Strategies Used by Families to Simplify Tasks for Individuals with Alzheimer's Disease and Related Disorders: Psychometric Analysis of the Task Management Strategy Index

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Strategies Used by Families to Simplify Tasks for Individuals With Alzheimer’s Disease and Related Disorders: Psychometric Analysis of the Task Management Strategy Index (TMSI)

Laura N. Gitlin, PhD, Laraine Winter, PhD, Marie P. Dennis, PhD, Mary Corcoran, PhD, OTR/L, Sandy Schinfeld, MPH, Walter W. Hauck, PhD

Purpose: Little is known about the specific behavioral strategies used by families to manage the physical dependency of persons with Alzheimer’s disease and related disorders (ADRD). This study reports the psychometric properties of the Task Management Strategy Index (TMSI), a measure designed to identify actions taken by caregivers to simplify everyday self-care tasks for persons with ADRD. Relationships between use of these strategies and caregiver and care-recipient characteristics were also examined. Design and Methods: A pool of 20 items was developed and initially tested with 202 family caregivers (Sample 1) recruited for a dementia-management intervention study. Principal axis factor analysis was performed to determine scale structure. Convergent and discriminant evidence was examined using Pearson correlation and multiple regression analyses with a separate sample of 255 family caregivers (Sample 2) recruited for the Philadelphia site of the National Institutes of Health multisite initiative, Resources for Enhancing Alzheimer’s Caregiver Health. Results: Exploratory principal axis factoring yielded one general factor accounting for 60.2% of variance in the first sample. Nineteen items, loading at .3 or above, constituted the final scale (Cronbach’s alpha = .81 in Sample 1 and .74 in Sample 2). In Sample 2, TMSI scores were significantly associated with greater functional dependency of ADRD patients, high self-efficacy, and greater use of positive coping strategies. As expected, caregiver upset with disruptive behaviors and caregiver use of criticism-based strategies were not associated with TMSI scores. Higher caregiver education was significantly associated with greater use of task strategies. Implications: Results provide preliminary evidence that the TMSI is an easily administered, reliable, valid scale. Caregivers with lower education may benefit from instruction in the use of these strategies.

Key Words: Home care, Dementia management, Caregiving

Most persons with Alzheimer’s disease and related disorders (ADRD) are cared for at home by family members (Haley & Bailey, 1999). As the disease progresses, families must contend with the person’s reduced competencies in performing self-care tasks as well as stressful behavioral disturbances such as agitation, depressive affect, or forgetful behaviors (Coen, Swanwick, O’Boyle, & Coakley, 1997; Teri, Borson, Kiyak, & Yamagishi, 1989). The expansive research on caregiving has shown that managing behavioral dysfunction is hard work that may pose grave psychological and social consequences for families (Gaugler, Davey, Pearlin, & Zarit, 2000; Pruchno, Kleban, Michaels, & Dempsey, 1990; Pruchno & Resch, 1989; Schulz, O’Brien, Bookwala, & Fleissner, 1995). The ability to sustain care at home over the course of the disease depends on how well families implement effective strategies to cope with the complexity of caring for persons with dementia day to day.

Previous research suggests that the coping mechanisms used by family caregivers consist of both mental or emotional (internal) responses and behavioral (external) actions. Although emotional and behavioral coping strategies are interrelated, most research has focused on the emotional mechanisms used by caregivers. The primacy of this one coping dimension...
in caregiver research was initially warranted given that, as Pearl and Schooler (1978) suggested, caregivers must first develop a cognitive framework for understanding a difficult situation prior to altering it through direct action. Nevertheless, little is understood about the concrete, behavioral actions caregivers assume to effectively manage daily care tasks (Miller & Butin, 2000; Van Ess Coeling, & Biordi, 2000); specifically, the way caregivers modify the external environment and structure assistance for persons with physical limitations and behavioral problems that are due to dementia remains an important but neglected area of investigation.

Contributing to the gap in knowledge of action-oriented coping strategies is the lack of an appropriate instrument to measure such caregiver strategies. One measure, the 28-item Dementia Management Scale developed by Hinrichsen and Niederehe (1994), examines three types of caregiver strategies: use of criticism, encouragement, and active management. The authors found that use of positive and criticism-type strategies contributed unique and differential variance in well-being of family members. Specifically, the use of active-management strategies (e.g., “I tried to do many things for my care recipient since he/she is no longer capable of doing them”) and criticism-oriented strategies (e.g., “I threatened my care recipient with undesirable consequences if he/she did not cooperate”) was associated with greater caregiver burden, whereas use of encouragement strategies (e.g., “I tried to help my care recipient look on the bright side of things”) was associated with less burden and desire to institutionalize. Their findings show that use of action-based strategies was associated with caregiver well-being independent of caregiver characteristics and the use of emotive-based coping mechanisms, and thus are important to consider. However, the items on this scale do not encompass the full range of behavioral actions available to caregivers, especially strategies that may be used to manage deficits in daily functioning, orientation, and awareness.

