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Assessing family caregiver skill in managing behavioral symptoms of Alzheimer's disease

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Abstract

Objectives—This measurement study operationalized family caregiver skill in managing behavioral symptoms associated with Alzheimer's disease (AD) by testing a Caregiver Assessment of Behavioral Skill-Self Report measure (CAB-SR).

Method—A cross-sectional design was used. Caregivers had a family member with possible/probable AD, resided at home with the care recipient and provided the majority of care (N=82). The mail-administered assessment included the CAB-SR and other care recipient and caregiver measures.

Results—Preliminary CAB-SR reliability and validity were determined, using reliability, factor analytic and correlational procedures.

Conclusion—This measure provides a preliminary assessment of caregiver skill in managing behavioral symptoms of AD and shows promise for use in research and clinical intervention settings.

Keywords

caregiver assessment; caregiver effectiveness; measurement development

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Introduction

Alzheimer's disease (AD), a common age-related neurodegenerative disorder, currently affects at least five million Americans. Progressive impairment of care recipient cognition and physical function and the development of behavioral disturbances place emotional, physical and financial demands upon family caregivers (National Alliance for Caregiving & AARP, 2009). Although medications are being tested for the treatment of AD, such treatments do not reverse disease progression, hence requiring that family members provide a broad range of mental and physically supportive interventions over time.

Studies suggest that skill-based caregiver interventions may be more effective than information and support interventions (Sörensen, Pinquart, & Duberstein, 2002). Yet skill-based interventions have been limited by the absence of clear definitions of caregiver skill, valid and reliable measures, and a match between the skill, its measurement, and most appropriate outcomes (Czaja, Eisdorfer, & Schultz, 2000; Sörensen, Pinquart, & Duberstein, 2002). Greater attention needs to be given to defining caregiver skill, designing appropriate measures that assess skill, and targeting specific skill-based interventions that are more likely to improve impaired family member and caregiver outcomes (Schulz, 2000).

Prior research, primarily from the field of nursing, has identified other concepts similar to family caregiver skill, such as 'caregiving effectiveness,' 'doing family caregiving well,' and 'quality of family caregiving' (Phillips, 2008; Schumacher, 2004; Smith, 1999). These researchers generally agree that any definition of caregiver skill is complex and multi-faceted. Schumacher, et al., (Schumacher, Stewart, Archbold, Dodd, & Dibble, 2000) in their work with family members and caregivers of persons with cancer noted that skillfulness involves a "combination of an art, science, and craft; develops over time and becomes well integrated and smooth with practice" (p. 194). Other qualitative research conducted by this investigative team noted that skilled caregivers could be distinguished from less skilled caregivers in at least three ways: 1) knowledge caregivers had about the Alzheimer's disease process and caregiving concerns; 2) formal and informal support received from others; and 3) personal characteristics and behaviors that were different from less skilled caregivers. The differentiating feature between skilled and less skilled caregivers was a 'transformative process' that occurred in how skilled caregivers thought, felt and responded to their impaired family member (Farran, Loukissa, Lindeman, McCann, & Bienias, 2004). Skilled caregivers were differentiated by their: provision of person-centered care which focused on care recipient needs and strengths; integration of complex and creative processes underlying care; and utilization of a broad repertoire of interventions to manage behavioral symptoms associated with AD (Farran, McCann, Fogg, & Etkin, 2009; Hellen, 1998; Kitwood, 1997).

Although these studies of caregiver skill have generally focused on the 'one-on-one' clinical application of this information, another slightly different body of literature focuses on family caregiver assessment, a related term, but one that is drawn from regulatory and reimbursement perspectives (Family Caregiver Alliance, 2006a; Family Caregiver Alliance, 2006b; Gaugler, Kane, & Langlois, 2000). This work emphasizes the importance of incorporating family caregiver assessment as a basic component into practice care settings but focuses on the political arena where government and other third party payers would recognize and pay for caregiver assessment as a part of caring for older or disabled adults (Family Caregiver Alliance, 2006a; Feinberg, 2002). Despite positive perceptions of contributions that caregiver assessment brings to practice and policy, questions and concerns have been expressed, namely that: 1) caregiver assessment might be misperceived as clinicians passing judgment on the fitness of the caregiver to provide care and raise sensitive issues (Guberman, 2006); 2) both caregivers and care recipients are vulnerable populations

and caregivers may abuse or neglect the care recipients (Maslow, 2006). If abuse is noted, confidentiality, privacy and autonomy issues might be raised concerning whose needs take precedence, and potential conflicts may evolve between care recipients, caregivers and service providers (Family Caregiver Alliance, 2006a); and 3) assessments that result in potential sanctions must be more precise than those that flag the need for clinical improvement (Kane & Kane, 2000) .

