

Reference	Sample	Measurement Instrument			Psychometric Characteristics	
		Name of the Scale	Domains and Constructs	Length and Format of Instrument	Validity	Reliability
Greene <i>et al.</i> (1982) ¹ Scotland	ADRD	Behavioral and Mood Disturbance Scale (BMDS)	Perception of care recipient's behavior/mood disturbance Three factors: (1) Apathetic/withdrawn; (2) Active/disturbed; (3) Mood disturbance	34 items, 5-point Likert scale (0=Never, 1=Rarely, 2=Sometimes, 3=Frequently, 4=Always or 0=Not at all, 1=A little, 2=Moderately, 3=Quite a lot, 4=Considerably)	Although not formally introduced as " <u>content validity</u> ", authors culled items for both scales from the literature and appropriately worded items for use with non-professional persons. A number of items also were created by the authors. The <u>structural validity</u> for the BMDS was established through EFA with PAF extraction and Varimax rotation that found three factors accounting for 41% of the total variance. A scree plot confirmed three factors: apathetic-withdrawn behavior, active-disturbed behavior, and mood disturbance.	Test-retest reliability was assessed by retesting a subsample of 18 caretakers 3 weeks after the initial test and calculating a Pearson's correlation coefficient. <u>Test-retest reliability, full scale=0.84.</u> <u>Test-retest reliability by subscales:</u> Apathetic (r=0.90); Active (r=0.87); Mood disturbance (r=0.73)
		Relatives' Stress Scale (RSS)	CG experience with stress and upset Three factors: (1) Personal distress; (2) Life upset; (3) Negative feelings toward patient	15 items 5-point Likert scale (0=Never, 1=Rarely, 2=Sometimes, 3=Frequently, 4=Always or 0=Not at all, 1=A little, 2=Moderately, 3=Quite a lot, 4=Considerably)	The <u>structural validity</u> for the RSS was established through EFA with PAF extraction followed by a Varimax rotation that found three factors accounting for 51% of the total variance. Scree plots also confirmed three underlying factors: personal distress, life upset, and negative feelings toward patient. <u>Concurrent validity</u> was examined by Pearson correlations between RSS subscales with two measures of self-care: Physical Self Maintenance (PSM) and ADLs. Only the RSS "life upset" factor (subscale) was significantly correlated with the PSM (r=0.34, $p<0.05$), that is, caretakers experienced "life upset" with poor physical self-maintenance of the patient.	Test-retest reliability was assessed by retesting a subsample of 18 caretakers 3 weeks after the initial test. <u>Test-retest reliability, full scale=0.85</u> <u>Test-retest reliability by subscales:</u> Personal distress (r=0.72; Domestic upset (r=0.80); Negative feelings (r=0.88)
Kinney & Stephens (1989) ² United States	ADRD	Caregiver Hassles Scale (CHS)	Stress or hassles of daily living Five domains: (1) Assisting with ADLs; (2) Assisting with IADLs; (3) Cognitive status of patient; (4) Behavior of patient; (5) Social network of CG	42 items, 4-point Likert scale (1=It wasn't, 2=Somewhat, 3=Quite a bit, 4=A great deal)	<u>Content validity</u> was established by literature reviews to derive key domains to be measured and further discussions with CGs to refine the domains. No formal tests of <u>structural validity</u> were conducted. Authors reviewed correlations between an item and the total score on the assigned "domain" or subscale (minus the item). Items with weak correlations were dropped resulting in a reduction from an initial pool of 110 item to 42 items. <u>Concurrent validity</u> was assessed by significant Pearson correlations between (a) the CHS-ADL subscale and the London Psychogeriatric Rating Scale (LPRS) measures of physical limitations (r=0.44, $p<.001$), and (b) the CHS-behavior hassles subscale and the LPRS-irresponsible behavior (r=0.331, $p<.02$). The CHS-cognitive status of patient subscale did not correlate significantly with the LPRS measure of "cognitive confusion."	<u>Cronbach's α estimate, full scale=0.91</u> <u>Cronbach's α by subscales:</u> ADL (Cronbach's α =0.79) Instrumental ADL (Cronbach's α =0.75) Cognitive (Cronbach's α =0.82) Behavior (Cronbach's α =0.89) Social network (Cronbach's α =0.74) <u>Test-retest reliability</u> (1-day interval, N=60) was estimated with Pearson's correlations. The reliability coefficient for the full scale=0.83 <u>Test-retest reliability by subscales:</u> ADL=0.86; IADL=0.71; Cognitive=0.80; Behavior=0.87; Social network=0.66
Lawton <i>et al.</i> (1989) ³ United States	ADRD	Caregiver Appraisal Scale (CAS)	Appraisal of caregiving stress Three factors: (1) Subjective burden; (2) Caregiving impact; (3) Caregiving satisfaction	19 items, 5-point Likert scale (ranging from 1=Never True to 5=Nearly Always True <u>or</u> 1=Strongly Disagree to 5=Strongly Agree)	The <u>structural validity</u> of CAS was evaluated first with PCA using two independent samples and secondly through a CFA. (The first independent sample reported here (N=632) consisted of AD caregivers. The second cross-validation sample comprised a mixed sample of CGs.) The results of the PCAs with the two independent samples were used to refine the original 47-item scale with 5 components/factors resulting in a reduced 19-item scale with 3 factors. The CFA was conducted with the same two independent samples confirming an underlying 3-factor structure. The first sample (N=632) yielded acceptable fit indexes (e.g., GFI=0.94, NFI=0.90). Results in the cross-validation sample were lower (e.g., GFI=0.86, NFI=0.78). <u>Concurrent validity</u> was established through correlations of the three CAS subscales with the following measures: Burden rating; Quality of relationship; Emotional burden; Relationship to impaired person. <i>Subjective burden</i> was highly related to Burden rating scores (r=0.65) and less strongly but significantly to all of the other scales (r's=0.28-0.33). <i>Caregiving satisfaction</i> was less strongly related to the Burden rating (r=0.24) but strongly related to the quality of the relationship to the impaired person (r=0.50). <i>Caregiving impact</i> was highly correlated with Burden rating (r=0.57).	<u>Cronbach's α by subscales:</u> Subjective burden (α =0.85) Caregiving impact (α =0.70) Caregiving satisfaction (α =0.67)
Novak & Guest (1989) ⁴ Canada	ADRD	Caregiver Burden Inventory (CBI)	CG burden Five factors: (1) Time-dependence; (2) Developmental burden; (3) Physical burden; (4) Social burden; (5) Emotional burden	24 items, 5-point Likert scale (ranging from 0=Not at all descriptive to 4=Very descriptive)	The <u>structural validity</u> of a 24-item scale (containing sixteen questions from a previous study and eight new questions added by the authors from the CG burden literature) was established by PCA with Varimax rotation identifying 5 components/factors accounting for 66% of the variance.	<u>Cronbach's α by subscales:</u> Time-dependence (α =0.85) Developmental burden (α =0.85) Physical burden (α =0.86) Social burden (α =0.73) Emotional burden (α =0.77)