We developed the Task Management Strategy Index (TMSI) to examine caregiver use of specific behavioral actions to successfully cope with physical dependency and agitation in individuals with ADRD. Such actions as using bright colors to heighten object awareness or planning a routine to enhance activity engagement are specific strategies that caregivers may use to manage the challenges of dementia caregiving. This article evaluates the psychometric properties of the TMSI and presents preliminary evidence for the construct validity of the scale. Also, we examined whether the frequency of strategy use as measured by the TMSI differs by caregivers’ gender, race, relationship to the patient, level of education, years of providing care, or income.

This study used baseline data gathered from two separate samples. The first sample involved 202 family caregivers who were enrolled between 1993 and 1996 in a study to test a 3-month intervention to manage dementia behaviors at home. With this sample, principal axis factor analysis was performed to determine scale structure. We then examined convergent and discriminant evidence using a separate sample of 255 family caregivers recruited between 1997 and 2000 for the Philadelphia site of the National Institutes of Health’s Resources for Enhancing Alzheimer’s Caregiver Health (REACH). REACH is a 6-year multisite initiative designed to characterize and test the feasibility of the most promising innovative interventions for family caregivers of persons with ADRD. REACH sites used a common set of standardized measures and, in addition, each site collected data on measures that were specific to their particular intervention. The TMSI was specific to the Philadelphia REACH site.

The conceptual foundations of the TMSI are based in environment and aging research, particularly the competence–environmental-press framework developed by Lawton and colleagues (Lawton, 1982; Lawton, 1989; Lawton & Nahemow, 1973), recent research on the role of the physical and social environment on dementia-related behaviors, and an understanding of task structure and its simplification as articulated in the field of occupational therapy. The competence–environmental-press framework suggests that persons with reduced competencies are particularly sensitive to their environments. When the individual’s capabilities are incongruent with external demands, negative adaptive responses occur. Recent research in hospital and residential settings shows that modifications to the physical and social dimensions of environments result in reduced agitation and delirium and higher functioning among older patients (Inouye, Bogardus, Baker, Leo-Summers, & Cooney, 2000; Namazi & Johnson, 1991; Namazi, Rosner, & Calkins, 1989). With respect to the home, various physical conditions have been linked to injuries, poor daily functioning, and disorientation (Gitlin et al., in press; Mann, Hurren, Tomita, Bengali, & Steinfeld, 1994).

The dynamic relationship between persons and environments is evident in the performance of everyday tasks (Barris, 1987). A task consists of a sequence of actions within an environment to satisfy either an external social requirement or an internal motive to be competent (Levine & Brayley, 1991). Characteristics of a task include its complexity (the number of steps involved or familiarity of objects necessary for the task), its temporal boundaries (time limited, such as preparing a meal, or continuous, such as going to school), its structure, and its purpose (Barris, Kielhofner, Levine, & Neville, 1985). As such tasks can be modified by increasing, condensing, or omitting steps in a sequence or by increasing or decreasing challenge to a person’s cognitive, sensory–motor, social, and emotional abilities (Christiansen, 1991; Watson, 1997). Simplification of the complexity and structure of tasks is an important clinical strategy to help persons with dementia participate in daily self-care (Corcoran & Gitlin, 1991).

Applied to the context of the home, family caregivers engage in an implicit process of analyzing the
needs and requirements of the person with dementia, his or her capabilities, and the physical and social environment in which performance of everyday tasks occurs. Previous research shows that caregivers, sometimes through trial and error, modify daily tasks and the home environment to compensate for deficits (Olsen, Ehrenkranz, & Hutchings, 1993; Pynoos & Ohta, 1991). For example, observations of caregiver homes show purposeful rearrangement; removal or placement of objects; use of visual cues including labels, written instructions, or memory boards; and use of control centers or purposeful grouping of objects to maximize participation. The items on the TMSI were gleaned from observation research, an ecology of aging perspective, and clinical techniques of occupational therapists. The items represent caregivers’ primary control strategies used to cope with deficits and behavioral problems common at the moderate stage (Schulz, Heckhausen, & O'Brien, 1994). That is, each item refers to a particular action that is designed to change the external environment by simplifying task requirements and a person’s interactions with his or her environment. This is in contrast to secondary control strategies that refer to cognitive approaches to managing stressful situations. TMSI scores reflect behavioral actions that are designed to compensate for functional loss.

