

Modeling Parenting Stress Trajectories Among Low-Income Young Mothers Across the Child's Second and Third Years : Factors Accounting for Stability and Change

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Abstract:

This study investigated parenting stress trajectories among low-income young mothers and the factors that are associated with change and stability of parenting stress as children aged from 14 to 36 months old. With a sample of 580 young mothers who applied to the Early Head Start Program, growth mixture modeling identified 3 trajectory classes of parenting stress: a chronically high group (7% of the sample), an increasing group (10% of the sample), and a decreasing group (83% of the sample). Maternal personal resources distinguished between the increasing and decreasing classes, whereas maternal personal resources, child characteristics, and contextual influences explained differences between the chronically high and decreasing trajectory classes. Findings suggest that for interventions to be effective, programs need to assess maternal, child, and contextual factors to better address the particular unique needs of young mothers.

Keywords: adolescent mothers | project head start | parenting stress | low-income families | family psychology

Article:

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Parenting stress, defined as “the aversive psychological reaction to the demands of being a parent” (Deater-Deckard, 1998, p. 315), has been identified as one of the most common daily concerns faced by parents. In addition to its prevalence, because of its potentially detrimental effects on the well-being of children, parents, and the family system, numerous studies have examined the correlates or consequences of parenting stress (see Crnic & Low, 2002).

Adolescent mothers experience higher levels of parenting stress than do adult mothers (Passino et al., 1993), perhaps because adolescent childbearing is seen as a departure from the normative developmental course of adolescence within major segments of contemporary American culture. Although the majority of research views young mothers as a homogeneous group by comparing them with adult mothers on a variety of outcomes, adolescent mothers vary in terms of their long-term outcomes (e.g., Furstenberg, Brooks-Gunn, & Morgan, 1987).

These studies have significantly advanced knowledge of the heterogeneity that exists among adolescent mothers. However, they also present an incomplete picture in that none of them have investigated parenting stress, which all parents inevitably experience to some degree as they cope with the day-to-day parenting stressors. Young mothers, particularly, deserve attention from researchers, as the majority of them experience poverty when their children are young, which, in turn, has been linked with higher levels of parenting stress (Seccombe, 2000). To date, only one study has investigated the factors and processes that are related to young mothers' perceptions of parenting stress (Chang et al., 2004).

Although some longitudinal studies have examined factors that affect parenting stress among middle-class adult mothers (Deater-Deckard, Pickerton, & Scarr, 1996) and mothers who have

children with disabilities (Hauser-Cram, Warfield, Shonkoff, & Krauss, 2001), no known study has attempted to capture the longitudinal component of parenting stress within this population. Moreover, this issue is likely to be particularly salient during the transition from adolescence to adulthood because of the multiple developmental tasks that are addressed during this period. Theories of psychosocial development (e.g., Erikson, 1968) suggest that adolescent mothers are likely to experience more maternal role strain than adult mothers because they must complete the tasks of parenting while in the midst of negotiating normal developmental tasks (e.g., forming an identity, developing intimate relationships). In addition, they must also cope with a child's increasing negativity and negotiation skills during their children's transition from infancy to early childhood; thus, the role of parenting stress may gradually and progressively become more prominent for young mothers during the first 3 years of a child's life.

Therefore, guided by Lazarus and Folkman's (1984) theory of stress and coping and Bronfenbrenner's (1986) bioecological systems theory, the goals of the present study were to identify subgroups of young mothers who display different parenting stress trajectories and to explore the relations between these trajectories and maternal, child, and contextual influences among a low-income population of young mothers during their children's transition from infancy to early childhood.

According to Lazarus and Folkman's (1984) theory of stress and coping, an individual and his or her environment are engaged in an ongoing, dynamic, and reciprocal transaction that suggests that young mothers have the potential to cope well with the challenges of young motherhood. In addition, Lazarus and Folkman suggested that the reciprocal view of stress and coping calls for repeated study of the same people across time, which may be the best way to study the degree of stability and change in stress and coping. Thus, identifying different trajectory patterns is essential for gaining an understanding of mothers' diverse parenting stress developmental pathways.

Equally important, examining the predictors of different trajectory patterns would lead to more informative models of parenting stress and more effectively targeted interventions. For example, factors that are characteristic of mothers who exhibit a chronically high level of parenting stress trajectory may not be the same as those for mothers who display different patterns. Bronfenbrenner's (1986) bioecological systems theory suggests that human development can only be understood within the multiple systems in which a person is embedded. Such a perspective is useful for examining young mothers' perceptions of parenting stress, as mothers' capacity for adaptation is influenced not only by themselves but also by their children and their ecological context. Therefore, we considered predictors of parenting stress trajectories from a series of progressively more distal systems, including maternal personal, child, and contextual sources.

Predictors of Low-Income Young Mothers' Parenting Stress Trajectories

On the basis of theoretical considerations and demonstrated empirical evidence, there are various maternal, child, and contextual factors that could be influential to low-income mothers' parenting stress trajectories. The literature review that follows focuses on those predictor variables used in the current study.

Maternal Personal Resources

Maternal Age

According to developmental research, there are distinctive differences among early, middle, and late adolescents in cognitive and psychosocial maturity (Steinberg, 1999). Because adolescent mothers who are older are more cognitively and/or psychosocially mature, they may be less likely to experience parenting stress. Therefore, the impact of the level of maturity on parenting stress may differ even within the population of young mothers. In addition, some studies have found that the onset of early sexual behavior might be associated with other problem behaviors; in other words, pregnancy is the extension of problem behaviors (Quint, Musick, & Ladner, 1994). Thus, younger mothers might be ones who also have other problem behaviors and would be expected to experience higher levels of stress. Previous studies (e.g., Passino et al., 1993) have investigated the relation between maternal age and parenting stress at a single time point. The present study examined the association between maternal age and parenting stress trajectories over time.

