make change for a purchase (21.6%). It should be noted however, that only a very modest number of caregivers indicated that the subject had clear-cut deficits in this area when they evidenced within-normal-limits performance on direct observation. In contrast, a large number of caregivers greatly overestimated the functional capacities of AD patients who evidenced objective functional impairment on the DAFS in such abilities as telling time (85.7%), identifying currency (66.7%), counting currency (78.6%), making change for a purchase (67.6%), and utilizing eating utensils (80.0%).

A composite index of positive caregiver bias was calculated for each case by summing the number of functional tasks in which caregivers overestimated the patients’ actual functional capacity relative to their actual performance on the DAFS. A composite index of negative caregiver bias was also derived by summing the number of functional tasks in which the caregiver incorrectly judged the patient as being impaired. Summing these two measures of positive and negative bias resulted in a total error score representing the total number of tasks in which the caregiver misjudged actual functional capacity. A series of stepwise multiple regression equations were conducted to determine the extent to which patient variables, such as age, level of educational attainment, global mental status as measured by the MMSE, and level of depression as measured by the Hamilton Depression Scale, were associated with the occurrence of caregiver’s judgment errors regarding functional capacity. Relationship of the caregiver to the patient (spouse versus adult child) was also entered in the model as a predictor variable.

As indicated in Table 3, scores on the MMSE were significantly related to the occurrence of positive caregiver’s judgment errors, $F(1,63) = 5.13$, $p < .05$, adjusted $R^2 = .061$. Caregivers of patients with higher MMSE scores tended to make more positive judgment errors overestimating functional capacity than caregivers with lower MMSE scores. None of the predictor variables in the regression model was associated with the number of negative judgment errors made by the caregiver. The relationship of the patient to the caregiver was related to the total number of bias errors, $F(1,63) = 4.58$, $p < .05$, adjusted $R^2 = .054$. A post hoc test of means indicated that caregivers who were adult children of AD patients exhibited more judgment errors than did spousal caregivers ($1.10 \pm 1.2$ versus $.531 \pm .76$). There was, however, a substantial degree of variability for each group. Post hoc chi-square analyses indicated that the proportion of error responses of adult children caregivers was greater only on functional tasks, such as writing a check and making change for a purchase.

Reported depressive symptomatology as reported on the CES-D scale was available for 44 caregivers, allowing an examination of the association between self-reported symptoms of depression and different types of judgment errors. None of the bivariate correlations between CES-D scores and positive judgment errors, negative judgment errors, and total number of judgment errors exceeded .2 or was statistically significant for the total sample or for spousal or child caregivers alone.

**DISCUSSION**

This represents the first investigation to determine the degree of caregiver bias in predicting the capacity of a patient with AD to perform a broad array of tasks that are required for independent daily living. Factors associated with different types of caregiver/performance–based discrepancies were also examined.

The obtained pattern of results is consistent with the notion that caregivers are extremely accurate in predicting the AD patient’s functional performance on tasks such as telling time, identifying currency, counting currency, and using eating utensils in patients who did not evidence any objective functional deficits on the DAFS. In contrast, caregivers appeared to have difficulties in *overestimating* the functional capacity of AD patients who demonstrated actual functional impairment on formal testing. Specifically, a majority of caregivers incorrectly believed that the patient was able to tell time, identify currency, count currency, make change for a purchase, or utilize eating utensils, despite the fact that patients exhibited significant objective functional deficits in these areas.

The tendency of caregivers to underestimate actual functional deficits was not related to any patient variables such as age or education. Similarly, caregiver variables such as reported levels of depression or relation to the patient were not related to a tendency to overestimate or to underestimate functional capacity. Caregivers of AD patients with higher MMSE scores tended to overestimate functional capacity, suggesting that patients with more intact cognitive and/or memory function may appear to their caregivers better able to perform different functional activities than may be actually the case. Adult children caregivers of AD patients tended to exhibit more judgment errors as a whole than did caregivers who were spouses. Persons caring for their parents were particularly inaccurate in assessing patients’ ability to write a check or to make change for a purchase, presumably because they may have less opportunity than spouses in observing these particular behaviors on a day-to-day basis. Indeed, post hoc analyses indicated that adult children who spent less than twenty hours per week in caregiving roles were more inclined to make at least one judgment error than those who spent more time in the caregiving role.