Methods

Recruitment and Study Procedures

Participants for this study were drawn from two separate samples: the dementia management intervention study, referred to as Sample 1, and the Philadelphia REACH site, referred to as Sample 2. Sample 1, described in more detail elsewhere (Gitlin, Corcoran, Winter, Boyce, & Hauck, 2001) was composed of 202 family caregivers who were recruited from local social service and medical centers and through media announcements in the Philadelphia region between 1993 and 1996. To participate in the study, caregivers had to live with a family member with a medical diagnosis of ADRD, report that they were the primary caregiver, report at least one limitation in basic activities of daily living (ADLs; Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963) or two dependencies in instrumental activities of daily living (IADLs) of the care recipient (Lawton & Brody, 1969), and report difficulty managing either IADL or ADL assistance or a dementia-related behavior (e.g., wandering, agitation). Caregivers of persons who were bedridden and nonresponsive to touch or the physical environment were excluded from participating in the study. These criteria were designed to obtain a sample of caregivers who were confronted with difficulties managing functional dependence and behavioral difficulties, the target of the intervention for this study. It also excluded caregivers of persons for whom an environmental adaptation would have relatively no benefit to either caregiver or care recipient given the severe stage of the dementia.

Sample 2 involved 255 family caregivers who were recruited primarily from the Philadelphia Corporation for Aging (PCA), the area agency on aging for Philadelphia County, and secondarily from media announcements. PCA sent a letter and study brochure to potential eligible caregivers who were identified from an initial review of clients on a waiting list for in-home services. Caregivers who were interested in participating in the study were invited to either contact the research team by telephone or mail a self-addressed, stamped response card. Caregivers who contacted the research team (N = 413) were then interviewed by telephone to determine study eligibility and willingness to participate. To participate in the study, caregivers had to meet the same criteria as those stated above for Sample 1. In addition, caregivers had to be at least 21 years of age, have been caregiving for at least 6 months and provide at least 4 hr of care each day. Caregivers were not eligible if they did not live with the care recipient, were undergoing chemotherapy or radiation therapy for cancer, had had more than three hospitalizations in the past year, or planned to place the care recipient in a nursing home within the next 6 months. Also, care recipients had to have a Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975) score less than 24 or have a documented diagnosis of dementia.

Of the 413 persons who initially contacted us for the REACH study, 290 caregivers were eligible for study participation and 255 (88%) were willing to participate. A comparison of these 255 caregivers enrolled in the study to the 35 caregivers who were eligible but not willing to participate indicated no large or statistically significant differences with regard to caregiver gender, relationship to the care recipient, age, years of caregiving, reported number of IADL and ADL dependencies, or care recipient’s gender and age.

Similar procedures were followed for both Samples 1 and 2. Interested caregivers contacted the research staff by telephone or postcard and were administered a telephone interview by a trained interviewer to determine study eligibility. Trained interviewers then met with eligible caregivers in their home, obtained signed informed consent from the caregiver using an approved Institutional Review Board consent form, and conducted the baseline interview. The baseline interview for Sample 1 involved a standard set of questions pertaining to caregiver health and care-recipient functioning, overall caregiver well-being, and the task-management–strategy items. The interview was approximately 1.5 hr in length.

For Sample 2, the REACH baseline core battery and several measures specific to the Philadelphia site, including the 20 items of the Task Management Scale, were administered. The REACH core battery measures have been described in detail elsewhere (Wisniewski et al., 2001). They include standardized measures of caregiver and care-recipient health and functioning and caregiver well-being. The site-specific task-management items were administered fol-
lowing the REACH core battery measures so that caregivers were asked these questions at the same point in the course of the interview. The entire interview (core battery and site-specific measures) took approximately 3 hr to administer. Given that the measures used in Sample 1 as well as those of the REACH core battery were unrelated to task management, we believe there was no order or carry-over effect with other instruments. The analyses reported for both samples used baseline data prior to initiating the interventions. Only the convergent and discriminant measures from REACH (Sample 2) that are relevant to the study here are described below.