Caregivers of persons with AD face special challenges to skill development because this disease has a broad range of cognitive, behavioral, motor, and functional impairments that change over time. Behavioral symptoms of dementia (i.e., memory-related, depression, and disruptive behaviors such as agitation and aggression) have received considerable attention because of their frequency, association with caregiver distress (Danahauer et al., 2004; Teri et al., 1992) and decreased time to care recipient nursing home placement (Gilley, McCann, Bienias, & Evans, 2005). There are no known standardized measures that assess caregiver behavioral management skills of persons with AD, although existing measures assess presence of and distress with care recipient behaviors (Teri et al., 1992) and how caregivers cope with physical dependency and agitation in their impaired family members (Gitlin et al., 2002). A standardized measure of caregiver skill in managing behavioral symptoms would be useful to researchers and practitioners alike, and serve as a more effective approach for expanding caregiver skill, decreasing caregiver and care recipient stress and improving their well-being.

The conceptual foundation of the Caregiver Assessment of Behavioral Skill-Self Report (CABS-SR) is based on social cognitive theory with a particular emphasis on perceived self-efficacy (Bandura, 2002), skill-building family caregiver interventions (Sörensen et al., 2002), clinical literature concerning effective approaches in responding to persons with dementia (Algase et al., 1996; Hellen, 1998; Kitwood, 1997), and potentially non-effective caregiver approaches (Beach, et al., 2005). Social cognitive theory proposes a multifaceted causal structure that addresses both the development of competencies and regulation of action concerning cognitive, social and behavioral skill. Other factors that determine skills include anticipatory mechanisms that enable forethought, predictive knowledge and plan-fullness; instrumental thoughts about desired futures that promote behaviors; outcome expectations, vicarious outcomes and self-evaluation of one's own behaviors.

Of importance, is human agency where individuals are proactive, aspiring and have a hand in shaping their own lives (Bandura, 2002). Perceived self efficacy plays a pivotal role in social cognitive theory; and operates within a broad network of influences but is not the only determinant of actions. Perceived self efficacy is influenced by one's choice of activities, motivation, efficacy beliefs, and acquisition of knowledge upon which skills are based. Self assurance determines if persons make good use of their capabilities; and insidious doubts can overrule the best of skills. Reciprocal determination suggests that human lives are highly interdependent, transactional, and their interactions are bidirectional.

Knowledge serves as a cognitive guide for constructing complex modes of behavior (i.e., skills); and is developed from verbal instruction, observational learning, exploratory activities, and innovative cognitive synthesis of acquired knowledge (Bandura, 2002). Knowledge structures are translated into action through transformational and generative operations. Cognitive models serve as a guide for producing skilled actions and internal standards that make corrective adjustments in developing behavior proficiency. Situations are rarely alike so execution of skills must vary depending upon changing circumstances. Adaptive functions require generative conceptions that enable persons to enact skills in various ways rather than in a rigid fashion. With practice, skills become integrated and executed with ease; and once proficient modes become routinized (i.e., driving behaviors)

an individual can implement them with greater ease. If changes occur in the situation, personal efficacy is re-appraised and behavior is altered as needed by the situation.

The purpose of this study was to operationalize caregiver skill in one disease-specific area, management of behavioral symptoms associated with AD, using a caregiver self-report assessment. Participants were family caregivers of persons with possible or probable AD. Study aims were to: 1) Determine preliminary feasibility of using the Caregiver Assessment of Behavioral Skill-Self Report measure (CAB-SR), 2) Evaluate preliminary CAB-SR psychometric properties including construct validity and reliability, and 3) Examine convergent validity of this measure, using common care recipient and caregiver variables and test the following hypotheses:

- a. Caregivers whose care recipient is more impaired will have greater opportunities to develop skill in caring for their family member; therefore, the CABS-SR subscales will be associated with greater care recipient cognitive impairment and functional impairment.
- b. Caregivers who report higher levels of stress (i.e., care recipient behavioral symptoms) and burden will report lower levels of skill; while caregivers who report higher levels of positive appraisal (i.e., self efficacy and positive care recipient relationship) will report higher levels of skill.

Methods

Sample and setting

A cross-sectional design was used. Participants were recruited from a large Midwestern Alzheimer's Disease Center that provides comprehensive diagnostic evaluations for persons with AD (N=82). Study participants were family caregivers of persons who had been assessed as having possible or probable AD, using standard research criteria (McKhann, Drachman, Folstein, Katzman, Price, & Stadlan, 1984) and who met these eligibility criteria: lived with or near the impaired person, provided majority of care, reported ≥ 2 behavioral symptoms associated with AD, and were English-speaking.

The study was approved by the Rush University Medical Center (RUMC) Institutional Review Board. Caregiver recruitment was done when care recipients were seen at the Rush Alzheimer's Disease Center (RADC) for clinical diagnosis and by using a call-back list of families who were in the RADC data base. Caregiver consent to be screened was given in-person or by telephone. Written study consents were mailed, signed and returned by family caregivers.

Procedures

Caregivers completed the full CAB-SR assessment and other measures at baseline (45–60 minutes). Participants who did not return their mail questionnaire were contacted by telephone by the project coordinator and reminded to complete and return their self-report questionnaires. If participants were reluctant to complete the assessment, a telephone interview was conducted. Although all caregivers were given the opportunity to repeat the CAB-SR from 4–6 weeks after baseline to determine test-retest reliability the response rate of caregivers who agreed to complete this measure a second time was 45% of those invited (n=37).

