The Relationship Between Single-Parent Status and Parenting Capacities in Mothers of Youth with Chronic Health Conditions: The Mediating Role of Income

Larry L. Mullins,1 PhD, Cortney Wolfe-Christensen,2 PhD, John M. Chaney,1 PhD, T. David Elkin,3 PhD, Lori Wiener,4 PhD, Stephanie E. Hullmann,1 MS, David A. Fedele,1 MS, and Ashley Junghans,1 BS

1Department of Psychology, Oklahoma State University, 2Department of Pediatrics/Neurology, Children’s Hospital of Michigan, 3Department of Psychiatry and Human Behavior, University of Mississippi Medical Center, and 4Pediatric Oncology Branch, National Cancer Institute/National Institutes of Health

All correspondence concerning this article should be addressed to Larry L. Mullins, PhD, 116 North Murray Hall, Oklahoma State University, Stillwater, OK, 74078, USA. E-mail: larry.mullins@okstate.edu

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Objective To retrospectively examine the relationship of single-parent status to parenting capacity variables in mothers of youth with a chronic health condition. Methods Parental overprotection, perceived vulnerability, and parenting stress were assessed in 383 mothers (308 married and 75 single parents) of youth with one of six chronic health conditions (i.e., type 1 diabetes, asthma, cancer, cystic fibrosis, hemophilia, or sickle cell disease). Results Single mothers evidenced higher levels of both perceived vulnerability and parenting stress, but not overprotection, than married parents. These differences disappeared in the presence of income as a predictor. Conclusions Single parents appear to evidence differences in parenting capacity; however, low income appears to account in large part for the higher level of risk associated with single-parent status.

Key words adjustment; chronic illness; parent stress; psychosocial functioning.

As noted by Thompson and Gustafson’s (1996) transactional stress and coping model, parent and child adjustment to a chronic illness is a complex and multifaceted process. Constructs outlined in this model include illness parameters, demographic parameters, family functioning, and cognitive processes, among others. Furthermore, according to this model, maternal and child adjustment are inextricably linked and are bidirectional in nature. Numerous components of this model have been examined in the pediatric chronic literature over the past decade; however, one area that has received relatively little attention is the relationship of single-parent status to other aspects of parental functioning in the context of pediatric chronic illness.

Over the past several decades, the proportion of children in two-parent families has decreased from 85 to 69%; as a consequence, approximately 3 out of 10 children live in single-parent homes (Shudy et al., 2006). It has been well documented that parents of children with a chronic illness struggle to adapt to their child’s illness and are often subject to distress; however, this struggle may be more intense for single parents who must carry the burden alone (Brown et al., 2008). Indeed, Dolgin and colleagues (2007) found that single mothers of children with cancer had moderately high levels of distress, which remained stable up to 6 months post diagnosis. Likewise, other research suggests that single mothers rate their children’s general health, behavior, and self-esteem lower than married parents (Landgraf & Abetz, 1998).

Other related factors, beyond marital status alone, may account for elevated distress in single parents, including increased financial burden. The financial resources
available to single parents are approximately 55% of those of two-parent families (Thomas & Sawhill, 2005). To further complicate this situation, caring for a child with a chronic illness can exacerbate a family’s financial burden due to health-care costs, medical equipment, travel expenses, and time off from work, each of which impact socioeconomic status (SES; Montgomery, Oliver, Reisner, & Fallat, 2002; Winthropp, et al., 2005). In the broader mental health literature, lower SES has consistently been shown to be associated with poorer psychological adjustment (Thompson & Gustafson, 1996).

A number of studies have also demonstrated that lower SES is related to poorer adjustment in both children with a chronic illness and their parents and siblings (Kupst & Schulman, 1988; Raina et al., 2005). Specifically, research conducted by Raina and colleagues (2005) suggests that lower income is related to both poorer physical and psychological health in caregivers of children with a chronic illness. Moreover, in a study of children with cancer who were undergoing bone marrow transplantation, those youth with lower SES also had lower health-related quality of life ratings than children from higher socioeconomic backgrounds (Phipps, Dunavant, Lensing, & Rai, 2002). Higher levels of distress have also been found to be related to lower SES in siblings of childhood cancer survivors (Zebrack et al., 2004).

Given these findings, researchers have begun to examine the impact of single-parent versus two-parent households on parental adjustment outcomes (Brown et al., 2008). In a recent study, Iobst and colleagues (2009) retrospectively examined adjustment in a large sample of mothers of children recently diagnosed with cancer. Single parents did not differ from married parents in terms of problem-solving ability or posttraumatic stress symptoms. Single parents did, however, report higher levels of depressive symptomatology, but after controlling for educational status, this difference was no longer significant. Notably, these investigators did not examine the relation between income and adjustment outcomes.