**Study Predictions**

Central to the validation effort is the basic idea that persons who score high on a measured construct should also score high on other indicators of that construct. To explore the convergence of an indicator related to the construct of task management, we used one measure, caregiver use of positive dementia-management strategies (Hinrichsen & Niederehe, 1994). We expected that more frequent use of task-based strategies would be positively associated with the use of other constructive action-oriented strategies.

We also selected two self-report measures that theoretically should be empirically related to task management: caregiver report of care-recipient dependence in ADLs and caregiver self-efficacy. We expected the use of action-oriented or task-based strategies to be associated with the care recipient’s dependence in ADLs as reported by the caregiver such that higher use of such strategies would be related to greater physical dependency. This relationship is logical in that the strategies represented in the index are designed to offset or manage functional dependence. We also expected that more frequent use of task strategies would be associated with the caregivers’ sense of self-efficacy. Previous research has shown a strong association between the use of different coping mechanisms and positive appraisals of efficacy (Gignac & Gottlieb, 1996).

Likewise, the construct under investigation should be distinguished from theoretically distinct constructs and unrelated phenomena. To test the divergence of task-management strategies from other constructs, we examined measures of caregiver use of criticism-based strategies to manage dementia and caregiver upset with disruptive behaviors. We expected that there would be no statistically significant association between TMSI scores and the use of strategies that are not supportive of daily functioning (e.g., yelling at care recipient) or with a caregiver’s emotional responses to troublesome behaviors.

**Measures**

The following measures were used in the validation analyses and pertain to Sample 2. The reported alphas are from that sample.

**Care-Recipient Predictor Measure.**—Functional dependence was measured using the REACH core measure of ADL dependence (Katz et al., 1963). Caregivers were asked if their care recipient needed help (1 = yes, 0 = no) in seven ADLs (bathing, eating, dressing upper body, dressing lower body, toileting, grooming, and getting in and out of bed). A total score was computed by summing the number of items for which the care recipient required help. We refer to this index as ADL dependence (Cronbach’s α = .83).

**Caregiver Predictor Measures.**—Self-efficacy is a construct that concerns beliefs about one’s competence to successfully perform discrete or specific tasks. Self-efficacy beliefs are domain specific and may vary among the different activities of caregiving (Haley et al., 1996; McAvay, Seeman, & Rodin, 1996). To measure self-efficacy in managing dependence in ADLs, we used Haley and colleagues’ (1996) approach in which caregivers rate their level of confidence in handling discrete activities. For each reported area of ADL dependence, caregivers were asked to rate their confidence in managing the particular self-care activity using a 5-point scale ranging from 0 (not at all confident) to 4 (extremely confident). An average ADL self-efficacy score was created by summing responses and dividing by the number of items. Higher scores on ADL self-efficacy indicate greater confidence in handling dependency. Because sample sizes differ depending on the number of deficit areas, it was not possible to compute a Cronbach’s alpha for this measure.

We also examined the relationship of the TMSI to the subscales of Hinrichsen and Niederehe’s (1994) Dementia Management Scale. A short form of this 28-item scale had been created by selecting the four items with the highest factor loadings on each of the original three factors. Data from this 12-item version were submitted to principal axis factoring using Sample 2. This yielded a two-factor solution accounting for 37.8% of the variance (Winter et al., 2000). One factor, which we refer to as positive dementia-management strategies, is composed of items reflecting actions taken by caregivers that were facilitative or enabling (e.g., “I tried to arrange my care recipient’s [CR] environment to safeguard him/her against causing problems, getting into trouble or endangering him/herself” or “I tried to divert my CR’s attention when he/she began to feel upset”). The second factor reflects criticism-based strategies (e.g., “I criticized or scolded my CR to try to prompt better behavior with him/her” or “I threatened my CR with undesirable consequences if he/she did not cooperate”). The response format for these subscales is a 5-point Likert scale with measurements ranging from 1 (never) to 5 (always). Higher scores reflect greater use of strategies. Cronbach’s alpha was .63 for positive strategies (seven items) and .69 for criticism strategies (five items). Winter and colleagues (2000) found that the two factors were differentially associated with the number of care-recipient behavior prob-
lems, ADL deficits, and caregiver emotional responses. That is, caregiver use of positive strategies was associated with more ADL deficits and problem behaviors, whereas use of criticism strategies was associated with greater caregiver upset and lower self-efficacy.

