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Family Caregivers of Persons With Spinal Cord Injury: Predicting Caregivers at Risk for Probable Depression

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Abstract

Objective—To determine the percentage of family caregivers of persons with spinal cord injury (SCI) with probable depression and to test the hypothesis that dysfunctional problem-solving abilities would be significantly predictive of risk status after taking into account important demographic characteristics and caregiver health.

Design—Correlational and logistic regression analyses of data collected in a cross-sectional design.

Participants—Eighteen men and 103 women caregivers (mean age of caregivers = 45.66 years, $SD = 12.88$) of individuals with SCI.

Main Outcome Measure—The Inventory to Diagnose Depression.

Results—Nineteen caregivers (15.7%) met criteria on the Inventory to Diagnose Depression for a major depressive disorder. A dysfunctional problem-solving style was significantly predictive of caregiver depression, regardless of the severity of physical impairment of the care recipient or the physical health of the caregiver and caregiver demographic variables.

Conclusions—The percentage of caregivers with probable depressive disorder may parallel that observed among persons with SCI, using a more conservative self-report measure designed to assess symptoms associated with a depressive syndrome. Family caregivers with a dysfunctional problem-solving style and assisting individuals with more severe injuries may have probable depression.

Keywords

caregivers; depression; social problem solving; spinal cord injury

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As a result of recent advances in medical technology, persons surviving a spinal cord injury (SCI) are living longer lives and often require varied degrees of assistance over their life span (DeVivo & Stover, 1995; Eisenberg & Saltz, 1991; Lasfargues, Custis, Carswell, & Nguyen, 1995). In response, family members often become the primary sources of assistance for various activities of daily living, such as feeding, dressing, transfers, and bowel and bladder care (Robinson-Whelen & Rintala, 2003; Weitzenkamp, Gerhart, Charlifue, Whiteneck, & Savic, 1997). However, caregivers enter into this new role without formal preparation or training (Elliott & Rivera, 2003). As a result, family caregivers of persons with severe disabilities encounter a host of problems, including role overload, lack of information, financial strain, impaired quality of life, changes in health status, and emotional problems (Donelan et al., 2002; Vitaliano, Zhang, & Scanlan, 2003). Caregiver depression has been consistently associated with poor quality of life and other adverse outcomes (Covinsky, Fortinsky, Palmer, Kresevic, & Landefeld, 1997; Han & Haley, 1999; Schulz & Beach, 1999).

For many individuals, the traumatic onset of a severe physical disability may be experienced as an “off time,” nonnormative life event (Neugarten, 1979) that abruptly interferes with the routine pursuit of normative personal, social, and vocational roles (Moen, Robison, & Dempster-McClain, 1995). Family caregivers of persons with SCI may experience a wide range of lifestyle and quality of life changes after assuming the role as primary caregiver (Boschen, Tonack, & Gargaro, 2005; Kolakowsky-Hayner & Kishore, 1999; Unalan et al., 2001). Although descriptive studies have found differences between family caregivers of persons with SCI and others who are not in caregiver roles (e.g., Weitzenkamp et al., 1997), prospective research has indicated that there is considerable variation in the caregiver experience, and much of this variance may be explained by behavioral and social mechanisms (Shewchuk, Richards, & Elliott, 1998).

Consonant with the extant literature (Elliott & Parker, in press; Navaie-Waliser et al., 2002), caregivers who have problems with ill health and who have ineffective coping skills are likely to experience problems with depressive symptomatology over time as they assist a loved one with an SCI (Elliott, Shewchuk, & Richards, 2001; Shewchuk et al., 1998). Caregivers who report problems with depression are likely to have continued problems with depression for up to a year (Elliott et al., 2001; Shewchuk et al., 1998) and perhaps even longer in some cases (Kris et al., 2006). These caregivers also are more likely to report increasing problems with stress and overload, and they are more likely than nondepressed caregivers to report prescription use for emotional and physical problems (Elliott, Shewchuk, Richards, & Chen, 2003).