To further elucidate the relationship of single-parent status and parental adjustment outcomes, the current study retrospectively examined the relation between single-parent status and three specific parenting capacity variables in mothers of youth with a chronic health condition. These parenting capacity variables included parental overprotection, perceived child vulnerability, and parenting stress, each of which has been consistently associated with poor adjustment outcomes across a number of chronic illness conditions including cancer, asthma, diabetes, and cystic fibrosis. Specifically, parental overprotection is defined as behavior that is deemed excessive or overbearing given the child’s developmental stage (Thomasgard, Metz, Edelbrock, & Shonkoff, 1995) and has been shown to be related to lower autonomy and psychosocial functioning and increased externalizing problems and dependence (Capelli, McGrath, & MacDonald, 1989; Holmbeck et al., 2002). Parents’ thoughts or beliefs regarding the child’s degree of vulnerability constitute the construct of perceived child vulnerability (Thomasgard & Metz, 1996), whereas parenting stress is considered to be the overall level of stress within the parent–child system (Abidin, 1990). Higher perceived child vulnerability has been related to various child adjustment outcomes, including elevated internalizing symptomatology, social anxiety levels, and illness uncertainty (Anthony, Gil, & Schanberg, 2003; Colletti et al., 2008; Mullins et al., 2004). Finally, studies have demonstrated that higher levels of parenting stress are related to increased child depressive symptoms, child behavioral and social maladjustment, and parental state anxiety (Colletti et al., 2008; Kazak & Barakat, 1997; Mullins et al., 2004).

Collectively, single mothers may be at risk for experiencing elevated levels of these parenting capacity variables for several reasons including: (1) single mothers may carry the psychological burden of caring for a child with a chronic illness, with little other support in the home, (2) single mothers may feel the need to be involved in their child’s medical care above and beyond what is developmentally appropriate because they do not have the benefit of sharing the responsibilities with another adult, or (3) single mothers must often deal with the additional economic pressures of a chronic illness without the benefit of having another wage earner in the home. Furthermore, due to these factors, single parents may feel that their child is receiving lower quality or inconsistent medical care, and may subsequently be at risk for developing disease exacerbation or evidence a higher rate of illness-related side effects than other children.

The overarching goal of the current study was to examine differences between single mothers and married mothers of youth with a chronic illness on levels of overprotection, perceived vulnerability, and parenting stress while taking into account the possible influence of income. To achieve this goal, we established three interrelated aims. Aim one sought to examine possible differences between single mothers versus married mothers on key demographic variables, including age, education, income, and minority status. For aim two, we sought to determine the direct relationship between marital status and levels of parental overprotection, perceived vulnerability, and parenting stress. Aim three examined whether annual family income would mediate the relationships...
between marital status and the three parenting capacity variables. We hypothesized that single-parent status would be associated with higher levels of parental overprotection, perceived child vulnerability, and parenting stress, and that income would mediate the relationships between marital status and levels of parental overprotection, perceived child vulnerability, and parenting stress.

Method
Participants
Data for the current study were collected from a total of 451 parents (383 mothers, 53 fathers, 15 custodial grandparents) of children who participated in two separate studies conducted between 2000 and 2008, which were designed to investigate parent and child adjustment to chronic illness. Please note that small subsamples from this larger database were utilized in two previous studies with different aims and hypotheses (Lopez et al., 2008; Mullins et al., 2007).

For the current study, we chose to retain only mothers for the purposes of homogeneity, given that previous research suggests that mothers and fathers evidence differential patterns of adjustment to their child’s illness (Kazak et al., 1997). As such, the current sample included 383 mothers of children with type 1 diabetes mellitus (n = 123), cancer (n = 94), asthma (n = 90), cystic fibrosis (n = 49), hemophilia (n = 17), and sickle cell disease (n = 10). Please see Table 1 for a description of the demographic characteristics for the sample. The ethnic breakdown of the current sample is consistent with the ethnic distribution of the geographic region in which this study was conducted.

Measures
Demographic and Illness Parameters
A demographic questionnaire was used to assess parent age, child age, annual household income, education, and marital status. Parents were asked to indicate their annual income on a 7-point scale ($0–9,999, $10,000–19,999, $20,000–29,999, $30,000–39,999, $40,000–49,999, $50,000–59,999, $60,000 or greater). Parents were asked to self-identify as married, single, remarried, never married, or other. Married and remarried parents were collapsed together for analyses, and single, never married, and other were collapsed together as single-parent status for analyses. A medical chart review form was used to collect data regarding the child’s diagnosis, and date of diagnosis.