We also examined the relationship of TMSI scores to caregiver upset with disruptive behaviors. We used the Disruptive Behaviors subscale of the Revised Memory and Behavior Problem Checklist, which consists of eight behaviors (e.g., agitation, destroying property, embarrassing behaviors, etc.; Teri et al., 1992). For each of the behaviors that occurred, caregivers were asked to rate their level of upset on a scale ranging from 0 (no upset) to 4 (very upset) with “no upset” assigned for behaviors that were not manifested. An average upset score was computed by summing responses and dividing by the number of upset responses. Cronbach’s alpha was .63.

Basic background characteristics of family caregivers in both study samples included age, education, and number of years caregiving, collected as continuous variables, and gender, relationship to person with dementia (spouse, nonspouse) and race (White, non-White). We also examined the relationship between caregiver income and TMSI scores.

Dependent Measure. Initially 20 items were developed to reflect a range of task-management strategies. However, one item, “Do you use bibs, children’s toys or other items for child care,” was eliminated from the analyses because of difficulty interpreting caregiver responses. For some caregivers, use of these objects represented a positive and helpful strategy, whereas for others, this was considered a negative and potentially harmful strategy. Given that items had initially been selected for inclusion that reflected constructive strategies that would benefit both caregiver and care recipient, we decided to exclude this item from the analyses. Thus, we measured the use of task-management strategies with 19 items using a 5-point Likert scale ranging from 1 (never) to 5 (always). Caregivers indicated how often they used each strategy. The items represent discrete task-simplification strategies tapping such areas as visual and tactile cueing, simplifying routines, communication techniques, and removing or rearranging objects.

Statistical Analyses

The first analytic step was to examine the distributions of the individual items of the TMSI. Descriptive statistics such as frequencies, measures of central tendency, and variance were used to characterize both Samples 1 (N = 202) and 2 (N = 255) and TMSI items. Next, to begin the process of construct validation, we examined the underlying factor structure of the 19 task-management–strategy items (Anastasi, 1988; Messick, 1989). Because we did not assume perfect reliability of all 19 items, we submitted the item ratings of Sample 1 (N = 202) to an exploratory principal axis factor analysis. According to Weiss (1970, 1971), principal axis factoring, though similar to principal components factor analysis, uses a reduced correlation matrix with $R^2$ as an estimate of common variance, thus excluding unique and error variance. Using this approach then, there was no need to replicate the derived factor structure with our second sample from the REACH study (N = 255). Cronbach’s alpha was used to assess the internal consistency of the TMSI for both study samples.

Next, using Sample 2, we explored preliminary convergent and discriminant evidence to further a construct interpretation of our TMSI measure using both Pearson correlation coefficients and multiple regression analyses (Switzer, Wisniewski, Belle, Dew, & Schulz, 1999). Convergent validity was assessed using one care-recipient variable (ADL dependence) and two caregiver variables (ADL self-efficacy and positive-strategy use). Discriminant validity was assessed with two caregiver variables (criticism-based–strategy use and upset with disruptive behaviors). We then used multiple regression analysis to examine the relative contribution of each of these predictor variables to the caregivers’ overall task-management–strategy use. Finally, to examine differential use of task-management strategies by race (White, non-White), gender, caregiver relationship (spouse, nonspouse), education, and income, we used multiple regression analysis in which the dependent variable was the TMSI total scores of Sample 2 (N = 255).

Results

Sample Characteristics

Table 1 presents the sample characteristics of both samples. In Sample 1 caregivers (N = 202) were primarily female, nonspouses, and 61 years of age with at least 13 years of education and with incomes ranging between $30,012 and $36,000 at the time of the study. Whites constituted 74% of the sample, and 24% were African American. The average length of caregiving was 3 to 4 years. Care recipients were mostly female, 71 to 86 years of age (Table 1).

Similarly, in Sample 2, the Philadelphia REACH caregivers were primarily female, nonspouses, and 61 years of age with at least 12 years of education and with annual incomes ranging between $15,000 and $19,999. Whites and African Americans each constituted 48% of Sample 2. The average length of caregiving was 4 years. Care recipients were primarily female with an average age of 81 years (Table 1).

Table 2 presents the means and standard deviations for each care recipient and caregiver predictor variable using Sample 2. As shown, care recipients required help with an average of four (out of seven) ADLs (Table 2). Caregivers demonstrated only a little upset with disruptive behaviors and a moderately high level of self-efficacy in managing dependence. They used both positive and negative management strategies.