Measures

The following care-recipient and caregiver validity measures were used to establish preliminary convergent validity of the Caregiver Assessment of Behavioral Skill-Self Report

(CAB-SR). These measures were selected based on Bandura's (2002) social cognitive theory which suggests that with practice, skills become integrated and executed with ease; and once proficient modes become routinized an individual can implement them with greater ease. A description of the CABS-SR measure and background assessments follow.

Care-recipient validity measures

Cognitive impairment—The Mini-Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975), a global index of cognitive impairment, is widely used to screen for presence and severity of dementia. Lower scores represent higher levels of cognitive impairment. An inverse relationship with the CABS-SR was hypothesized.

Functional impairment—Care recipient assistance with physical and instrumental activities of daily living was measured with a 5-item Activities of Daily Living/Instrumental Activities of Daily Living Scale (ADL/IADL) (Chicago Health and Aging Project (CHAP), 1993; Lawton, Moss, Fulcomer, & Kleban, 1982). Three items assessed whether the caregiver provided care for personal, instrumental, or supervisory activities (0=no, 1=yes). Two additional items assessed whether the care recipient had bladder or bowel incontinence (1=less than once a month or never to 5=almost every day). Higher scores indicated that the care recipient required greater levels of assistance and a positive relationship with the CABS-SR was hypothesized.

Behavioral impairment—An 8-item measure of care recipient behavior was adapted from the Neuropsychiatric Inventory (Cummings et al., 1994). Each item identified potential behavioral symptoms (i.e., paranoia, hallucinations, help refusal, apathy/depression, withdrawal from activities, anxiety, inappropriate comments, and agitation/aggression) (Response format: 0=no, 1=yes). Higher scores signify greater number of behavioral symptoms and a positive relationship with the CABS-SR was hypothesized.

Caregiver Validity Measures

These caregiver measures were selected based on Bandura's social cognitive theory which supports the pivotal role that personal self efficacy plays in development of knowledge and skills concerning caregiving; that human lives (i.e., relationships) are highly interdependent and that adaptive functions (i.e., related to burden) require generative conceptions (Bandura, 2002); and caregiver literature which supports the notion that caregiver self-efficacy, relationships, and burden may be associated with skill level (Guberman, 2006; Haley et al., 1996; Schulz, 2000; Schumacher et al., 2000; Schumacher, 2004).

Self-efficacy for controlling upsetting thoughts about caregiving—This construct was assessed with one 5-item domain of the Revised Scale for Caregiving Self-Efficacy (Steffen, McKibbin, Zeiss, Gallagher-Thompson, & Bandura, 2002). Caregivers used a visual analogue scale to rate their level of self-efficacy from 0–100 that they could control negative thoughts about caregiving given their best effort. Higher scores correspond to greater self-efficacy and a positive relationship with the CABS-SR was hypothesized.

Caregiver/care recipient relationship—A 7-item measure was used to assess level of caregiver/care recipient relationship strain and compatibility. Responses ranged from 1=not at all to 3=often (Archbold, Stewart, Greenlick, & Harvath, 1990). Higher scores indicated a more positive relationship and a positive relationship with the CABS-SR was hypothesized (Norton et al., 2010).

Burden—Caregiver burden was assessed by using a 17-item, well-established measure (M. P. Lawton, Kleban, Moss, Rovine, & Glicksman, 1989). Items focus on caregiver perception

of emotional distress, anxiety, depression, demoralization and generalized loss of personal freedom attributed to caregiving (Response format: 0= never to 4=nearly always). Higher scores illustrate greater perceived burden and a negative relationship with the CABS-SR was hypothesized (Danahauer, et al., 2004; Gaugler, et al., 2000).

Caregiver assessment of behavioral skill-self report (CABS-SR)

This measure was originally developed by identifying selected items from a 15-item Caregiver Skill Building measure used in a prior study (C. J. Farran et al., 2004). The item pool was broadened from agitated and aggressive behaviors to include other common behavioral symptoms of dementia (i.e., memory-related, depression, and disruptive behaviors) (Teri et al., 1992). Items were contextually constructed to reflect behavioral symptoms that are common over the course of dementia progression, and a conceptualization of caregiver skill which focused on the interactive nature and relationship between caregiver *cognitive skills*, behavioral *intervention approaches*, and *emotional* responses using principles of self-efficacy theory and person-centered care (Bandura, 2002; C. J. Farran et al., 2009; C. J. Farran, Loukissa, Perraud, & Paun, 2004; Hellen, 1998; Kitwood, 1997). Focus groups and individual interviews were conducted with clinical experts and family caregiver researchers who were skilled in dementia care (C. J. Farran & Fogg, 2007); and existing literature was used to expand content on behavioral symptoms of dementia and caregiver skill (Hellen, 1998; Kitwood, 1997; Teri et al., 1992). Five clinical experts and researchers reviewed the proposed items for their reflection of appropriate behavioral symptoms of dementia, range of intervention responses, and item clarity. Five family caregivers completed the measure and provided feedback concerning item appropriateness and clarity. Three caregiver skill subscales were determined: general approaches to caregiving, behavioral management skill, and a single-item assessment of skill level.