However, these prospective studies also have revealed considerable overlap in the fluctuations observed in depression, ill health, and anxiety over time (Shewchuk et al., 1998). To a great extent, this shared variance may represent a general distress factor that may permeate self-report measurement of depression. In fact, the scale used most often in the study of caregiver depression—the Center for Epidemiological Studies—Depression scale (CES-D; Radloff, 1977)—has been criticized for its inability to distinguish distress from diagnosable depressive syndromes, and a high number of false positives result when the CES-D is used to screen for depression in the clinical setting (Coyne, 1994). Researchers who have used the CES-D to screen for possible depression among caregivers have reported estimates of 37% (among caregivers of stroke survivors; Grant, Bartolucci, Elliott, & Giger, 2000; Grant, Weaver, Elliott, Bartolucci, & Newman-Giger, 2004) to 50% (among caregivers of persons with SCI; Elliott et al., 2003) of caregivers had probable depression. The inability of the CES-D to reliably and accurately identify persons with possible depressive syndromes renders these data suspect.

It is important that more definite and reliable information about the number of family caregivers with probable depression be investigated. Although most self-report measures have inherent

shortcomings in assessing symptoms associated with depressive disorders (Coyne, 1994), there is evidence that the Inventory to Diagnose Depression (IDD; Zimmerman & Coryell, 1987) may provide a more conservative estimate of depressive symptomatology. The IDD was developed to assess symptoms of major depressive disorder (MDD) according to *Diagnostic and Statistical Manual of Mental Disorders* (3rd rev. ed.; *DSM-III-R*; American Psychiatric Association, 1987) criteria. In a study of various community and clinical samples with the IDD, Frank et al. (1992) found a lower rate of persons with SCI classified as depressed (11%) than that observed in studies relying on other measures (ranging from 22% to more than 30%; Elliott & Frank, 1996). The observed rates of depression observed among the community (4%) and undergraduate (5.7%) samples were consistent with expectations for a nonclinical sample (Frank et al., 1992).

The use of a more conservative estimate of depression may have ramifications for our prediction of probable depression status. Studies linking caregiver health (Grant et al., 2000) and problem-solving abilities (Grant et al., 2004) to probable depression status may reflect a general association with global distress rather than a unique predictive relationship with a depressive disorder, per se. Moreover, it is preferable to use a conservative, theory-based model similar to that guiding the IDD (Zimmerman & Coryell, 1987) to predict probable depression status to minimize the likelihood of Type I error and to advance our understanding of specific mechanisms that may be implicated in caregiver depression. Although Grant et al. (2004) found that ineffective social problem-solving abilities were predictive of probable depression in family caregivers in a manner consistent with our theoretical models, which have shown that social-cognitive variables such as social problem-solving abilities influence behavioral health and adjustment of individuals facing chronic health conditions, their exploratory study relied on the CES-D to determine “a set of variables that would best predict” depression status (p. 174).

A more conservative estimate of depression may also aid in minimizing problems related to overdiagnosis (Aragones, Pinol, & Labad, 2006). For example, although identifying and referring those who meet less stringent criteria (i.e., adjustment disorder, depressive disorder not otherwise specified [NOS]) might certainly be beneficial in terms of preventative efforts, overidentifying depressive spectrum experiences may have a negative impact on those who are in greatest need of limited services given restrictions on current resources in health care practice. That is, containment of costs in managed care often restrict financial resources only to those with the most severe forms of depressive symptomatology. Thus, it is critical to accurately identify those who are at greatest risk for depression. Other problems associated with overdiagnosing depression may be associated with overmedication on antidepressant medications and the potential for labeling.