The finding that caregivers as a whole tended to overestimate the functional capacity of AD patients who exhibited functional deficits on the DAFS is in contrast to previous findings using the DAFS that indicated caregivers, particularly those with high perceived burden, tend to underestimate the AD patient’s functional performance (Mangone et al., 1993; Zanetti et al., 1999). It is postulated that the differences between the current and previous investigations
may stem from differences in the nature and type of caregiver and patient measures employed. Previous studies required caregivers to make rather global judgments regarding a patient’s functional capacity, such as the patient’s ability to use money and communication and shopping skills. These judgments require caregivers to subjectively define problem behaviors that constitute a particular problem for the patient within a particular functional domain. For example, a caregiver might judge that the patient has difficulties in using money because he has previously lost his wallet or made a poor investment or simply because he has lost interest in paying bills. Similarly, the failure to convey a telephone message or getting lost on the way to the market may be viewed by caregivers as deficits in functional abilities such as using the telephone and shopping skills rather than reflecting other cognitive deficits or loss of motivation. It is therefore not surprising that some caregivers in these studies identified the presence of functional deficits among AD patients who have no observable functional deficits upon direct examination. It was for this reason that caregivers were asked to make judgments regarding specific functional performance that could be directly contrasted with the patient’s performance on the DAFS. This allowed for a more direct comparison between caregivers’ judgments and the results of objective functional assessment.

In contrast to previous investigations which found a relationship between the level of caregiver reported burden and a tendency to overestimate the extent of functional impairment, caregiver distress, as measured by the CES-D, was not related to positive or negative caregiver bias in the current study. However, it should be noted that in the study by Zanetti and colleagues (1999), reported caregiver burden, rather than depression, was related to the tendency to overestimate functional disability. This raises the possibility that caregivers who feel overwhelmed in the caregiver role may perceive more global functional deficits than might otherwise be the case. Unfortunately, measures of perceived caregiving burden were not available in the present investigation to determine the impact of this distress on individual task performance.

Although somewhat speculative, we hypothesize that specific functional activities, such as counting currency and making change, may be less susceptible to close monitoring by caregivers, which may have resulted in the tendency of this sample to overestimate these functional abilities. It is less clear, however, why some caregivers did not recognize deficits in more easily identifiable areas, such as ability to tell time on a clock with hands and eating skills.

There are several limitations of the current study that should be addressed. First, the current sample consisted of a relatively modest number of mildly to moderately impaired AD patients who exhibited functional impairment on one or more subtests of the DAFS. With regard to lower order functional abilities such as telling time, identifying currency, and eating skills, the vast majority of AD patients performed well on the objective DAFS measure. As a result, the absolute number of caregivers overestimating functional ability was in many cases quite modest. Future work should determine whether caregivers’ overestimation of functional capacity in a number of different areas can be replicated among a larger population of AD patients with a greater range of disease severity and functional deficits. In addition, measures of both caregiver burden and caregiver depression should be obtained in future work to address their comparative impact on specific functional judgments. A further limitation of the current investigation is the lack of an absolute “gold standard” as to the presence or absence of functional impairment. While the DAFS has excellent face and content validity (Loewenstein & Mogosky, 1999), all performance-based measures assess specific requisite skills in a contrived setting which may not fully capture the essence and complexities of all factors which affect real-world behaviors.

The finding that the children of AD patients may be more susceptible to judgment errors regarding functional status than spousal caregivers suggests that the accuracy of caregiver judgments needs to be further investigated. The interaction of other variables, such as gender of the patient and caregiver as well as the caregiver’s role, likely play an important role in the perceptions of functional abilities. In our clinic, Mintzer and colleagues (1992) previously demonstrated that Spanish-speaking AD patients rely on daughters as caregivers while English-speaking AD patients rely more on spousal caregiving to provide primary care for a demented parent within the home. The influence that cultural considerations have on the recognition of specific cognitive deficits is an important area requiring further research.

Considered with previous research, it appears that targeted questions for caregivers about the ability of a patient to perform specific functional activities of daily living may be more uniform and preferable to global judgments that may be more susceptible to individual interpretation. Even when specifically asked to rate the patient’s performance on discrete observable functional skills, there is still the tendency of caregivers to minimize difficulties on those tasks which are not as susceptible to day-to-day observation.
Errors in caregiver judgment may reflect incorrect attributions (i.e., the patient’s unwillingness is tantamount to the inability to perform a task), positive or negative reporter biases, or simply a limited opportunity of the caregiver to observe certain functional abilities. This study suggests that the nature of the specific functional tasks employed and the relationship of the caregiver to the patient all influence the accuracy of specific caregivers’ judgments of functional impairment.

Acknowledgment

Address correspondence to David A. Loewenstein, PhD, University of Miami Department of Psychiatry, Mount Sinai Medical Center, 2nd Floor MRI Bldg., 4300 Alton Rd., Miami Beach, FL 33140. E-mail: dloewenstein@worldnet.att.net

References