General approaches to caregiving—A 29-item scale originally conceptualized six prerequisites to skill: knowledge and attitudes toward learning, caregiver personal qualities, supportive relationships, general approaches to caregiving, dealing with feelings, and managing outside resources. Examples of items include: I know my relative's strengths and limitations; I focus on what my relative can still do; I let my relative make choices whenever possible (Farran et al., 2009). Cronbach's alphas for these subscales ranged from .52 to .94. To further refine the CABS-SR a decision was made to focus only on the 11-item general approaches to caregiving subscale because these items seemed most central to assessing caregiver skill and other items could be assessed with standard caregiver measures. This subscale focused on approaches to understanding care recipient's current needs, often associated with person-centered care (i.e., respectful communication, structure, active involvement in pleasant activities, humor), and strengths versus limitations (i.e., ability to make choices) (Colling, 2004; Hellen, 1998; Kitwood, 1997). Caregivers assessed how well they completed each of the approaches in the past month. Responses reflected a range of approaches that skilled or less skilled caregivers might use (1=I do not do this very well, 2=I have some difficulty doing this, 3=I usually do this well, 4=I do this very well). Scores could range from 11–44 with higher scores indicating higher levels of self-perceived skill in using these approaches.

Behavioral management skill (BMS)—This 45-item measure focused on five areas where caregivers were likely to have experiences in managing care recipient behavioral symptoms of dementia: 1) changes in memory, 2) depressive symptoms, 3) hallucinations and paranoia, 4) aggression and agitation, and 5) behaviors that occur during personal care. To present the context in which caregivers had opportunities to use these particular skills (Bandura, 2002), items included a statement about a particular behavioral symptom and a

potential caregiver intervention approach (i.e., If my relative gets confused, I give basic information). Caregiver intervention approaches were derived from a broad spectrum of supportive approaches that have been advocated for caregivers when intervening with behavioral symptoms: behavioral management approaches, medical interventions, need-based approaches, and pleasurable activities (Colling, 2004; Farran, Loukissa et al., 2004; Hellen, 1998; Kitwood, 1997; Teri, Logsdon, Uomoto, & McCurry, 1997); as well as more 'negative' or 'confronting and criticizing' approaches (Beach et al., 2005; Gitlin et al., 2002). Caregivers indicated how likely each of these statements were true in their situation (0=seldom true, 1=true some of the time, 2=true most of the time; or if their relative did not demonstrate this behavior caregivers could indicate 3=not relevant). We chose this response pattern because we anticipated that not all items and/or interventions would be relevant to family caregivers due to any of the following reasons: the care recipient did not exhibit the behavioral symptom, the caregiver did not use the intervention approach, or an intervention approach may be seen as not socially desirable. Not relevant scores were not originally included in the final score. Scores for confronting/criticizing approaches were reverse-coded so lower scores indicated lower skill level. Scores could range from 0–90 with higher scores indicating greater behavioral skill.

Single skill item (SSI)—A final item was used to identify caregiver's overall perception of skill or effectiveness level. A visual analogue scale was used and had a range of 0–10 (0=not effective at all to 10=consistently effective). Higher self-ratings indicated perceptions of greater overall skill.

Background Measures

Demographic variables—Standardized background information was collected to describe participant and selected care recipient characteristics (Cornoni-Huntley, Brock, Ostfeld, 1986).

Social desirability—Social desirability is a potential response bias that reflects the reluctance of a respondent to endorse socially unacceptable or undesirable characteristics. The *Marlowe-Crowne Social Desirability Scale* was used to determine caregivers' likelihood to be influenced by social desirability bias. This 10-item scale has been widely used in test validity research. Persons with high scores are generally interpreted to be more "defensive" and desire to put themselves in a favorable light (Strahan & Gerbasi, 1972).

Data analyses

Data analyses were conducted in three steps: 1) *CABS-SR feasibility* was determined by using descriptive statistics to characterize the sample, determine if there was variance associated with each CABS-SR item, detect any extreme ceiling and floor effects for individual items, and address missing data (Aim 1); 2) *CABS-SR psychometric properties* included determination of construct validity using Exploratory Principal Component Analysis Extraction Methods and an iterative process using Pearson correlations to examine how Behavioral Management Skill items were best grouped. Reliability was determined by examining subscale Cronbach's alphas for internal consistency. Pearson correlations were used to examine subscale test-retest reliability (Aim 2); 3) *CABS-SR Convergent Validity* was examined by CABS-SR correlations with care recipient and caregiver validity measures.