Ellis <i>et al.</i> (1989) ⁵	ADRD	Caregiver Reactions Scale (CRS)	Reactions to caregiving Seven factors/dimensions: (1) Financial impact; (2) Impact on schedule; (3) Restrictions in social activities; (4) Impact on health; (5) Caregiving role responsibility; (6) Negative reactions; (7) Family abandonment of CG	34 items, 5-point Likert scale (ranging from 1=Strongly disagree to 5=Strongly agree)	Authors did not explicitly talk about <u>content validity</u> of the items in the scales developed but report conducting a review of the literature to define the concepts included in each of the scales and key relationships between concepts that needed to be considered in the development of the scales. In particular, the development of the "Caregiver Reactions" scale included in-depth interviews with CGs of persons with various types of physical and cognitive impairments. A pool of 101 items were identified from both the literature review and the analysis of the interviews. The <u>structural validity</u> of the CRS was established through a CFA to test a theorized 7-factor structure. One of the hypothesized subscales ("restrictions in social activities") was dropped from the final solution as well as items from the original pool. The final scale consisted of 34 items and 6 factors. No GFI statistics are reported for the CFA model.	Cronbach's α by subscales: Financial impact of caregiving ($\alpha=0.77$) Impact on schedule ($\alpha=0.84$) Impact on health ($\alpha=0.81$) Caregiving role responsibility ($\alpha=0.88$) Negative reactions to caregiving ($\alpha=0.83$) Family abandonment of CG ($\alpha=0.87$)
United States		Social Resources Scale (SRS)	Perceptions of availability of social resources One factor: Availability of resources	6 items, 5-point Likert scale (ranging from 0=No assistance to 4=Most frequent amount of assistance)	The <u>structural validity</u> of the SRS was established through CFA to test a theorized one-factor structure. The single factor produced factor loadings with acceptable ranges (0.42-0.62). No GFI statistics are reported for the CFA model.	Cronbach's α , full scale=0.69

Note: AD = Alzheimer's disease; ADRD = Alzheimer's disease and related dementias; ADL = Activities of Daily Living; AGFI = adjusted goodness-of-fit index; AVE = average variance extracted. A recommended threshold for convergent validity is an AVE > 0.50; CG = Caregiver; CATPCA = categorical principal component analysis; CES-D = Center for Epidemiological Studies Depression Scale; CFA = confirmatory factor analysis; CFI = comparative fit index; CR = composite reliability. A recommended threshold for convergent validity is a CR > 0.70; CVI = content validity index;¹⁹¹ EFA = exploratory factor analysis; GFI = goodness of fit index; Hamilton Depression Rating Scale = HAM-D; Hospital and Anxiety Depression Scale = HADS; IADL = instrumental activities of daily living; ICC = Intra-class correlation coefficient; IFI = incremental fit index; IRT = item response theory; LSNS= Lubben Social Network Scale; ML = maximum likelihood; MLE = maximum likelihood estimation; MMSE = Mini-Mental State Examination; NPI = Neuropsychiatric Inventory; NFI = Normed Fit Index; NNFI = non-normed fit index; PAF = principal axis factoring; PCA = principal components analysis; POMS= Profile of Mood States; RMPBC = Revised Memory and Behavior Problems Checklist; RMSEA = root mean square error of approximation; SF-36 = Short form 36 Health Survey; SRMR = standardized root-mean-square residual; TLI = Tucker-Lewis Index; ZBI = Zarit Burden Interview; PSI = person separation index.¹⁹² PSI values above 0.70 indicate good to excellent reliability in differentiating persons along the measured trait. Proposed rule of thumb thresholds for ICCs are: between 0.50 and 0.75 (moderate); ≥ 0.75 (good), and ≥ 0.90 (excellent).¹⁹³ Generally accepted threshold for "good" Cronbach's α test of reliability is considered to be ≥ 0.70 . Responsiveness (longitudinal validity) refers to the ability of an instrument to detect clinically important changes over time.¹⁹⁴ Measures such as minimal important change (MIC), smallest detectable change (SDC), effect size (ES), and area under the receiver operating curve (ROC) can be used to describe responsiveness.