Depression Among Parents of Children With Disabilities

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We examined the rate of depression among 110 parents of children with disabilities and tested a model to determine the unique factors associated with parental depression. Consenting parents completed measures of depression, family satisfaction, physical health, problem-solving abilities, stress appraisals, and child functional impairment. Participants were categorized as depressed or nondepressed based on their responses to the Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001). Nineteen percent of the parents met screening criteria for depression. Regression analyses revealed that threat appraisals, poorer physical health, and lower family satisfaction were uniquely associated with depression status with 83.3% accuracy. These findings highlight the importance of family satisfaction, problem solving ability, physical health, and the influence of appraisal processes on depression among parents of children with disabilities.

Keywords: depression, children with disabilities, parents, family satisfaction, Patient Health Questionnaire

Parents of children with disabilities appear to be more likely to experience elevated levels of stress and, as a result, a decrease in quality of life (Browne & Bramston, 1998). Approximately 35% to 53% of parents of children with disabilities may have problems with depression, but this literature is plagued with small sample sizes and differences in depression measurement methods (Olsson & Hwang, 2001). Veison (1999) points out that studies of depression among parents of children with disabilities yield conflicting results: There are studies indicating higher levels of depression among parents of children with disabilities and studies that find no differences in depression between parents of children with and without disabilities (Glidden & Schoolcraft, 2003).

Many studies of depression among parents of children with disabilities rely on samples recruited in clinical settings where families seek treatment; consequently, this work may lack generalizability to people living in the community who are not actively seeking or receiving clinical services. More importantly, many studies in this area use instruments that are not criterion-referenced and lack specificity for a meaningful comparison with symptoms and criteria consistent with a major depressive episode. Although popular self-report measures of depressive symptoms are often used in studies of parent adjustment (Demirtpe-Saygili & Bozo, 2011), these instruments lack specificity and scores are inflated by general distress (Gotlib, Lewinsohn, & Seeley, 1995). For example, in the Singer (2006) meta-analysis of maternal depression, none of the studies reviewed used a depression measure that assessed all symptoms by the criteria required to determine a major depressive episode.

Generally, evidence indicates that mothers of children with disabilities often report problems with depressive symptoms (Bristol, Gallagher & Schopler, 1988), and certain features may decrease the likelihood of depression among these parents, including education and income (Breslau, Staruch, & Mortimer, 1982), marital status (Olsson & Hwang, 2001), and the sever-
ality of the child’s impairments (Floyd & Gallagher, 1997). Parents report that environmental resources and supports that match family needs—such as financial resources, opportunities for community and social inclusion, family cohesion, and access to necessary information and services for child and family—can mitigate the stress often incurred by the child’s disability and its impairments (Green, 2007; Resch, Mireles, Benz, Zhang, Peterson, & Grenwelge, 2010; Worcester, Nesman, Mendez, & Keller, 2008). Unfortunately, environmental resources and supports are not well understood and are understudied, despite the fact that improvements in resources and supports are emphasized in the Affordable Care Act to benefit community-residing families providing care to a family member with a disability (Reinhard, Kassner, & Houser, 2011).

Several psychological characteristics, in contrast, are known to be associated with the distress reported by a family member caring for a loved one with a disability, and many of these have considerable implications for psychological interventions. We know that cognitive appraisals of stress and growth (Hastings, 2002; Kronenberger & Thompson, 1992; Pakenham, 2001), effective social problem-solving abilities (Dreer, Elliott, Fletcher, & Swanson, 2005; Dreer, Elliott, Shewchuk, Berry, & Rivera, 2007; Noojin & Wallander, 1997; Rivera, Elliott, Grant, & Oswald, 2007), and satisfaction with familial relationships (Glidden & Floyd, 1997; Lightsey & Sweeney, 2008) are predictive of distress reported by family members who are in caregiver roles independent of the variance attributable to psychological interventions. We know that cognitive appraisals of stress and growth (Hastings, 2002; Kronenberger & Thompson, 1992; Pakenham, 2001), effective social problem-solving abilities (Dreer, Elliott, Fletcher, & Swanson, 2005; Dreer, Elliott, Shewchuk, Berry, & Rivera, 2007; Noojin & Wallander, 1997; Rivera, Elliott, Grant, & Oswald, 2007), and satisfaction with familial relationships (Glidden & Floyd, 1997; Lightsey & Sweeney, 2008) are predictive of distress reported by family members who are in caregiver roles independent of the variance attributable to care recipient disability severity. We do not know, however, the degree to which these variables contribute to the prediction of a possible depressive episode among parents of children with disabilities, or whether they remain predictive of depression status after taking into account environmental supports and services.