Parenting Capacity Measures
The following parenting capacity measures were used: the Parent Protection Scale (PPS), Child Vulnerability Scale (CVS), and Parenting Stress Index/Short Form (PSI/SF). Notably, a revised version of each of the measures was utilized given the recommendations of Fedele and colleagues (2010). In the study conducted by Fedele and colleagues (2010), exploratory and confirmatory factor analyses were conducted to determine a final factor structure for each

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**p < .01, ***p < .001.
measure within a chronic illness population. These analyses resulted in a 9-item revised version of the PPS, a 7-item revised version of the CVS, and a 26-item revised version of the PSI/SF.

Parental Overprotection
Parental overprotective behaviors were measured using the PPS (Thomasgard et al., 1995). The PPS is originally a 25-item parent self-report measure assessing several dimensions of protective parenting behaviors. Higher total scores represent greater overall levels of parental protection behaviors. Previous normative studies on the PPS have demonstrated moderate to high internal reliability (Cronbach’s $\alpha = .73$) and high test–retest reliability for the total score ($r = .86$, Thomasgard et al., 1995). Internal consistency for the current sample was slightly lower than previous studies (Cronbach’s $\alpha = .60$).

Perceived Child Vulnerability
Parental perceptions of child vulnerability were assessed using the CVS (Forsyth, Horwitz, Leventhal, Burger, & Leaf, 1996). The CVS is originally an 8-item parent self-report scale with a 4-point response scale ranging from 0 (definitely false) to 3 (definitely true); higher scores reflect greater perceived child vulnerability. Previous studies have demonstrated adequate internal reliability (Cronbach’s $\alpha = .74$; Forsyth et al., 1996) and an aggregate correlation of $r = .84$ for test–retest reliability (Thomasgard & Metz, 1993). Internal consistency for the current sample was higher than reported in previous studies (Cronbach’s $\alpha = .80$).

Parenting Stress
The relative magnitude of parenting stress in the parent–child system was measured using the PSI/SF (Abidin, 1990). The PSI/SF is originally a well known, 36-item parent self-report instrument with a 5-point response scale ranging from 1 (strongly agree) to 5 (strongly disagree). The PSI/SF yields a total summary score, which was used in the current study as the measure of parenting stress. The internal consistency for the current sample was high (Cronbach’s $\alpha = .92$).

Procedures
Parents of children with asthma or cystic fibrosis were recruited from two outpatient pulmonology clinics, parents of children with diabetes were recruited from three outpatient endocrinology clinics, and parents of children with cancer, sickle cell disease, or hemophilia were recruited from an outpatient hematology/oncology clinic in the southwestern United States. Clinic rosters were used to generate the list of families eligible for the study. Parents of children with cancer were approached in the waiting room during the child’s outpatient clinic visit and completed their measures in a private location, whereas all other parents were sent a solicitation letter describing the purpose of the study, and parents who expressed interest were mailed consent forms and questionnaire packets. All parents who completed the study received a gift certificate for participating. Approximately 600 families were contacted for participation, with 83.5% consenting to participate ($n = 501$). Of those consented, 451 mothers completed all measures, leading to a completion rate of 90%. Each study was approved by the university institutional review board and was in compliance with the ethical standards of the American Psychological Association.

Overview of Analyses
To address aim one, analyses were conducted to determine group differences between married and single mothers on age, level of education attainment, minority status, or annual income. Next, to accomplish the second and third aims, hierarchical regression analyses following Baron and Kenny’s (1986) four-step model for testing mediation were utilized to determine whether marital status was independently related to each parenting capacity variable, and whether income mediated these relationships. Successful mediation would indicate that income was the mechanism through which marital status affected a particular parenting capacity variable. In Baron and Kenny’s four-step model for testing mediation through regression analyses (1986), a direct relationship between the predictor and outcome variable is first examined. Next, a direct relationship between the predictor and the mediator is tested. Finally, the relationship between the predictor and the outcome variable is examined while controlling for the effect of the mediator. Guided by the transactional stress and coping model (Thompson & Gustafson, 1996), theoretically chosen demographic covariates (i.e., parent age, child age) were entered on Step 1; illness covariates (i.e., illness duration, disease group) were entered on Step 2; and the predictor variables (i.e., marital status and/or income) depending on the model, were entered on Step 3 for all regression analyses. Following the mediation analyses, post-hoc probing was conducted. Holmbeck (2002) warns that failing to test the significance of a mediated effect can lead to false conclusions. Therefore, post-hoc probes of the mediational effect of income on the relationships between marital status and parental overprotection, perceived vulnerability, and parenting stress were conducted by testing the significance of the indirect effect in the models using the Sobel equation (Sobel, 1982).
Results