Results

Sample Characteristics

Study participants were similar to those in other AD family caregiver studies (Wisniewski et al., 2003) where caregivers were approximately 13 years younger than their care recipients, most were female, married spouses, who were well-educated and lived with their care recipient. Although the majority of participants were Caucasian, 33% were African American which represents a higher percentage than the 22% of African Americans over 65 years reported for the Chicago Metropolitan area. Caregivers were almost equally represented by retired and working caregivers. The majority of caregivers had provided care to their family member for three or more years. Caregivers were found to have high levels of self-efficacy and quality of relationship with their care recipient; and relatively low levels of burden. Care recipients were almost equally divided by gender, had moderate levels of cognitive impairment, low levels of need concerning ADLs/IADLs, and low levels of behavioral symptoms even though upon screening they reported having ≥ 2 behavioral symptoms (Table 1).

Background data were examined to determine if level of caregiver skill differed by caregiver characteristics such as age, relationship with the care recipient, gender, race, marital status, education, employment status, living arrangements and years of caregiving. Low and high level skill groups were identified by using mean caregiving levels. Caregivers below the mean were identified as having low levels of skill and those at or above the mean as having high skill levels. Chi-square analyses were used for categorical data and analysis of variance was used to determine differences by skill level for continuous variables. There were no significant differences in skill level by caregiver age, gender, spousal/non spousal relationship, and years caregiving. Although not significant, several demographic variables suggested potential differences. There was a tendency for African American and Latino caregivers to report lower levels of skill than whites or other racial/ethnic groups; for caregivers with high school and less education to report somewhat lower skill levels than caregivers that were college graduates or beyond; and for caregivers who reported caregiving for less than two years to report lower skill levels. Significant differences were found in four areas: caregivers who were widowed, divorced, or separated reported higher levels of skill than those who had never married or were currently living as married; caregivers who were employed full or part-time reported higher levels of skill than those who were homemakers, unemployed, or retired; caregivers who were living with the care recipient reported lower levels of skill than those who were not living with their care recipient; and caregivers of older care recipients reported lower levels of skill than those with younger care recipients (Table 1).

CABS-SR feasibility (Aim 1)

General approaches to caregiving (GEN)—This 11-item subscale had approximately 10% missing data which appeared to be missing at random. Exploratory Principal Component Analysis Extraction Methods were used to examine these items for construct validity. All items loaded on one major factor with eigen values ranging from .42-.82 and were retained. Table 2 notes the mean and standard deviation for this subscale.

Behavioral management skill (BMS)—This 45-item subscale had approximately 45% of data that was missing or to which caregivers indicated that items were 3=not relevant (i.e., their relative did not demonstrate this behavior, they did not use the intervention, or they found the response socially undesirable). With two items, 96% of caregivers indicated they were not relevant (i.e., If my relative masturbates, I tell him/her to 'stop it;' and If my relative threatens to hurt him/herself or others, I put him/her in a locked room). These two

items were deleted and only the remaining 43 items were used for analyses. Analyses explored imputing data and using exploratory factor analysis with these items, neither of which resulted in interpretable item subsets.

A two-step process resulted in the most reliable item subset: 1) the 3=not relevant responses were re-coded to 0=seldom true. Our assumption was that if an item was not relevant, whether it was due to a behavior not occurring, a particular intervention not being used, or an item not being socially desirable, it could also be interpreted as seldom being true; and 2) subscale items were re-conceptualized. Items were originally conceptualized around care recipients' behavioral symptoms (i.e., changes in memory, depressive symptoms, hallucinations and paranoia, aggression and agitation, and behaviors that occur during personal care). This re-conceptualization used a combination of factor analytic data of these items, a conceptual iterative process (Miles & Huberman, 1994; Patton, 2002), assessment of correlations and Cronbach's alphas to winnow the 43 items to 17 items. Items were re-conceptualized to focus on caregiver intervention approaches rather than care recipient symptoms. The conceptual iterative process included two research team members reviewing items, each making preliminary assignments by intervention, discussing literature, and coming to an agreement as to what intervention approach was best reflected. Examination of correlations included reviewing item-to-total subscale correlations and retaining items with higher correlations. Cronbach's alphas were also examined and items that resulted in a lower Cronbach's alpha were deleted, so as to retain as high internal consistency as possible amongst the final selection of items. The resulting conceptual structure of these items focused on four types of caregiver intervention approaches: need-based (NEED), behavior management (BHV), pleasurable activity (PLS), and confronting/criticizing (CONF). This resulted in a useable data set that included 96% of participants (See Table 2 for subscale and intervention means and standard deviations; and Table 3 for a summary of the final 17 items, including percentage of original missing data, and assignment of items to each intervention approach).

Single skill item (SSI)—This subscale was completed by over 90% of participants (Table 2).

CABS-SR psychometric properties (Aims 2 and 3)

Reliability—Internal consistency was established using Cronbach's alpha for each CABS-SR subscale (Table 2). Internal consistency for the General Approaches subscale was highest (GEN), while the range of Cronbach's alphas for the Behavior Management Skill (BMS) subscale and each of its intervention approaches was somewhat lower (.75-.80). Alphas represent the shared variance of items within each scale while squares of inter-correlations of scale scores represent the shared variances across scales. As seen in Table 2 the internal consistencies were higher than the squares of correlations across scales, suggesting that factors measured independent and distinct phenomena. Test-retest reliability was highest for the General Approaches and the single skill item subscales; but was low for the Behavior Management Skill subscale and its intervention approaches (n=37). This sample of 37 obtains a power of .80 for Pearson correlations of .40, assuming a one-tailed alpha of .05.