The present study was conducted to achieve two goals. First, we wanted to obtain information about the number of parents of children with disabilities who may be at risk for a major depressive episode. To accomplish this, a sample of community residing parents was recruited, rather than a sample of parents receiving services from a clinical setting. We also used a criterion-referenced self-report measure of depression that provides a reliable and valid assessment of a probable major depressive episode.

Second, we examined a predictive model of depression status, using variables (i.e., appraisals of threat and growth, social problem solving ability, and resources and environmental/social supports, physical health, family satisfaction) of theoretical and clinical importance known to be associated with depression rates for family caregivers in prior research. Using a model of family adjustment after disability as a guide (cf. Elliott & Mullins, 2004), we used a four-step hierarchical regression equation to predict parent depression status, while simultaneously accounting for any clinically important relationships that could be attributable to parent demographic information and/or the severity of the child’s impairments.

Method

Participants

The total sample consisted of 110 parents of at least one child with a disability recruited through a large statewide parent organization for parents of children with disabilities. Disability type was determined using disability categories used in the Texas education system and commonly understood by the participants and the parent organization. Most of the participants were mothers ranging in age from 27 to 68 years ($M = 45.6$). The majority of the participants were Caucasian (83.6%); Latinos (9.1%) and African Americans (5.5%) constituted most of the remaining sample. Most participants (73%) reported annual household incomes of at least $25,000, but not more than $150,000. All participants had at least a high school diploma, and 95% reported some college experience. About a third (34.5%) of parents reported sporadic or no employment, 23.6% reported part-time employment, and 41.8% reported full-time employment.

Child ages were normally distributed with the majority ($n = 90$) of the participant’s children falling between ages 5 and 11 ($n = 38$), 11–16 ($n = 34$), and 17–21 ($n = 18$). The disability type of the child varied: 32.7% ($n = 36$) had autism, 19.1% ($n = 21$) had an intellectual disability, 20% ($n = 22$) had multiple disabilities (e.g., a child with both an intellectual dis-
ability and a visual impairment), and 27.3% (n = 30) had other types of disabilities (e.g., auditory impairments, visual impairments, traumatic brain injury, orthopedic impairment, speech impairments, deaf-blind, and other types of health impairments).

Procedure

Parents affiliated with the statewide parent organization used as a point of recruitment for this study were sent an initial email in which they were invited to participate in an online survey about their experiences as a parent raising a child with disabilities. Those parents indicating a willingness to participate were subsequently sent a unique link to complete the survey. An online survey tool (Qualtrics) was used to facilitate data collection for this study. Because a significant portion of the state’s population was of Mexican descent, the survey was also made available in Spanish. Consistent with the requirements for informed consent, upon accessing the link, participants were provided a more detailed explanation about the study to include their rights as participants, a statement about the potential risks and rewards of participation, information about the confidential nature of any shared information, details regarding an incentive for participating (a $10 gift card) and the contact information for the investigators and the Institutional Review Board at Texas A&M University.

Predictor Variables

Parent demographic data. Parent age, education level, employment status, and annual household income were included as predictor variables.

Child disability severity. To assess the severity of the child’s disability, parents completed the 12 items that assess activities of daily living (ADLs) on the Personal Care Assessment Form (PCAF; Phillips, Patnaik, Dyer, Naiser, Johnson, Fournier, & Elliott, 2011; available at http://pcaf.tamu.edu/). The PCAF has been used to assess personal and family needs among 5,000 children with special health care needs in the Texas Medicaid Personal Care Services program (Elliott, Phillips, Patnaik, Naiser, Fournier, et al., 2011). The ADL items require parents to rate the amount of assistance their child needs to complete different ADLs on a weekly basis. The particular areas of interest include the following: bed mobility, eating, transfers, toilet use, personal hygiene, bathing, and continence. A six-item Likert response scale ranging from total independence to total dependence is used. Two questions regarding bowel and bladder continence use a six-item Likert scale ranging from continent to always/ almost always incontinent. An additional continence question uses a dichotomous response choice (yes/no) to assess whether the child is continent during the night. The ADL items are added together to get a total score, with higher scores indicating their child has less ability to perform ADLs independently. The two bladder and bowel continence questions are also summed. Higher scores indicate problems with incontinence.

