

**Title:** Direct and indirect pathways to the long-term health, mental health, and work-related outcomes for mothers of children with chronic illness.

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Investigating the determinants and consequences of various health and well-being statuses is a complex, multidisciplinary venture. Research has focused on a complex web of these determinants and consequences, such as the relation of individuals' socioeconomic status (SES) and health over the life course (Adler et al, 1994; Link and Phelan, 1995; House and Williams, 2000; Lynch, 2003; Palloni, 2006; Herd et al, 2007; Warren and Hernandez, 2007). Families are also an important component for investigating the determinants and consequences of one's health and well-being, with researchers investigating the relation of parents' health, well-being, and SES to child health, well-being, and SES (Elo and Preston, 1992; Conley and Bennett, 2000; Finch, 2003; Hayward and Gorman, 2004).

One facet of this complex of relationships that has received less attention at the population level is how child health and well-being may affect parent's health, well-being, and even SES. We seek to determine the impact of caring for a chronically-ill child on the family, relative to caring for a healthy child. Because caring for a child with a chronic health illness can place physical, financial, time, and psychological burdens on the rest of the family, we expect that caring for a child with a chronic health condition may present an additional risk for parental health, mental health, and work-related outcomes beyond caring for a healthy child. We also expect that the worse health outcomes are due in part to the increased effect of family burdens on parental health outcomes, as children's health conditions have been shown to have a negative effect on parental role functioning that is further predictive of parental problems of psychological well-being (Waddington and Busch-Rossnagel, 1992).

In particular, we propose to set up a multiple-group structural equation model (SEM), where the two groups being compared are mothers with children that have chronic health conditions and mothers with children that do not have these conditions. The multiple group SEM will allow us to investigate the extent to which having a child with chronic health conditions exacerbates or mitigates some of the relations among mothers' background and family characteristics with mother's health, mental health, and socioeconomic outcomes (see Figure 1 for conceptual model. Note that each variable listed in each category is its own latent construct, and will covary with the other latent

constructs listed in that category as well as have direct effects on the latent constructs in other categories).

About 13% of our proposed sample (see below) reports that they are caring for a child with a chronic health issue, and a recent study estimates that 15.6% of parents reported that they are caring for a child with an activity limitation, and (Witt et al, under review, 2008). We argue that a child's health is one component of parents' health and socioeconomic outcomes, and thus may be another small but "nonignorable" component of the feedback processes determining intergenerational mobility and the relations among SES and health for individuals and family systems across the lifecourse (Palloni, 2006).

### **Literature**

Our analytic question is grounded in social ecological systems theory (Bronfenbrenner, 1977), which describes the nested hierarchy of the family and social contexts in considering adaptations to chronic illness. Briefly, the idea is that there are mutually influencing effects among the proximal (members of the family) and more distal (culture, school, labor markets) environments in which members of the family are embedded, such that outcomes of interest are a function of interplay of these components over time (Thompson and Gustafson, 1996). Particular to our research interest, stress on any person in the family system (in this case, a child with chronic health conditions) will influence the health, mental health, and even socioeconomic outcomes of members of the family (in this case, the mother).

Previous research has shown that parents of children with childhood activity limitations were significantly more likely to experience poor health and mental health and have an increased number of lost workdays or reduced number of hours worked compared to parents of children without such limitations (Witt et al, under review, 2008; Witt, Riley, Coiro, 2003).

### **Methods**

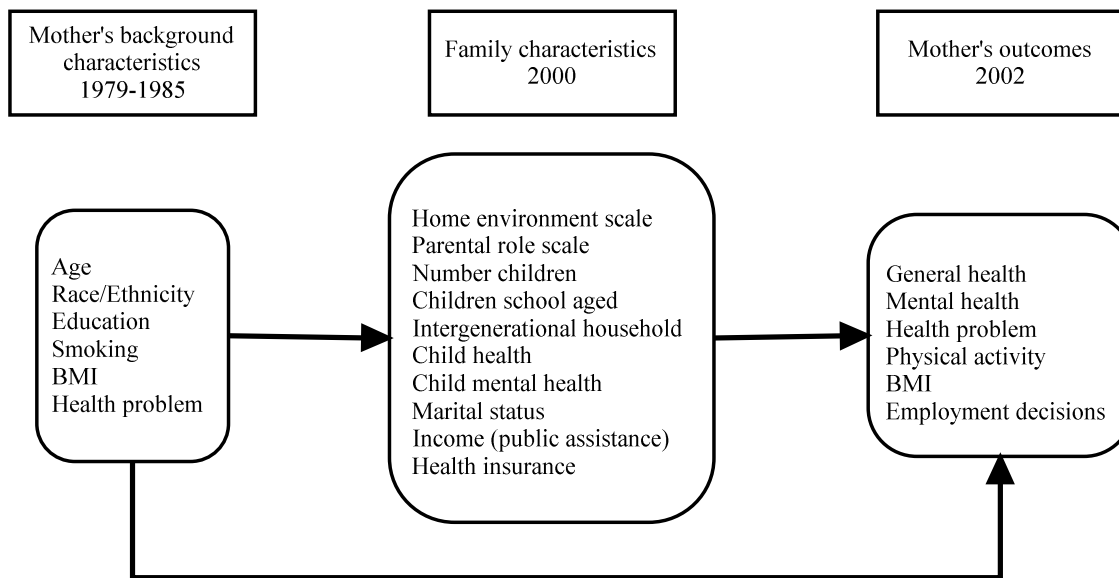
Our model departs from prior research in that it is in essence an interaction model, in that the system of relations we seek to ascertain in Figure 1 is run separately for mothers' of children with chronic health conditions and mothers of children without those conditions. SEM analysis allows for the simultaneous estimation of a system of equations in order to ascertain direct and indirect relationships. Because we are interested in more than one outcome for mothers, we can use SEM to estimate a system of equations that accounts for multiple outcomes in conjunction with one another, and we can specify correlated errors among various latent variables that we know are related.

Our theoretical model will be run as a multiple group SEM, which allows us to ascertain whether there is a statistically significant difference between the two groups of mothers across the various path coefficients. We propose a multiple group SEM rather than an analysis matched on covariates of interest precisely because we are interested in the direct and indirect effect of the exogenous variable on the endogenous variables, whereas a matched analysis would hold those effects constant across groups. Furthermore, a multiple group model is better than a t-test for the difference of the path coefficients across groups because SEM allows for multiple indicators (survey items) to load on the same underlying construct, and the multiple group SEM examines the differences across groups in the path coefficients among these latent variables. The latent variables are constrained to the same metric across groups, and the steps in a multiple group model show where the latent variables are not on the same metric, in which case

results of a more simple analysis should be interpreted with caution. The data are transformed into matrices of means, covariances, and asymptotic covariances that fix the thresholds for each ordinal variable to be equal to the pooled threshold of that variable across women and men. These matrices are then used to estimate models of group differences (Jöreskog, 2005).

This study will draw upon data from the 1979-2002 panels of the National Longitudinal Survey of Youth (NLSY), a nationally representative longitudinal survey of youth sponsored and conducted by the Bureau of Labor Statistics, U.S. Department of Labor. Data about the children born to women interviewed in the original sample were collected starting in 1986 and have continued every two years through 2002, yielding ten time points of data. All families in the 1986-2002 NLSY will be included in our sample, using mother-child dyads. The NLSY collects data from parents on the child's physical, emotional or mental conditions and illnesses that limits their activities or requires healthcare treatment or equipment, as well as the duration of this condition.

Figure 1. Conceptual model for structural equation model analysis



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