Construct and convergent validity

Construct validity of the three CABS-SR subscales was examined using Pearson correlations (Table 4). The General Approaches subscale (GEN) subscale had small correlations with the Behavior Management Skill (BMS) and Single Skill Item (SSI) subscales. The Behavior Management Skill subscale had the expected moderately positive significant relationships with each of the four intervention approaches.

Convergent validity was investigated by Pearson correlations between CABS-SR subscales and commonly used care recipient and caregiver variables (Table 5). It was hypothesized that the CABS-SR subscales would be associated with greater care recipient cognitive impairment (i.e., lower MMSE), higher levels of functional impairment (ADL/IADL) and behavioral symptoms (BHV SX). There was minimal support for this hypothesis with only two low significant correlations between care recipient impairment (MMSE and ADL impairment) and two caregiver intervention strategies (Need-Based and Behavior Interventions).

It was also hypothesized that CABS-SR subscales would be significantly related to caregiver validity measures. The General Approaches and Single Skill subscales showed the most consistent correlations with caregiver self-efficacy, caregiver/care recipient relationship, and caregiver burden (Table 5). Two Behavior Management Skill intervention approaches (i.e., need-based and pleasurable activities) were consistently correlated with two caregiver positive appraisals (i.e., self-efficacy and relationship with care recipient). The external validation analyses are based on a sample size of approximately 80. While this is smaller than ideal, this sample size has a power of .80, assuming a correlation of .30 and a one-tailed alpha of .05

Caregiver endorsement of confronting/criticizing approaches was significantly related with social desirability.

Discussion

This manuscript represents the first attempt to evaluate the psychometric properties of a caregiver self-report measure designed to assess general caregiver approaches and how caregivers intervene with care recipient behavioral symptoms in persons with moderate levels of dementia who still reside in their own home (Farran, et al., 2009). The need for such a measure is great as most assessments focus on care recipient needs (Feinberg, 2002), with less emphasis on what caregivers do and how well they intervene. This measure is designed for clinical assessment and intervention planning as opposed to regulatory and reimbursement perspectives (Family Caregiver Alliance, 2006a; Family Caregiver Alliance, 2006b; Gaugler et al., 2000).

Strengths of this measure include its focus on three approaches to assessing caregiver skill: a general approach, a more specific contextual assessment of behavioral management skills, and a global single skill item. This approach is supported by the multitrait-multimethod matrix method proposed by Campbell and Fiske (Campbell & Fiske, 1959). Combined, this measurement approach includes a focus on general approaches to care and understanding care recipient's current needs using person-centered care and attention to strengths rather than limitations (Colling, 2004; Hellen, 1998; Kitwood, 1997); and provides opportunities for second-order thinking where caregivers consider the combined context of the care recipient's disease-related symptoms as well as their own responses to these symptoms. These intervention responses are more complex, require greater thought; depend on caregivers' knowledge, experience, creativity and flexibility; and also, what may happen 'right in the moment' (Bandura, 2002). Finally, this measurement approach also acknowledges that things may not always go well for caregivers. Extensive attention has been given to caregiver stress, burden and how that may affect both the care recipient and caregiver's health and well-being (Carter, 2008; Pinquart & Sorensen, 2007). Much less attention has been given to approaches that caregivers may actually use when stressed, and whether they think about or actually use psychological or physical approaches to address these conflicts (Beach et al., 2005; Gitlin et al., 2002).

A major challenge faced in this study concerned missing data with the Behavior Management Skill (BMS) Subscale. Measuring any type of personality trait has been a concern to psychologists for many years as the setting in which a respondent acts can be a powerful force in determining what traits the actor exhibits (Fiske, 1971). This same argument can apply to caregiving skill. Types of skills caregivers are likely to exhibit are dependent on the level of the care recipient's dementia symptoms. This research was designed to develop a self-report scale that is capable of producing valid estimates of caregiver skill across a variety of levels of care recipient impairment. Because caregivers with less impaired care recipients would be less likely to have experienced the full-range of these symptoms of the disease, they were permitted, in this scale, to not respond to items that examined their response to symptoms associated with higher care recipient impairment. So, for example, most caregivers would have to address problems associated with memory impairment, but far fewer would have to address problems associated with psychotic symptoms. Thus, there would be fewer responses across a sample of caregivers to psychotic items. The aim of this study was to achieve a standardized estimate of caregiving skill that was relatively independent of the severity of the care recipient's disease. Our best approach was to estimate missing data when possible to help in this estimation process and to reconceptualize items from disease symptoms to intervention approaches. By inferring these missing data and reconceptualizing these items, it was possible to obtain the best possible estimates of skill across the various levels of care recipient severity.