Previous research using the PCAF has shown high internal consistency (α = .94; Fournier, Davis, Patnaik, Elliott, Dyer, Jasek, & Phillips, 2010) and acceptable interrater reliability (Phillips et al., 2011). Reliability analysis for this study proved to be similar (e.g., α for ADLs = .95 and α for continence = .94). Higher ADL and incontinence scores on the PCAF are generally predictive of the hours of personal care services requested by the family (Nineteen percent of the parents met screening criteria for depression Fournier et al., 2010) and authorized by caseworkers for children with special health care needs (Elliott et al., 2011), especially for children with intellectual disabilities (Patnaik, Elliott, Fournier, Naiser, et al., 2011).

Appraisals of threat and growth. Two distinct types of appraisals were measured in this study: Appraisals of threat or harm and appraisals of positive growth. The threat questionnaire was modeled after the scale used by Pakenham (2001). It has seven questions that use a seven-point scale (low potential to high potential) asking participants to appraise the extent to which they believe raising a child with a disability could potentially threaten or harm key aspects of their life (e.g., important life goals, relationships with others, and their personal physical well-being). Previous studies using this questionnaire have demonstrated acceptable psychometric properties (e.g., Pakenham, 2001; Stanton & Snider, 1993). Internal consistency of the threat scale for this study was high (α = .89).
The 21-item Post Traumatic Growth Inventory (PTGI) was used (Tedeschi & Calhoun, 1996) to measure participants’ appraisals of benefit and growth while parenting a child with a disability. Participants used a six-point Likert scale to rate the degree to which they believed certain areas of their life may have positively changed in five key areas: (a) relating to others; (b) new possibilities; (c) personal strength; (d) spiritual change; and (e) appreciation of life. Higher total scores reflect a greater sense of benefit and growth. Previous research found the PTGI to be both reliable (e.g., full scale α = .90) and valid in terms of measuring growth when faced with challenges (Tedeschi & Calhoun, 1996). The internal consistency of the PTGI for this study was α = .94. Notably, the original intended use of the PTGI was to measure the existence of positive growth in individuals who had experienced a traumatic event, and parenting a child with a disability does not necessarily constitute a “traumatic” event. Because the PTGI asks questions about how people grow when faced when challenges, however, it is potentially a useful tool to measure positive growth and benefit finding among the parents in this study. Recent research supports the assertion that the PTGI can be used in non-trauma studies (Anderson & Lopez-Baez, 2008).

Resources and environmental/social supports. The Resources and Environmental/Social Supports-Questionnaire (RESS-Q) was developed based on theoretical and empirical evidence that suggests parents of children with disabilities encounter several barriers related to resources and supports in their surrounding community and social environment (e.g., Beckham, 2002; Minnes, 1988; Resch et al., 2010; Worcester et al., 2008). The purpose of the RESS-Q was to measure the degree of match between the family’s needs and the resources and supports available in the community to meet those needs. The RESS-Q has 13 items that ask parents if they encounter problems associated with access to information and services, financial barriers, and social/community inclusion (e.g., “Important information related to the needs of my child is usually readily available and easy to understand”; “Our insurance plan usually covers the majority of the health care expenses for my child with a disability”; “I am pleased with my social life and the number of opportunities I have to spend with friends and neighbors”). A five-point Likert scale ranging from one (mostly disagree) to five (mostly agree) is used to record responses with the total possible questionnaire score ranging from 13 to 65. Higher scores suggest that parents feel as if their family has greater access to environmental and social supports available in their communities. Internal consistency of the RESS-Q was α = .79.

Social problem-solving abilities. Parents completed the 10-item version of the Social Problem Solving Inventory-Revised (SPSI-R-10; Dreer, Berry, Rivera, Snow, Elliott, Miller, & Little, 2009) in order to assess their overall problem-solving abilities. Response choices on the SPSI-R-10 consist of a 5-point Likert scale ranging from 0 (not at all true of me) to 4 (extremely true of me). Items are summed and a total score is derived; higher scores suggest better problem-solving abilities. Prior research has found that the SPSI-R-10 is statistically comparable to the longer, 25-item version (Dreer et al., 2009). Internal consistency of the SPSI-R-10 for this study was α = .74.