Group Differences on Demographics

Independent t-tests revealed that single parents were significantly younger (M = 35.01, SD = 7.28) than married parents (M = 37.29, SD = 6.34; t[378] = -2.67, p = .008; 95% confidence interval [CI] = -3.94, -0.61) and that single mothers had significantly lower educational attainment (M = 13.21, SD = 2.14) than married mothers (M = 14.44, SD = 2.43; t[377] = -4.30, p < .001; 95% CI = -1.81, -0.67). Chi-square tests of association revealed that single mothers were significantly more likely to self-identify as a member of a minority group (χ²(1) = 28.97, p < .001) and reported significantly lower income (χ²(6) = 146.32, p < .001) than married mothers.

Primary Analyses

Contrary to hypotheses, a significant direct relationship between marital status and parental overprotection was not found (β = -.05, p = .30), after controlling for covariates. Specifically, single-parent status was not significantly associated with higher levels of parental overprotection. As such, subsequent mediation analyses were not conducted for parental overprotection.

Consistent with hypotheses, a significant direct relationship between marital status and perceived vulnerability existed (β = -.20, p < .001), such that single mothers reported significantly higher levels of perceived vulnerability than married mothers. Analyses also revealed a significant relationship between marital status and income (β = .53, p < .001), such that single-parent status was associated with lower income. Furthermore, marital status was no longer a significant predictor of level of perceived vulnerability after controlling for annual income which suggests that income mediated this relationship (p > .05).

Finally, also consistent with hypotheses, a direct relationship between marital status and parenting stress was found (β = -.14, p = .01). Specifically, single mothers reported significantly higher levels of parenting stress than married mothers. Results also demonstrated a significant relationship between marital status and income (β = .53, p < .001), such that single-parent status was associated with lower income. Finally, the results revealed that after controlling for annual income, marital status was no longer a significant predictor of level of parenting stress suggesting that income mediated this relationship (p > .05).

Post-Hoc Probing of Meditational Effect

Results revealed that income indeed mediated the relationships between marital status and perceived vulnerability (z = -4.31, p < .001; see Figure 1) and parenting stress (z = -3.72, p < .001; see Figure 2).

Discussion

The current study retrospectively examined the relationship of single-parent status to three parenting capacity variables in a large sample of mothers of youth with a chronic health condition. Consistent with our predictions, marital status was indeed associated with two parenting variables, such that single-parent status was associated with higher levels of perceived vulnerability and parenting stress, even after controlling for a number of specific demographic and illness parameters. Additionally, income was found to mediate the relationships between marital status and perceived vulnerability and parenting stress, indicating that a significant portion of the risk conferred to single-parent status is a function of lower income. These results suggest that those single parents with lower income may be at an even greater risk for experiencing parenting stress and perceived vulnerability than single parents with higher income. Notably, however, our efforts to case match single mothers to married mothers with similar incomes could not be accomplished, even with this large data set.

Figure 1. Mediational model for associations between marital status and perceived child vulnerability as mediated by annual family income. Note: Values on paths are path coefficients (standardized betas). Path coefficients outside parentheses are partial correlations (s.s). Path coefficients in parentheses are standardized partial regression coefficients from equations that include the other variable with a direct effect on the criterion. ***p < .001.
suggesting that being a single parent consistently confers lower income status. Although Iobst et al. (2009) found that controlling for education decreased group differences on depressive symptoms between single and married participants, this may well be explained by the typically moderate to strong association between education and income.

Interestingly, no relation was found between marital status and parental overprotection. Although speculative, it may be that parents in our current sample, the majority of whom were many years post-diagnosis of their child, had ample opportunity to learn new methods of parenting in a developmentally appropriate manner. At the same time, they may still see their child as vulnerable and find the role of parenting to be a stressful one.

It is important to note that our results do not suggest that all single mothers are experiencing maladjustment or poor functioning. Rather, the current study suggests that those with higher income, as a group, are at less risk than those with lower income. It may also be that those mothers with higher incomes have greater access to a range of resources which may serve as protective factors, whereas individuals with lower incomes are also at risk for experiencing neighborhood violence, residing in low income housing, and experiencing physical and mental health problems, all of which can supersede individual adaptation or resilience (Sameroff & Rosenblum, 2006).