Other limitations of the BMS included absence of test-retest reliability and construct validity with other caregiver and care recipient variables. Lack of test-retest reliability is potentially due to the small sample size and the fluctuation of behaviors and intervention approaches from day-to-day. Concerning construct validity, the BMS had significant correlations with the General Caregiving Approaches and the Single Skill Item subscales; and several intervention approaches (i.e., Need and Pleasant Activities) were significantly related to expected caregiver appraisal and outcome variables. It is possible that the BMS is better suited as a clinical assessment measure where caregivers and clinicians talk about the caregiving context, including what behaviors is the care recipient experience, what approaches is the caregiving using and how successful these approaches are for both the care recipient and caregiver.

Although the need for a measure such as the CABS-SR is great, further measurement development is warranted to prepare such a measure for future research intervention studies and clinical practice. The following issues need to be addressed: 1) further attention needs to be given to determining Behavior Management Skill feasibility and understanding why caregivers choose not to respond to selected items. Several approaches can be considered. Interviewers could collect these data in person and use probes to further determine reasons for potential missing data; item responses could be changed to use a three-pronged approach where respondents are asked: has X behavior occurred, was Y management approach used, and how proficient are you in using this skill? A potential disadvantage of this approach is that it does not place the intervention response within the broader contextual environment in which the care recipient behavior occurs. It is important for future work not to merely assess frequency of skills but to assess the caregivers' perception of their proficiency in using particular skills; 2) depending on these results, focus groups with family caregivers and/or interviews with domain experts would be helpful to further refine the construct of family caregiver skill, to add, delete and/or modify existing CABS-SR items; 3) the CABS-SR should be further tested against other objective assessments of caregiver skill which might include multiple sources of information such as professional assessments and/or direct observations (Farran et al., 2009; Feinberg, 2002); 4) additional measures should be considered to further establish CABS-SR construct validity. The revised Dementia Management Scale which includes both positive and criticism-based dementia management

strategies provides one option (Gitlin et al., 2002); 5) once methodological issues are addressed, a longitudinal methodology with a larger more representative sample should be selected that follows caregivers at least 12–18 months to observe if skills change or improve over time. Particular attention should be given to CABS-SR stability; and 6) future family caregiver skill building studies should consider not only the acquisition of positive skills but also the possibility of what caregivers do in the absence of positive skills. Although use of confronting/criticizing approaches as noted in this study cannot be interpreted as a pattern of abuse, further research is needed to examine when these confronting/criticism-based strategies and absence of skill result in potentially abusive caregiver approaches and more negative care recipient outcomes (Beach et al., 2005). Of importance for future caregiver intervention studies is to be able to assess these confronting/criticizing interventions; assist caregivers in being aware of when they use these strategies; and provide them with alternatives concerning how to change these types of approaches.

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Table 1

Baseline characteristics of family caregivers and care recipients and differences by caregiver level of skill (N=82)

Variable	M (SD, Range) or %	Differences by Caregiver Skill Level
Caregiver Demographic Characteristics		
Age	62.84 (12.99, 27–89)	$F=.04$, $df=1$, $p=.85$
Female (%)	77	$\chi^2=.01$, $df=1$, $p=.93$
African American (%)	33	$\chi^2=4.04$, $df=4$, $p=.40$
Relationship (%)		$\chi^2=3.07$ $df=4$, $p=.55$
Spouse	55	
Adult Child	35	
Other	10	
Married (%)	73	$\chi^2=4.81$ $df=1$, $p=.03$
Highest Education Completed (%)		$\chi^2=5.28$ $df=6$, $p=.51$
1–11 years	7	
HS Graduation	22	
Vocational Training	5	
Some College	22	
College Graduate	25	
Graduate Degree	18	
Doctorate	1	
Employment Status (%)		$\chi^2=6.59$ $df=1$, $p=.01$
Retired	45	
Full-Time/Part-Time	41	
Homemaker	11	
Other	3	
Living with Care recipient (%)	95	$\chi^2=4.99$ $df=1$, $p=.03$
Years Caregiving (%)		$\chi^2=.50$, $df=1$, $p=.92$
< 1	7	
1–2	24	
3–4	22	
≥ 5	47	
Care Recipient Demographic Characteristics		
Age	75.72 (11.35, 47–97)	$F=4.78$, $df=1$, $p=.03$
Female (%)	53	$\chi^2=1.3$ $df=1$, $p=.26$
Care Recipient Validity Measures: Symptom Severity		
Mini Mental Status Exam	13.71 (7.06, 0–30)	
ADL/IADL	2.53 (.69, 2–13)	
Behavioral Symptoms	1.50 (.30, 0–8)	
Caregiver Validity Measures		
Self-Efficacy	388.50 (93.34, 0–500)	

Variable	M (SD, Range) or %	Differences by Caregiver Skill Level
Quality of Relationship	16.68 (2.86, 7–21)	
Burden	22.41 (11.38, 0–68)	
Caregiver Background Measure		
Social Desirability	2.33 (1.71, 0–10)	

Table 2

CABS-SR: Descriptive data and reliability by subscales (n=79)