Physical health. Past research has consistently demonstrated that physical health is an important factor in their family caregiver well being (e.g., Grant, Bartolucci, Elliott, & Giger, 2000; Rivera et al., 2007). To measure each parent’s overall physical health the Physical Component Summary (PCS) from version 1 (v.1; standard 4-week recall) of the Short Form-12 (SF-12; Ware, Kosinski, & Keller, 1996) was used. The SF-12 v.1 has 12 items that assess one’s mental and physical health-related quality of life. Test–retest reliability for the SF-12 ranges between .86 and .89 for the PCS (Ware et al., 1996). Higher PCS scores indicate greater overall physical health.

Family satisfaction. To measure how satisfied parents are with their family functioning the Family Satisfaction Scale (FSS; Olson & Wilson, 1982) was used. The FSS has 14 items to assess family cohesion and adaptability and has been used in many studies of family adjustment after disability (Johnson et al., 2010; Lightsey & Sweeney, 2008; Perlesz, Kinsella & Crowe, 2000). The FSS uses a Likert scale ranging from 1 (dissatisfied) to 5 (extremely satisfied). Responses are summed to yield a total score with higher scores suggesting a higher degree of family satisfaction. Reliability
and validity work by Olson and Wilson (1982) yielded an \( \alpha \) coefficient of .92. Internal consistency on the FSS for this study was also high (\( \alpha = .90 \)).

**Criterion Variable**

The Patient Health Questionnaire (PHQ9; Kroenke, Spitzer, & Williams, 2001) was used to determine parent depression status. The nine questions on the PHQ reflect the nine criteria on which the DSM-IV depressive disorders are based (Kroenke et al., 2001). The PHQ9 was designed for use in clinical and medical settings, and uses a four-point Likert scale (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day) to gauge responses to questions asking about the respondents mental/emotional health over the previous 2-week period. Consequently, it is an excellent tool for obtaining normative information about depression rates among individuals who typically present their concerns about depressive symptoms in primary care settings (Probst et al., 2006). It is also suitable for use in screening for depression among parents of children with severe disabilities (Blucker, Elliott, Warren, & Warren, 2011).

Scores on the PHQ9 can range from 0–27; scores between 0 and 4 indicate no depression, 5–9 indicate mild depression, 10–14 indicate moderate depression, 15–19 indicate moderately severe depression, and \( \geq 20 \) indicate severe depression (Kroenke et al., 2001). In this study depression status was coded dichotomously with participants scoring \( \geq 10 \) being coded as depressed and participants scoring from 0–9 coded as not depressed. Internal consistency of the PHQ9 for this study was \( \alpha = .85 \).

Reliability and validity studies of the PHQ9 have yielded results indicating sound psychometric properties. Internal consistency of the PHQ9 has been shown to be high. A study involving two different patient populations and 6000 total participants produced Cronbach’s alpha of .86 and .89. Additionally, test–retest reliability had a high correlation at \( r = .84 \) and discriminant validity was established via a ROC analysis that produced an area under the curve for the PHQ9 of .95 when diagnosing depression (Kroenke et al., 2001). Moreover, criterion validity was demonstrated by both high sensitivity and specificity for the PHQ9. In addition, among the 6000 participants who completed the PHQ9, 580 were interviewed by mental health professionals, and results demonstrated strong agreement between diagnoses made by the PHQ9 and by the mental health professionals (Kroenke et al., 2001).

**Data Analysis**

Preliminary data analysis steps included descriptive statistics, tests of group differences, and zero order correlations of all variables included in the analysis. To systematically test the relations of clinical, psychological, and environmental variables to parents’ depression status, a four-block hierarchical logistic regression (HLR) analysis was conducted. Essentially, HLR is a sequence of regression analysis where multiple predictor variables are added at different blocks to see if each new combination of predictor variables can account for significant variance in the criterion variable while still including previously entered combinations in the model (Hoyt, Imel, & Chan, 2008). Optimal use of HLR occurs when independent variables (IVs) belonging to similar categories or measuring similar constructs are included in the analysis as sets of IVs, instead of being entered as individual IVs as would be done in typical regression approaches. HLR analysis calculates how much variance in the dependent variable (DV) is explained by each block. A regression coefficient for each individual variable is also calculated to measure each individual variables distinct contribution (Hoyt et al., 2008). HLR has been used in this fashion in previous studies of depression among individuals caring for family members with disabilities (Dreer et al., 2007; Grant et al., 2004; Rivera et al., 2007).