As such, it is important to identify potential moderating factors that may magnify or minimize the relationships found in the current study. One potential moderator may be the amount of social support a parent is receiving. Considerable research suggests that social support serves as a buffer such that greater social support can be linked with better adjustment for both mothers and fathers of children with a chronic illness (Hoekstra-Weebers, Jaspers, Kamps, & Klip, 2001). Furthermore, studies have suggested that enhancing social support may aid in parental coping (Bayat, Erdem, & Kuzucu, 2008). Additionally, integration or increased reliance on a spiritual organization may also be a moderating factor, with research suggesting that spirituality can play a role in a parent’s coping process, especially in life-threatening illnesses (Yeh, Lee, Chen, & Li, 2000). Although these psychosocial variables may be challenging to change in a clinical context, it is still important for clinicians and researchers to develop interventions aimed at helping single parents cope with the burden of caring for their chronically ill child alone. Specifically, it would be beneficial for interventions to target single parents at the point of diagnosis to determine what, if any, social and financial support services they are currently receiving. After establishing this baseline information, these interventions should include educational components that focus on the protective role of social support and helping the parent establish a support network for themselves and their children, as well as finding potential sources of additional financial support. Furthermore, these interventions should involve monitoring progress in acquiring and maintaining support over the course of their child’s illness through periodic follow-up contact.

The results of the present study should be considered in light of certain limitations. First, the study was cross-sectional in nature, which precluded us from examining the trajectory of the parenting capacities over the course of the child’s illness. Second, only mothers were retained in the current sample, which improved the homogeneity of the sample, but limits the generalizability of the findings to other caregivers (i.e., fathers, grandparents). Similarly, the majority of our sample self-identified as Caucasian and highly educated, which reflects the demographic characteristics of the communities from which participants were recruited, but potentially limits generalizability. Third, mothers were self-identified as single based on one question in the demographic

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**Figure 2. Meditational model for associations between marital status and parenting stress as mediated by annual family income.** Note: Values on paths are path coefficients (standardized betas). Path coefficients outside parentheses are partial correlations (r), Path coefficients in parentheses are standardized partial regression coefficients from equations that include the other variable with a direct effect on the criterion. **p < .01, ***p < .001.
questionnaire that asked for current marital status. It can certainly be argued that mothers can be unmarried and still have a significant person or persons in their life who provide considerable support and resources to them. Conversely, a mother may be legally married and yet still be very much “alone” in terms of caring for their ill child, making decisions about their child’s care, and financially providing for that child with little support from their spouse. Potential gradations of “loneness” complicate the assessment of family composition across time and social contexts (Brown et al., 2008). Being able to better define and characterize what it means to be a “lone” parent is clearly necessary for future studies, as well as determining when in the trajectory of the child’s illness being a single parent matters the most in terms of vulnerability. Our sample included mothers of children with one of six chronic health conditions, and it is certainly possible that illness-specific variables (e.g., illness severity) may differentially affect a parent’s level of overprotection, perceived vulnerability, and parenting stress. Furthermore, although the varying group sizes lead to collapsing across all chronic illnesses, doing so may limit the sensitivity of the findings to specific illness groups. In sum, due to the outlined limitations, the findings of the current study should be applied and interpreted with caution.

Findings from the current study have important implications, as this is one of the first studies to link specific parenting capacity variables to specific demographic characteristics, namely single-parent status and family income. Much of the extant literature on these parenting capacity variables has demonstrated their relationship with negative outcomes (e.g., higher levels of depressive and anxious symptomatology) in parents of children with a chronic health condition (Davis et al., 2001) in addition to indirectly negatively affecting child adjustment outcomes (e.g., poorer emotional and behavioral adjustment; Anthony et al., 2003; Colletti et al., 2008; Holmbeck et al., 2002; Mullins et al., 2004). The current study suggests that various demographic characteristics may indeed serve as risk factors for heightened levels of more discrete parenting variables. Therefore, future studies should certainly investigate levels of these variables within specific illnesses and with a range of parents from diverse racial and ethnic backgrounds as well as geographic areas. Future studies should also aim to further elucidate the relationship of potential moderating factors, including income, race/ethnicity, education level, social support, and spirituality, in single parents of children with a chronic illness. Finally, it is imperative that we investigate the mediating role of income on single-parent status for other parental adjustment outcomes, such as depressive and anxiety symptoms, to determine if the relationship identified in discrete parenting variables also exists for broader adjustment outcomes.

**Acknowledgments**

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**Conflicts of interest**: None declared.

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