The present study was designed to examine the percentage of individuals who may be at risk for probable depression among family caregivers of persons with SCI, using a more conservative self-report measure that was designed to assess symptoms associated with a depressive syndrome. Next, a conservative test of specific cognitive-behavioral mechanisms that operate in the ways in which people solve problems in everyday life (cf. D’Zurilla, Nezu, & Maydeu-Olivares, 2004; Nezu, 2004) was conducted. On the basis of social problem-solving theory, we expected that an ineffective problem-solving approach to solving problems would be predictive of the probable depression status of caregivers, but we did not know whether this variable would remain a significant predictor after taking into account important demographic information, the severity of the SCI, and caregiver health.

Method

Participants

The sample included 121 family caregivers (18 men, 103 women) who were assuming the role of caregiver for a family member who had incurred an SCI. Participants ranged in age from 20 to 85 years old ($M = 46$ years). The sample comprised more Caucasians ($n = 80$) than African Americans ($n = 41$). Relationships of the caregivers to care recipients varied with caregivers, which consisted of spouses ($n = 46$), sisters ($n = 10$), parents ($n = 45$), child ($n = 9$), and other ($n = 11$).

Of the care recipients (81 men and 40 women), 23 had complete lesions to the spinal cord and tetraplegia, 42 had incomplete lesions and tetraplegia, 29 had complete lesions and paraplegia, 20 had incomplete lesions and paraplegia, 1 had a complete lesion and “other type of injury,” and 6 had incomplete lesions and “other type of injury.” The majority of these individuals had incurred an SCI within 12 months of the study.

Procedure

Eligible participants consented to participate in a program developed to provide ongoing, home-based education to family caregivers of persons with SCI (cf. Kurylo, Elliott, & Shewchuk, 2001; Rivera, Shewchuk, & Elliott, 2003). To be eligible to participate in this study, individuals had to be in a caregiving role for a family member who had an admitting diagnosis of SCI. In addition, caregivers had to be 18 years or older and be related by blood or marriage to the SCI survivor, be responsible in providing assistance to the SCI survivor for at least 6 hr per day, and be oriented and able to speak English. Those who agreed to participate were seen individually and administered measures of social problem-solving abilities, depression, and personal health.

Predictor Variables

Demographic data—Caregiver age, gender, and race were included in the analyses.

Care recipient injury—Type and level of care recipient injury were combined and categorized on a scale from 1 to 6 (i.e., 1 = other SCI and incomplete lesion, 2 = other SCI and complete lesion, 3 = paraplegia and incomplete lesion, 4 = paraplegia and complete lesion, 5 = tetraplegia and incomplete lesion, 6 = tetraplegia and complete lesion).

Social problem-solving abilities—The 52-item Social Problem-Solving Inventory—Revised (SPSI-R; D’Zurilla, Nezu, & Maydeu-Olivares, 2002) was used to assess social problem-solving abilities. According to D’Zurilla et al. (2004), the SPSI-R assesses two constructive or adaptive problem-solving dimensions (positive problem orientation and rational problem solving) and three dysfunctional dimensions (negative problem orientation, impulsive/careless style, and avoidance style). The five major scales, along with sample questions that comprise each scale, are as follows: Positive Problem Orientation, “When I have a problem, I try to see it as a challenge or opportunity to benefit in some positive way from having a problem”; Negative Problem Orientation, “I become depressed and immobilized when I have an important problem to solve”; Impulsive/Careless Style, “When I am attempting to solve a problem, I act on the first idea that occurs to me”; Avoidance Style, “When a problem occurs in my life, I put off trying to solve it for as long as possible”; and Rational Problem Solving, “When I have a problem to solve, I examine what factors or circumstances in my environment might be contributing to the problem.”

Items on the SPSI-R are rated on a 5-point Likert-type scale ranging from 0 (*not at all true of me*) to 4 (*extremely true of me*). Participants indicate how they usually respond to problems.