In the first block of the equation, parent demographic variables were entered to control for any potential association they may have with parent depression status. The second block consisted of variables related to the child’s disability (PCAF scores for ADLs, continence). Because child age and parent age were highly correlated (\( r = .72 \)) child age was not included in the analysis to avoid problems with multicollinearity. Block three consisted of the RESQ, SPSI-R-10, PTGI, and Threat measures. These variables were included in the same block because each one represents a specific psycholog-
ical or environmental characteristic that constitutes an important protective factor for families with members who have chronic health conditions (Weihs, Fisher, & Baird, 2002), and should, based on our hypothesis, be predictive of parent depression (Elliott & Mullins, 2004). The final block consisted of parent physical health and family satisfaction. Assuming these variables would likely have a strong inverse relationship with depression and potentially correlate with the other predictor variables, entering these variables in the final step provided a conservative test of any unique relationship they may have with parent depression. The order of entry for each block provides an appropriately stringent test of the presumed influence of psychological, environmental, and personal characteristics specified in the Elliott and Mullins (2004) model of family adjustment following disability.

Results

Table 1 provides information by depression risk status on parent demographic, child characteristic variables, and other predictor variables included in the equation. Chi-square tests performed for marital status and disability type revealed no significant differences between the two depression risk status groups for these variables. In addition, independent t tests revealed no mean differences between the two depression risk status groups for average parent age, parent education level, annual household income, employment status, or any of the child’s disability variables. However, significant differences were found between the groups for other predictor variables. The parents classified as depressed had significantly higher threat appraisals than parents who were not depressed. Depressed parents also reported significantly less problem-solving ability, lower family satisfaction, and lower physical health. The two groups did not differ on their reported access to resources and environmental/social supports or in their appraisals of positive growth.

Because of missing data on a small number of surveys, only 86% (n = 94) of the participants were included in the logistic regression analysis. Eighteen (19.1%) of the parents included in this part of the analysis had depression scores at or above 10 on the PHQ9. Therefore, the cut value for depression classification was set at .191 to reflect the actual rate of depression observed among study participants. Parent demographic variables, entered at the first block of

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Sample Statistics and p Values for Independent Samples t Tests</th>
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</thead>
<tbody>
<tr>
<td>Depressor risk</td>
<td>Not depressed (n = 91)</td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td>Parent age</td>
<td>45.7</td>
</tr>
<tr>
<td>Parent education level</td>
<td>3.7</td>
</tr>
<tr>
<td>Household income</td>
<td>3.5</td>
</tr>
<tr>
<td>Employment status</td>
<td>2.0</td>
</tr>
<tr>
<td>Disability severity characteristics</td>
<td></td>
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<tr>
<td>ADLs</td>
<td>14.5</td>
</tr>
<tr>
<td>Urinary/bowel continence</td>
<td>2.7</td>
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<tr>
<td>Appraisal measures</td>
<td></td>
</tr>
<tr>
<td>Threat</td>
<td>19.3</td>
</tr>
<tr>
<td>Growth</td>
<td>61.5</td>
</tr>
<tr>
<td>Environmental/social supports</td>
<td>35.0</td>
</tr>
<tr>
<td>Problem solving</td>
<td>31.0</td>
</tr>
<tr>
<td>Parent wellbeing</td>
<td></td>
</tr>
<tr>
<td>Family satisfaction</td>
<td>50.0</td>
</tr>
<tr>
<td>Physical health</td>
<td>53.0</td>
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</tbody>
</table>

* Significant difference < .05. ** Significant difference < .01. *** Significant difference < .001.
the equation, were not significantly predictive of parent depression status, $\chi^2(4) = 2.87$ (see Table 2). At the second step of the equation the child disability characteristics (ADLs, incontinence) did not significantly contribute to the equation, $\chi^2(2) = .44$, ns.

The four psychological and environmental variables (RESSQ, SPSI-R-10, PTGI, Threat), entered at the third step, were significantly predictive of parent depression status, $\chi^2(4) = 14.92, p < .01$. Parental threat appraisals significantly contributed to the prediction of depression status ($\beta = .115$; odds ratio = 1.12; Wald [1] = 7.07, $p < .01$). With each unit increase in appraisals of threat, parents had 12% greater odds of being at risk for depression. However, the SPSI-R-10, RESSQ, and PTGI did not significantly contribute to the equation. Based on the Cox and Snell, and as indicated by the Nagelkerke pseudo $R^2$ estimates, the variables entered at the third step accounted for 14.1% to 22.8% of the variance in parent depression status.