Principal Axis Factor Analysis

Using Sample 1, we submitted caregiver ratings of 19 task-management–strategy items to an explor-
always used a strategy. As shown in Figure 1, on the
rarely used a strategy and 1

Table 1. Background Characteristics of Study Samples

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample 1 (N = 202)</th>
<th>Sample 2 (N = 255)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td><strong>Caregiver</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>28.2</td>
<td>25.5</td>
</tr>
<tr>
<td>Women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>74.3</td>
<td>48.2</td>
</tr>
<tr>
<td>African American</td>
<td>24.3</td>
<td>47.8</td>
</tr>
<tr>
<td>Other</td>
<td>1.5</td>
<td>3.9</td>
</tr>
<tr>
<td><strong>Relationship to</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care Recipient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>24.1</td>
<td>38.8</td>
</tr>
<tr>
<td>Nonspouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>60.79</td>
<td>13.87</td>
</tr>
<tr>
<td>Education</td>
<td>13.86</td>
<td>3.05</td>
</tr>
<tr>
<td>Years of Caregiving</td>
<td>3.67</td>
<td>2.82</td>
</tr>
<tr>
<td>Income</td>
<td>6.86a</td>
<td>4.82</td>
</tr>
</tbody>
</table>

Notes: Income category = $30,012–$36,000 per year. Income category = $15,000–$19,999 per year.

Table 2. Means and Standard Deviations for Care-Recipient and Caregiver Predictor Variables (Study Sample 2, N = 255)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care Recipient Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADLs</td>
<td>3.90</td>
<td>1.72</td>
</tr>
<tr>
<td>Caregiver Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADL self-efficacy</td>
<td>4.27</td>
<td>0.93</td>
</tr>
<tr>
<td>Criticism-based strategies</td>
<td>15.98</td>
<td>3.15</td>
</tr>
<tr>
<td>Positive strategies</td>
<td>27.55</td>
<td>4.28</td>
</tr>
<tr>
<td>RMBPC behavior upset</td>
<td>4.92</td>
<td>5.17</td>
</tr>
</tbody>
</table>

Notes: ADL = activity of daily living; RMBPC = Revised Memory and Behavior Problem Checklist.

Table 3. Factor Loadings of Task-Management–Strategy Items (Sample 1)

<table>
<thead>
<tr>
<th>Factor Loading</th>
<th>Items Included (How often do you:)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.87</td>
<td>Introduce an activity that uses the same motion over and over such as sweeping, raking, dusting?</td>
</tr>
<tr>
<td>.84</td>
<td>Give short instructions (2 or 3 words)?</td>
</tr>
<tr>
<td>.79</td>
<td>Use pictures or labels to identify objects in rooms?</td>
</tr>
<tr>
<td>.75</td>
<td>Keep talking to CR when he/she is doing something so he/she knows what to do?</td>
</tr>
<tr>
<td>.59</td>
<td>Place items out in the order in which they need to be used by CR?</td>
</tr>
<tr>
<td>.57</td>
<td>Provide rest breaks or quiet time for CR?</td>
</tr>
<tr>
<td>.57</td>
<td>Place your hand over CR’s hands to guide him/her through an activity?</td>
</tr>
<tr>
<td>.55</td>
<td>Take CR’s arm to get him/her to go somewhere with you?</td>
</tr>
<tr>
<td>.53</td>
<td>Keep things that CR likes to use, look at, or touch in easy reach?</td>
</tr>
<tr>
<td>.52</td>
<td>Put items that are needed by CR in a place where he/she will notice them?</td>
</tr>
<tr>
<td>.51</td>
<td>Show CR what to do by demonstrating the activity?</td>
</tr>
<tr>
<td>.51</td>
<td>Put away items that aren’t needed for what CR is doing?</td>
</tr>
<tr>
<td>.51</td>
<td>Use pictures to help CR remember what to do?</td>
</tr>
<tr>
<td>.50</td>
<td>Use bright color or signs to help CR notice an item?</td>
</tr>
<tr>
<td>.48</td>
<td>Use clothing that is easy to put on or take off?</td>
</tr>
<tr>
<td>.46</td>
<td>Have CR do simple chores such as folding laundry, making beds, or drying dishes?</td>
</tr>
<tr>
<td>.42</td>
<td>Try to ignore CR’s mistakes?</td>
</tr>
<tr>
<td>.41</td>
<td>Plan a routine for CR and try to stick to it?</td>
</tr>
<tr>
<td>.35</td>
<td>Use intercom or other monitoring device to supervise CR when he/she is in another room?</td>
</tr>
</tbody>
</table>

Notes: Participants were told: Here are some ways you may help your (care recipient) throughout the day. Please tell me how often you use these ways of helping your (care recipient): (1) Never, (2) Rarely, (3) Sometimes, (4) Often, (5) Always. CR = care recipient.