The SPSI-R has shown high reliability ranging from .72 to .85 and has been found to be moderately correlated with other external measures of psychological distress and well-being with significant correlations (D’Zurilla et al., 2002; Nezu, 2004). D’Zurilla et al. (2004) suggested that the Positive Problem Orientation and Rational Problem Solving Scales indicate a constructive problem-solving style, whereas the Negative Problem Orientation, Avoidance Style, and Impulsive/Careless Style Scales indicate a dysfunctional problem-solving style. Both confirmatory and exploratory factor analyses have supported this conceptualization (Elliott, Rivera, Berry, & Oswald, 2006; Johnson, Elliott, Neilands, Morin, & Chesney, 2006). In the present study, we conducted a principal components analysis with varimax rotation on the five SPSI-R Scales. Two orthogonal factors with eigenvalues greater than 1 were extracted, which accounted for 76.6% of the original score variance. Consistent with previous research, a dysfunctional problem-solving style (eigenvalue = 2.69; 53.9% variance) had high loadings from the Negative Problem Orientation (.88), Avoidance Style (.90), and Impulsive/Careless Style (.79) Scales. A constructive problem-solving style (eigenvalue = 1.14; 22.8% variance) had high loadings from the Positive Problem Orientation (.81) and Rational Problem Solving (.90) Scales. In subsequent data analyses, we used the unit weighted sum of the Positive Problem Orientation and Rational Problem Solving Scales to assess a constructive problem-solving style and the sum of the Negative Problem Orientation, Avoidance Style, and Impulsive/Careless Style Scales to assess a dysfunctional problem-solving style.

Caregiver health—Caregiver health was evaluated with relevant scales from the Medical Outcomes Study Short Form Health Survey (SF-36; Ware, Snow, Kosinski, & Gandek, 1993). The SF-36 consists of eight scales: Physical Functioning (10 items), Physical Role Functioning (4 items), General Health (5 items), Bodily Pain (2 items), Vitality (4 items), Social Functioning (2 items), Emotional Role Functioning (3 items), and Mental Health (5 items). We used the scales that measured domains influenced by current health. The Physical Functioning Scale assesses the ability to perform activities without restrictions imposed by current health, and the Physical Role Functioning Scale measures difficulties with daily activities as a result of physical health problems; higher scores on these scales indicate fewer problems performing activities from these respective concerns. The General Health Scale evaluates current health status; higher scores indicate better health status. Lower scores on the Bodily Pain Scale indicate more severe and limiting pain (Ware et al., 1993).

Raw scores for each scale were transformed with an algorithm to a 0–100 scale (Ware et al., 1993). Substantial evidence supports the basic psychometric properties of the SF-36 scales (Ware et al., 1993). Internal consistency reliabilities have ranged from .62 to .96 across 12 different studies; test–retest coefficients have ranged from .43 to .90 (Ware et al., 1993).

Criterion Variable

The IDD (Zimmerman & Coryell, 1987) was used to determine risk status for depression. This measure was designed to provide a general severity index of depression and a categorical diagnosis of MDD according to *DSM-III-R* criteria (American Psychiatric Association, 1987). The instrument is a 22-item measure of depressive behavior, and each item is rated on a 5-point scale ranging from 0 (*no presence of the symptoms*) to 4 (*severe symptomatology*; Zimmerman, Coryell, Wilson, & Corenthal, 1986). For each item that assesses a symptom of depression, respondents are required to denote whether the symptom has been present for more or less than 2 weeks. Scores meeting the criteria for MDD only can then be identified and created as a categorical variable. The IDD excludes other diagnostic classifications such as dysthymia or depressive disorder NOS.

Acceptable test–retest reliabilities (.98 over days) and internal consistency (.92) coefficients have been reported; correlations with structured interview estimates of MDD and other self-report measures of depression have been adequate (ranging from .80 to .87; Zimmerman & Coryell, 1987; Zimmerman, Coryell, Corenthal, & Wilson, 1986; Zimmerman, Coryell, Wilson, & Corenthal, 1986). The IDD has been a sensitive indicator of depression among community-residing adults and persons with a variety of health problems (Frank et al., 1992). We followed the algorithm described by the developers of the IDD (Zimmerman & Coryell, 1987) to identify caregivers who met *DSM-III-R* criteria for MDD.