The FSS and PCS were entered as a block into the final step of the equation. This final block, $\chi^2[2] = 12.56, p < .01$, significantly contributed to the prediction of depression status. Both the FSS ($\beta = -.131$; odds ratio = .877; Wald [1] = 5.77, $p < .01$) and PCS ($\beta = -.062$; odds ratio = .940; Wald [1] = 4.11, $p < .05$) independently and significantly contributed to the overall model. For each unit decrease in the parent’s reported family satisfaction, participants were 12.3% more likely to be at risk for depression. Similarly, for each unit decrease in the physical health score, parents were 6% more likely to be at risk for depression.

The pseudo $R^2$-squared values for this final block ranged from 10.3% to 16.5%, and the complete model was statistically significant ($\chi^2[12] = 30.79; p < .01$), accounting for an estimated 27.9% to 44.8% of the available variance in parent depression status. Moreover, prediction accuracy for depression status using this model was 76.3% for the nondepressed, 83.3% for the depressed group, and 77.7% for the entire sample (see Table 3).

**Discussion**

Based on responses to the PHQ9, 19.1% of the parents in our sample were classified as depressed. This rate of depression is much lower than the range of 35% to 53% found in past research on similar populations (Olsson & Hwang, 2001), but nearly three times more than the average for the overall U.S. population

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Hierarchical Logistic Regression Predicting Depression Risk Status</th>
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<tbody>
<tr>
<td></td>
<td>$\beta$</td>
</tr>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
</tr>
<tr>
<td>Parent age</td>
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</tr>
<tr>
<td>Parent education level</td>
<td>$.94$</td>
</tr>
<tr>
<td>Household income</td>
<td>$-0.16$</td>
</tr>
<tr>
<td>Employment status</td>
<td>$.13$</td>
</tr>
<tr>
<td><strong>Disability characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>ADLs</td>
<td>$0.05$</td>
</tr>
<tr>
<td>Urinary/bowel continence</td>
<td>$-0.14$</td>
</tr>
<tr>
<td><strong>Psychosocial variables</strong></td>
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<tr>
<td>Threat appraisals</td>
<td>$.11$</td>
</tr>
<tr>
<td>Growth appraisals</td>
<td>$-0.01$</td>
</tr>
<tr>
<td>Environmental/social supports</td>
<td>$.11$</td>
</tr>
<tr>
<td>Problem solving</td>
<td>$-0.05$</td>
</tr>
<tr>
<td><strong>Parent wellbeing</strong></td>
<td></td>
</tr>
<tr>
<td>Family satisfaction</td>
<td>$-0.13$</td>
</tr>
<tr>
<td>Physical health</td>
<td>$-0.06$</td>
</tr>
<tr>
<td>Constant</td>
<td>$5.89$</td>
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*p < .05.
Moreover, the percentage of depressed parents in this study is similar to rates observed in research that used a conservative measure of depression among individuals caring for family members with disabilities (15.7% among individuals caring for family members with spinal cord injuries; Dreer et al., 2007), and substantially lower than studies that used more liberal, nonspecific measures to determine depression status (48% among family caregivers of persons with traumatic brain injuries, Rivera et al., 2007; 38% among family caregivers of stroke survivors, Grant et al., 2004). Collectively, the results of the present study imply that parents raising children with disabilities may be at higher risk for depression than the general public, but this risk may not be as high as some studies have suggested.

The present study underscores the need for the use of measures that closely adhere to established criteria for diagnosing depression. The PHQ9 is strictly modeled after the DSM–IV depression criteria. Although not a stand alone diagnostic tool, the PHQ9 was designed to specifically detect the presence of possible mood psychopathology (i.e., clinical depression) and not simply general emotional maladjustment (i.e., mild anxiety or stress). Past studies provide support for this explanation. Dreer et al. (2007) hypothesized that many studies of family caregiver depression may base depression prevalence rates from data obtained from nonspecific measures of distress. As a result, past studies of parents of children with disabilities may not have actually measured clinical depression but rather a nonspecific emotional distress. This could account for the wide variation in depression prevalence rates in past research.