Caregiver Assessment of Behavioral Skill-Self Report (CABS-SR)	Descriptive Data	Reliabilities	
	M (SD)	Cronbach's Alpha	Test-Retest (n=37)
General Approaches to Caregiving (GEN) (11 items)	3.25 (.66)	.94	.77**
Behavior Management Skill (BMS) (17 items)	1.07 (.34)	.75	.35
Need-Based Interventions (NEED) (6 items)	1.5 (.49)	.77	.11
Behavior Interventions (BHV) (3 items)	.89 (.77)	.79	.40*
Pleasurable Activities (PLS) (2 items)	1.7 (.50)	.76	.51
Confronting/Criticizing Interventions (CONF) (6 items)	.58 (.49)	.80	.28
Single Skill Item (SSI) (1 item)	8.48 (.12)	NA	.60**

Notes: M = Mean; NA=Not applicable; SD = standard deviation

*
p<.05 level,

**
p<.01 (2-tailed)

Table 3

Summary of Behavioral Management Skill Subscale by Item, Original Percent of Missing Data, and Re-Conceptualization of Items by Intervention Approach

Behavioral Management Skill Item	% Missing Data	Conceptualization By Intervention Approach
1. When my relative has trouble remembering things that just happened I tell him/her it is "okay."	6	Need-Based
2. If my relative becomes upset, I know how to calm him/her.	16	Need-Based
3. If my relative wanders around during the night, I make sure s/he cannot get out of the house.	26	Need-Based
4. If my relative seems to be feeling sad or hopeless, I get some old pictures out and talk about some of the good times in his/her life.	27	Need-Based
5. If my relative accuses me or others of taking or hiding something, I "gently" change the subject.	28	Need-Based
6. When bathing my relative, I ask him/her to help me.	43	Need-Based
7. When my relative repeatedly forgets what day it is, I start talking about something else.	9	Behavior Management
8. When my relative talks loudly or rapidly, I remind myself that "it's me who has to change."	24	Behavior Management
9. If my relative strikes out at me when I take him/her to the bathroom, I try to take it one step at a time.	45	Behavior Management
10. If my relative seems to be feeling lonely, I try to find something s/he enjoys doing.	27	Pleasurable Activities
11. Whenever possible, my relative's bath/shower becomes one of our activities for the day.	21	Pleasurable Activities
12. When my relative has difficulty concentrating on a task, I tell him/her to pay more attention.	22	Confronting/Criticizing
13. If my relative asks the same question over and over, I tell him/her that s/he just asked that question.	24	Confronting/Criticizing
14. If my relative just sits and doesn't do anything, I tell him/her to "snap out of it."	34	Confronting/Criticizing
15. If my relative says s/he would be better off dead, I tell him/her not to talk like that.	65	Confronting/Criticizing
16. If my relative accuses me of hiding something, I argue with him/her.	71	Confronting/Criticizing
17. If my relative destroys property, I restrain him/her.	84	Confronting/Criticizing

Table 4
Validity Testing: Correlations between CABS-SR subscales and intervention approaches (n=79)

CABS-SR Subscales and Intervention Approaches	BMS Intervention Approaches						
	GEN	BMS	NEED	BHV	PLS	CONF	SSI
General Caregiving Approaches (GEN)		.31**	.48**	.05	.46**	.00	.33**
Behavior Management Skill (BMS)			.68**	.55**	.45**	.54**	.24*
Need-Based Interventions (NEED)				.16	.51**	.06	.36**
Behavior Interventions (BHV)					.17	-.13	-.06
Pleasurable Activities (PLS)						.05	.14
Confronting/Criticizing (CONF)							.07
Single-Item of Skill (SSI)							

* $p < .05$;

** $p < .01$

Table 5

Validity testing: Correlations between care recipient and caregiver validity measures and the CABS-SR Subscales and Intervention Approaches (n=79)

Care Recipient Function	BMS Intervention Approaches						
	GEN	BMS	NEED	BHV	PLS	CONF	SSI
Measures							
MMSE	.14	-.09	-.00	-.31**	-.01	.19	.07
ADL/IADL	.05	.18	.23*	.20	.15	-.05	.01
BHV SX	.15	.05	.05	-.22	-.07	.13	.06
Caregiver Appraisal, Outcome, and Social Desirability							
Self-Efficacy	.39**	.06	.23*	-.05	.24*	-.15	.32**
Relationship with CR	.51**	.14	.25*	-.04	.25*	-.03	.37**
Burden	-.25*	.04	-.11	.10	-.23	.18	-.27*
Social Desirability	-.09	.02	-.09	-.15	.01	.35**	-.13

Notes: ADL/IADL = Activities of Daily Living/Instrumental Activities of Daily Living; BHV SX = Behavioral Interventions; BHV = Behavioral Interventions; BMS = Behavioral Management Skill; CONF = Conflicting/Criticizing Interventions; CR = Care recipient; GEN = General Approaches to Caregiving; MMSE = Mini Mental Status Examination; NEED = Need-Based Interventions; PLS = Pleasant Activity Interventions; SSI = Single Skill Item

*
p<.05;
**
p<.01