Statistical Analyses

Correlational procedures were used to evaluate the relationships between self-report variables and demographic characteristics. It was expected that a dysfunctional or ineffective problem-solving approach would significantly predict risk for probable caregiver depression above and beyond demographic characteristics and caregiver health. To examine this prediction, we conducted a logistic regression analysis. Demographic variables, care recipient injury severity, caregiver health, and problem-solving styles (constructive and dysfunctional) were successively entered in separate blocks to predict the criterion variable. In the event of significant changes at a specific step, we performed *t* tests for the specific variables within the block to determine their unique contribution.

Results

Of the 121 caregivers, 19 (15.7%) had IDD profiles that met the criteria for probable depression. Table 1 presents data by probability for depression status on caregiver demographic, physical health, and problem-solving variables, and care recipient level of injury. There were no significant demographic differences between the high probability and low probability for depression groups. Although expected cell frequencies were too sparse to conduct a valid chi-square test on care recipient levels of injury, an independent samples *t* test on level of injury as a continuous variable (coded 1 to 6) found that the high probability for depression group ($M = 5.16$, $SD = .89$) was significantly higher than the low probability for depression group ($M = 4.25$, $SD = 1.27$), $t(119) = -11.01$, $p < .001$. These data indicate that a more severe injury was associated with a likelihood of being depressed. Bodily Pain and General Health Scale scores differed significantly between the groups: Depressed caregivers were more likely to report problems with pain and ill health than nondepressed caregivers. On the social problem-solving scales, the caregivers with probable depression were significantly higher on the Negative Problem Orientation and Avoidance Style Scales. As shown in Table 1, the group with probable depression was significantly higher on the dysfunctional problem-solving style, but the two groups did not differ significantly on the constructive problem-solving style.

A hierarchical logistic regression was used to predict probable depression status from demographic, physical health, level of injury, and problem-solving variables. The cut value for classification was set at .157, the prevalence rate for probable depression in the sample. Predictors were entered in four blocks. In the first step of the equation, the block of demographic variables did not improve prediction over the null model, $\chi^2(3, N = 121) = 5.27$, *ns*. Care recipient injury, added at the second step, yielded a significant improvement of prediction of probable depression status, $\chi^2(1, N = 121) = 8.89$, $p < .01$. The partial coefficient for SCI severity ($\beta = .80$; odds ratio [OR] = 2.22) was statistically significant, Wald(1) = 6.54, $p < .05$. Greater injury severity was associated with greater likelihood of depression probability status. At the third step, the block of caregiver physical health variables did not improve prediction over the previous model, $\chi^2(4, N = 121) = 8.38$, $p = .08$. The General Health Scale, however, had a significant partial association with probable depression risk ($\beta = -.04$; OR = .96), Wald(1) = 6.04, $p < .05$.

At the final step, the constructive and dysfunctional problem-solving style scores were added to the prediction equation. The problem-solving styles provided significant improvement in the prediction model, $\chi^2(2, N = 121) = 5.99, p < .05$. The coefficient for the positive problem-solving styles was not statistically significant ($\beta = .03$; OR = 1.03), Wald(1) = 1.61, *ns*. The dysfunctional problem-solving style was significantly associated with risk for probable depression ($\beta = .04$; OR = 1.04), Wald(1) = 5.37, $p < .05$. Thus, a dysfunctional problem-solving style significantly contributed to the prediction of probable depression status, consistent with the theoretical model.

The final predictive equation yielded an overall 74.4% accuracy of classification, with 73.7% of caregivers with probable depression correctly classified and 74.5% of not-at-risk caregivers correctly classified (see Table 2).