The two groups of parents did not differ significantly on any of the demographic variables in any of the mean difference analysis. Furthermore, indicators of child disability severity did not distinguish the two depression risk groups. Based on these findings, demographic variables and child disability characteristics may not be the best indicators of parent risk for depression. In the past, such inferences may have contributed to a negative view of having a child with a disability. Evidence continues to suggest that parental maladjustment is often more associated with variables not related to the child but instead to problems accessing information, resources, and environmental/social supports (Green, 2007; Resch et al., 2010; Worcester et al., 2006).

Consistent with the Elliott and Mullins (2004) conceptualization of family adjustment following disability, parent appraisals of their situation were significantly associated with their depression status. Parents at risk for depression may have negative beliefs and fears about the potential for harm posed by the challenges of raising a child with a disability. Appraisals of positive growth had no appreciable contribution to the prediction of depression status, and contrary to prior work, neither did parent problem-solving abilities. The results of the present study imply that parents who are primed to interpret stressful circumstances and events as potentially threatening may be more likely to report other symptoms characteristic of a major depressive disorder.

Family satisfaction and physical health appear to have greater influence on parental depression than the social–cognitive variables contained in the third block of the equation. The relationship between parental physical health and depression may reflect, in part, a circular relationship: It is well established that individuals who care for a family member with a disability, in general, are at risk for poor health that subsequently increases their risk for psychological problems (Vitaliano, Zhang, & Scanlan, 2003). A few studies have indicated a relationship likely exists between family satisfaction and overall parental adjustment, but the family side of having a child with a disability has traditionally been neglected in research (Ones, Yilmaz, Cetinkaya & Caglar, 2005). This is troubling because the unit of society most affected by having a child with a disability is the family and high satisfaction with family functioning has been shown to be

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Table 3

<table>
<thead>
<tr>
<th>Predicted group</th>
<th>Observed group</th>
<th>Low risk</th>
<th>High risk</th>
<th>% Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not depressed</td>
<td>58</td>
<td>18</td>
<td>76.3%</td>
<td></td>
</tr>
<tr>
<td>Depressed</td>
<td>3</td>
<td>15</td>
<td>83.3%</td>
<td></td>
</tr>
<tr>
<td>Total percent accuracy</td>
<td>77.7%</td>
<td></td>
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(based on the 6.7% prevalence rate reported by the National Institute of Mental Health, 2010).
associated with increased coping and more positive appraisals (Failla & Jones, 1991). The marital relationship, in particular, may be especially important for positive child adjustment (Carr & Springer, 2010).

Several important limitations should be mentioned when interpreting these results. This study used the cut-off of ≥10 on the PHQ9 to determine depression risk status for this sample, and this could be construed as a liberal depression cut-off point. Notably, however, past studies have demonstrated that using the ≥10 cut-off point is equally useful as a more sophisticated PHQ9 scoring algorithm (Gilbody, Richards, Brealey, & Hewitt, 2007). Moreover, individuals with scores at or above this cut-off point have been shown to be significantly more likely to be diagnosed with depression following a more in-depth clinical interview by a mental health professional that those scoring below the cut-off (Kroenke et al., 2001). Gilbody et al. (2007) also found that for a community (nonclinical) sample such as that studied here, an even lower cut-off score (≥9) may be most appropriate. Given the cross-sectional nature of this study, no statements about causality can be made. The analytical model used here found several predictors of depression status in this sample of parents, but prediction in this model should not be confused with causality in the general population of parents raising children with disabilities.

An additional limitation of this study is that the majority of the sample was Caucasian, educated, and living in mostly nonrural areas of a single state. Importantly, no data regarding family size or of child externalizing behavior problems were collected. As this study demonstrated, family satisfaction has a strong relationship with parental emotional wellbeing and understanding the role of family size on this relationship may be an important variable not included in this study. Additionally, child externalizing behavior problems have been associated with parent distress in prior research (Blacher, Neece, & Paczkowski, 2005), and with parent requests for formal personal care assistance in the home (Fournier et al., 2010) and of personal care hours authorized by Medicaid caseworkers (Elliott et al., 2011). Future study of parent depression should include indicators of child externalizing behavior problems. Finally, possible differences due to the parent and/or gender of the child with the disability were not included in this study. Future research should attempt to capture these potential differences as they may, for example, shed additional light on the unique challenges and perspectives faced by fathers of children with disabilities.

Despite these limitations, the findings of this study are informative for researchers, policymakers, educators, clinicians, and families of children with disabilities. Research that builds on these findings will continue to uncover possible predictors of parental depression that will, in turn, inform health and education policy decisions designed to assist these families.

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