To examine the average number of strategies used by caregivers in Sample 2, we collapsed the response format of the 19 TMSI items such that 0 = never or rarely used a strategy and 1 = sometimes, often, or always used a strategy. As shown in Figure 1, on the basis of this dichotomous rating, we found that caregivers used an average of 10.5 strategies (sometimes, often, or always). Only 1 (0.4%) caregiver reported either rarely or never using a strategy, whereas almost 60% of the caregivers reported using close to 11 strategies (sometimes, often, or always).

Frequency of Use of Task-Management Strategies

To examine the average number of strategies used by caregivers in Sample 2, we collapsed the response format of the 19 TMSI items such that 0 = never or rarely used a strategy and 1 = sometimes, often, or always used a strategy. As shown in Figure 1, on the

Relationship of TMSI and Caregiver and Care-Recipient Characteristics

To initiate the validation process, we examined the relationship between the 19-item factor-derived TMSI and characteristics of the caregiver and care recipient using Sample 2. We anticipated that families providing assistance to persons with more functional loss as measured by the number of physical dependencies would score higher on the TMSI. As discussed earlier, each item of the TMSI reflects a strategy to offset the consequences of memory loss and functional dependence. We also expected that higher self-efficacy scores and caregiver use of positive dementia-management strategies would be associated with greater use of task-management strategies. Conversely, we did not expect TMSI scores to be significantly associated with caregiver upset with disruptive
behaviors or caregiver use of criticism as a strategy to manage dementia-related behaviors.

With regard to care-recipient characteristics, we found, as anticipated, that TMSI scores were significantly associated with ADL dependence in the expected direction at the bivariate level. That is, greater use of task strategies was associated with more ADL deficits.

With regard to caregiver characteristics, as expected, TMSI scores were significantly associated with higher ADL self-efficacy and positive-strategy use. Also, we confirmed that TMSI scores were not significantly associated with caregiver use of criticism or caregiver upset with disruptive behaviors (Table 4).

Given that the predictor variables were intercorrelated, we used multiple regression analysis to determine the independent contributions of each predictor variable to total TMSI scores. For this analysis we entered ADL dependence to control for care-recipient status and the four caregiver self-report variables (self-efficacy, positive-strategy use, criticism-based strategy use, and caregiver upset with disruptive behaviors). As shown in Table 5, several factors were significantly associated with TMSI scores, \( R^2 = .29, F(5,217) = 18.04, p = .0001 \). Specifically, care recipients’ ADL dependence was significantly related to use of task-management strategies (\( t = 2.09, p = .038 \)), as was ADL self-efficacy (\( t = 2.15, p = .032 \)) to caregivers’ use of positive dementia-management strategies, which made the strongest independent contribution (\( t = 7.88, p = .0001 \)). Criticism-based strategy use and upset with disruptive behaviors did not significantly contribute to task-management–strategy use (Table 5).

### Differential Use of Task Management Strategies

Finally, we wanted to determine if the use of task strategies differed according to basic characteristics of the caregiver including gender, race, and relationship to the care recipient. Also, we wanted to determine whether caregiver education level, income, and number of years taking care of the care recipient would significantly influence task-management–strategy use. Using Sample 2, the results of a multiple regression analysis revealed that, taken together, caregiver characteristics were significantly associated with use of task-management strategies, although minimal variance was explained (\( R^2 = .06, F(7,246) = 2.33, p = .03 \)). Caregiver level of education made the strongest independent contribution (\( t = 2.24, p < .026 \)), such that caregivers with more education tended to use more task-management strategies (Table 6).

### Discussion

This article represents the first attempt to evaluate the psychometric properties of the TMSI. The TMSI is a simple to administer 19-item self-report measure. These initial psychometric analyses suggest that it is a valid and internally consistent instrument for appraising the specific behavioral strategies used by family caregivers to manage the complex behaviors and functional dependence of individuals with ADRD who are living at home. This is an innovative measure of the environmental context of care with particular emphasis on the constructive use of task-simplification techniques. The techniques represented by the TMSI items are designed to reduce the number of steps involved in a task, clarify the sequence of steps to be taken, or eliminate the negative repercussions of minor errors. Therefore, they reflect primary control strategies that may be used by caregivers to regulate deficit areas of persons with dementia, particu-
We did not expect action-oriented behaviors to be directly associated with potentially harmful strategies or a caregiver’s negative affect.