Discussion

The percentage of caregivers who met criteria on the IDD for possible MDD (15.7%) was far less than the percentages reported in studies that used the CES-D to determine risk status (37%, Grant et al., 2000; 50%, Elliott et al., 2003), and less than that reported in studies that have used other self-report measures (32% among caregivers of persons with dementia; Covinsky et al., 2003). It is interesting to note that the percentage of depression among caregivers in the current study is comparable to the rate of possible MDD observed among persons with rheumatoid arthritis (14%) and others with SCI (11%) found by Frank et al. (1992) in their empirical investigation of the IDD.

These data underscore criticisms of the CES-D (and other self-report inventories that lack clear instructional parameters and inadequately assess the full range of depressive symptoms; Coyne, 1994) as an ineffective and potentially misleading indicator of depression status. The CES-D is best construed as a measure of global distress, assessing features that may be associated with anxiety, grief, and depression, and it should not be construed as a unique measure of depressive episodes. In contrast, the IDD—although also possessing some shortcomings associated with other self-report instruments (Coyne, 1994)—seems to provide a more conservative estimate of depression status. Perhaps the IDD may be used clinically as an efficient screening measure to identify caregivers who may require more immediate diagnostic attention for a possible depressive episode, as it may be less likely to result in an unacceptable rate of false positives associated with the CES-D.

These data confirmed our hypothesis that a dysfunctional problem-solving style toward solving problems would significantly predict probable depression above and beyond caregiver demographic and health variables and care-recipient injury severity. These results are consistent with and replicate prior work in this area: Dysfunctional problem-solving abilities are predictive of poorer psychological adjustment of family caregivers of persons with chronic health conditions (Elliott, Grant, & Miller, 2004). Given this finding, it may be somewhat difficult to ascertain whether this relationship would remain significant under the context of other variables associated with depressive behavior (i.e., previous psychiatric history, social support, etc.).

The findings of the current study diverge from other research that has linked ill health with caregiver depression (Shewchuk et al., 1998). There is considerable evidence that ill health is a risk factor for adjustment problems among caregivers, generally (Elliott & Parker, in press; Navaie-Waliser et al., 2002; Vitaliano et al., 2003). However, a recent meta-analysis reports that significant differences in health between caregivers and noncaregivers are rather small and may lack clinical importance (Pinquart & Sorensen, 2003). The most pronounced—and clinically meaningful—differences in health are found between caregivers of persons with

dementia and noncaregivers, and differences may also be found as a function of study methodology and the caregiver–care recipient relationship (Pinquart & Sorensen, 2003). The current findings concerning the relation of caregiver health to depression status, then, may have been affected by the cross-sectional nature of the study or by unique (or unmeasured) aspects of this particular sample.

Of particular clinical interest is the finding in this study linking injury severity experienced by the person with SCI to caregiver probable depression status. Several investigators have speculated that severe injuries may be associated with greater caregiver distress. For example, greater injury severity may require more demanding roles by caregivers, and this may in turn require caregivers to provide a higher level of assistance in activities of daily living and time spent assisting the person with SCI. Thus, the demands associated with these caregiver activities may increase the likelihood for caregiver distress. There are some data to support these assumptions (Shewchuk et al., 1998), although other data have failed to support this notion (Elliott et al., 2001). The coding scheme for injury severity used in this study may have contributed in part to these results, but, in general, other research using prospective designs will be required to examine this matter.

In a recent review of family caregivers of persons with chronic disease, accumulating evidence suggests that teaching effective problem-solving skills to family caregivers may be useful for promoting their physical and psychosocial well-being (Lui, Ross, & Thompson, 2005). A problem-solving perspective can be used to present basic information about the condition, teach active coping skills, and encourage the use of assistive devices and the development of new goals with considerable success (Nezu, Felgoise, McClure, & Houts, 2003). Problem-solving therapies have shown considerable efficacy as a treatment for depression (Nezu & Perri, 1989), but providing these interventions to family caregivers in the community will likely require innovative approaches in primary care settings (Mynors-Wallis, Gath, Lloyd-Thomas, & Tomlinson, 1995) or with long-distance technologies (e.g., telephone sessions; Grant, Elliott, Weaver, Bartolucci, & Giger, 2002). The effectiveness and efficacy of problem-solving training for caregivers of persons with severe physical disabilities has yet to be established.