We found no differences in the use rates of TMSI strategies between male and female, White and non-White, and spouse and nonspouse caregivers. However, caregivers with higher education appeared to modify tasks as a caregiving strategy more often than did caregivers with lower education. Possible explanations include greater exposure to information about simplifying activities for individuals with dementia or greater use of active child-management strategies that have been adapted for the dementia caregiving situation.

Given the above findings, conducting a full-scale validation study of the TMSI may be a productive research endeavor to further establish the utility of this scale. The validation analyses presented here are limited in that they were based on cross-sectional data and caregiver self-report. Stronger validation needs to be established through a longitudinal study with the TMSI. For example, a study that recruited caregivers of individuals at the early stages of the disease and followed them over time would provide further evidence as to the natural history of skill development as it occurs throughout the trajectory of caregiving. We would expect that caregivers would not use the strategies represented on the TMSI when caring for persons at the early and end stages of the disease. Also, it is of importance to test the sensitivity of the TMSI to detect change in the frequency of use of these strategies as a consequence of participation in education or skill-training interventions. This would provide stronger evidence as to its validation and extend its utility for intervention research. Furthermore, it would be important to determine the predictive validity of the TMSI by examining its relationship with caregiver well-being over time.

Although use of self-report measures may pose a risk of response bias (such that caregivers might tend to overestimate their use of constructive strategies or respond similarly per measure), qualitative examination of patterns of responses on the various measures did not reveal any tendency in this direction. In view of the fact that the items of the TMSI were administered by trained interviewers (vs. self-administration), it is possible that the caregivers may have been more attentive to the nature and content of each discrete item and, thus, less likely to exhibit such bias. Nevertheless, it would be important for future research to examine the extent to which self-report use of task-management strategies is consistent with ratings obtained by skilled observers who would also be able to observe whether such strategies were actually implemented correctly and effectively.

Table 5. Multiple Regression Model of Care-Recipient and Caregiver Factors and Task-Management Strategies (Sample 2, N = 255)

<table>
<thead>
<tr>
<th>Source</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care Recipient Factor ADL dependence</td>
<td>.123</td>
<td>2.09</td>
<td>&lt;.038</td>
</tr>
<tr>
<td>Caregiver Factor ADL self-efficacy</td>
<td>.129</td>
<td>2.15</td>
<td>&lt;.032</td>
</tr>
<tr>
<td>Criticism strategies</td>
<td>-.106</td>
<td>-1.74</td>
<td>.083</td>
</tr>
<tr>
<td>Positive strategies</td>
<td>.467</td>
<td>7.88</td>
<td>&lt;.000</td>
</tr>
<tr>
<td>RMBPC behavior upset</td>
<td>-.019</td>
<td>-.30</td>
<td>.765</td>
</tr>
</tbody>
</table>

Notes: ADL = activity of daily living; RMBPC = Revised Memory and Behavior Problem Checklist.

N = 223.

Using principal axis factoring and a Kaiser (1960) criterion of .30 or higher factor loading as a cutoff in Sample 1, we retained all 19 items of the scale. In both Samples 1 and 2, high internal consistency was obtained. As initial evidence of its construct validity, we found in Sample 2 that use of TMSI strategies was associated with a care-recipient characteristic, dependence in ADLs. This suggests that this index is measuring changes in the home environment that one might expect to occur at the moderate stage of dementia in which there is increased need for assistance with physical dependence. Also, TMSI scores were associated with caregiver well-being in the expected direction as measured by ADL self-efficacy. The data suggest that this index measures active-control strategies, the use of which is associated with caregivers’ reported self-confidence in managing ADLs. Moreover, TMSI scores were highly related to the use of positive strategies, an index most closely associated with the underlying construct of task simplification. In contrast, and as expected, TMSI scores were not associated with the use of criticism-type strategies such as yelling or with a caregiver’s affective stance toward disruptive behavioral occurrences. We did not expect action-oriented behaviors to be particularly at the moderate to severe stages of the disease. They also represent actions caregivers take to simplify task requirements. For example, individuals at the moderate stage of dementia often experience shortened attention span. Thus, strategies to redirect attention to the task (such as verbal cues) may be adapted by caregivers to promote independence.

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building interventions. For example, in Sample 2, caregivers reported using 11 of the 19 strategies at least some of the time. Using this tool to identify the strategies not in use or not used frequently may be the starting point for intervention.

References

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