Several limitations are noted in the current study. The cross-sectional design limits the understanding for causal explanations. For example, it is possible that individuals whose scores on the IDD are consistent with a depression diagnosis have had previous problems with major depression or that a depressive behavioral style contributed to dysfunctional social problem-solving abilities. In addition, the current findings are limited in terms of generalization and inferences about the relationships given the number of variables that were investigated. The cross-sectional design also limits the understanding about the dynamics that contribute to the development and maintenance of depression over time. Self-report measures cannot be used in lieu of diagnostic interview systems; however, these data provide some preliminary support for using the IDD as a fairly conservative screening device with caregivers. The current study also had a small sample of men, which raises caution when generalizing gender effects; however, this number is representative of the body of literature on caregiver demographics. Another limitation of the study is the IDD and its reliance on *DSM-III-R* criteria. Last, future studies should also incorporate additional variables that might aid in the classification of caregiver depression (e.g., financial strain, social support, care burden).

The current findings are consistent with and extend prior research regarding the importance of social problem-solving styles in caregiver adjustment, and our data raise other issues that merit clinical and empirical attention. Accurate prediction of caregivers who are at greatest risk for depression and in need of mental health services is imperative. Longitudinal investigations are needed to provide for a more comprehensive understanding of the correlates of caregiver

depression over time, and similar studies are needed to identify interventions that best address the needs of family caregivers in the community and in the clinical setting.

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Means and Standard Deviations for Demographic and Self-Report Variables for Caregivers With a High or Low Probability of Depression

Variable	Depression status						p
	High probability (n = 19)			Low probability (n = 102)			
	M	SD	%	M	SD	%	
Caregiver demographics							
Age	41.1	8.55		46.5	13.39		.09
Gender							.20
Women	18		95	85		83	
Men	1		5	17		17	
Race							.44
Caucasian	14		74	66		65	
African American	5		26	36		35	
Care recipient level of injury ^a							
1	0		0	6		6	
2	0		0	1		1	
3	1		5	19		19	
4	3		16	26		25	
5	7		37	35		34	
6	8		42	15		15	
Short Form—36 Physical Health scales							
Bodily Pain	61.6	24.50		73.4	23.01		.04
Physical Role Functioning	78.9	36.57		82.8	32.24		.64
Physical Functioning	82.4	16.10		85.9	19.41		.67
General Health	59.3	23.64		71.9	22.82		.03
Social Problem-Solving Inventory—Revised							
PPO	13.2	3.98		14.4	3.09		.15
RPS	51.6	14.80		49.5	12.27		.52
NPO	14.5	11.09		7.6	6.95		.001
AS	8.8	7.79		5.85	4.88		.03
ICS	9.4	6.76		7.9	6.35		.36
Constructive problem-solving score	64.7	18.1		63.9	14.0		.81
Dysfunctional problem-solving score	32.6	22.8		21.4	15.8		.009

Note. Constructive problem-solving score = PPO + RPS; dysfunctional problem-solving score = ICS + AS + NPO. PPO = Positive Problem Orientation; RPS = Rational Problem Solving; NPO = Negative Problem Orientation; AS = Avoidance Style; ICS = Impulsive/Careless Style.

^a Levels of injury were coded as follows: 1 = other incomplete, 2 = other complete, 3 = para incomplete, 4 = para complete, 5 = tetra incomplete, 6 = tetra complete.

Table 2

Classification Matrix of Family Caregivers With a High Probability or Low Probability of Depression

Actual group	Predicted group		Accuracy
	Low probability	High probability	
Low probability	79	23	74.5
High probability	5	14	73.7

Note. Total percent accuracy = 74.4%.