Knowledge of Child Development

Mothers who are more knowledgeable about child development are more likely to create a positive home environment that supports children's needs (Benasich & Brooks-Gunn, 1996). In addition, researchers studying child abuse have emphasized that inappropriate parental expectations set the stage for abusive behavior to occur. Young mothers tend to overestimate what their children can perform developmentally at a specific time (Tamis-LeMonda, Shannon, & Spellmann, 2002). In relation to parenting stress, parents who have unrealistic expectations of what children can achieve both cognitively and physically may experience higher levels of parenting stress. As a result, we examined the effects of level of knowledge of child development on maternal parenting stress trajectories.

Self-Efficacy

Perceived self-efficacy is defined as people's beliefs about their capabilities to influence the events that might affect their lives (Bandura, 1992). A mother's perception of control over her choices may influence the extent to which her experience of parenting is stressful. Low levels of efficacy are related to perceptions of the child as difficult and to the use of undesirable disciplinary tactics. Chang et al. (2004) found that young African American mothers' self-efficacy when the child was 14 months old predicted less parenting stress when the child was 2 years old. We extended this work by examining the relation between maternal self-efficacy and parenting stress trajectories among racially diverse low-income young mothers.

Depression

Consistent with Lazarus and Folkman's (1984) suggestion that a person's psychological resources affect reactions to stress, researchers have examined whether depression, conceptualized as a deficit in psychological resources, is linked to higher levels of parenting stress. In a sample of clinically depressed married mothers with infants, level of depression was the strongest predictor

of parenting stress (Gelfand, Teti, & Fox, 1992). To date, however, no known studies have examined how depression is related to parenting stress trajectories.

Child Characteristic: Temperament

Studies of the influence of child temperament on parenting have typically been on difficult temperament (emotionality). In relation to parenting stress, previous cross-sectional findings have suggested that difficult child temperament is associated with maternal stress among middle-class Caucasian mothers (Ostberg & Hagekull, 2000). Chang and colleagues' (2004) study also revealed a similar finding among young low-income African American mothers. No known studies have examined the relationship between difficult child temperament and parenting stress trajectories specifically among racially diverse low-income young mothers.

Contextual Influences

Sociodemographic Characteristics

Research has pointed to the important role of sociodemographic characteristics on young mothers' parenting experience. Compared with their unmarried counterparts, married teenage mothers do not suffer the same poor long-term economic outcomes and are less depressed in later life (e.g., Kalil & Kunz, 2002). Because of these findings, we investigated the relation between partner status and young mothers' perceptions of parenting stress across time.

In addition to partner status, although ethnicity has frequently been investigated as a contributing factor in young mothers' lives, no known studies have examined how ethnicity is related to parenting stress trajectories. Individuals from different racial–ethnic backgrounds might hold different views on the optimal timing and sequencing of childbearing and marriage. For example, young mothers from European backgrounds in which early childbearing is considered nonnormative might experience more rejection from the family and community. By contrast, young mothers who are from contexts in which many of their peers are also early childbearers might receive more support from extended family and the community, as some scholars have argued that young motherhood might be considered adaptive life strategies for some ethnic minority youths (e.g., Stack & Burton, 1994). Although no known studies have examined the effect of early childbearing stigma on young mothers' adjustment, research on nonparenting adolescents has shown that being rejected by peers is associated with negative psychological outcomes (Bagwell, Newcomb, & Bukowski, 1998). Our sample of racially diverse low-income young mothers enabled us to examine the unique role of race–ethnicity in determining low-income young mothers' parenting stress trajectories.

Program Group

In the present data set, mothers who received Early Head Start services reported lower levels of parenting stress than did the comparison group (Administration on Children, Youth, and Families [ACYF], 2001). However, because we do not know whether program group assignment affected the course of parenting stress over time, we examined this issue.

Adequacy of Family Resources

Inadequate family resources have been found to lead to disruption of parental functioning (Conger, Conger, & Elder, 1997). Two specific domains of family resources—economic strain and social support—were explored here, as the majority of young mothers experience economic hardship, and social support might be most pivotal during times of transition and stress.

Several cross-sectional studies have assessed the relationship between perceived economic strain and distress specific to the parenting role. For example, Pittman, Wright, and Lloyd (1989) found a significant association between parenting stress and economic strain for fathers but not for mothers. These results may have been due, in part, to the more traditional gender roles of the primarily Mormon families participating in this study. Additional studies with diverse populations are needed to further explore this relationship. None of the studies of parenting stress among young mothers have considered the role of perceived economic strain, even though the majority of these mothers live under economic hardship.

Although early studies emphasized the effectiveness and importance of support networks as a protective factor in young mothers' parenting, more recent studies have painted a more complex picture of how social support affects their lives. Young mothers' social support networks have been found to be both positively and negatively associated with their parenting behavior and experiences (Wakschlag, Chase-Lansdale, & Brooks-Gunn, 1996). Despite the possible negative effects of social support, both theory and research continue to suggest that when the support network is strong and positive, it is a helpful coping resource.

Stressful Life Events

Low-income mothers are likely to frequently experience stressful life events. Although research has shown that more stressful life events are associated with less optimal parent–child interactions, few researchers have investigated the relationship between stressful events and parenting stress. For example, Ostberg and Hagekull (2000) found a moderate relationship between life events and parenting stress among Swedish adult mothers with young children. A stronger relationship may be found between life events and parenting stress among mothers who live in economic hardship.

Family Conflict

Evidence regarding the relationship between family conflict and parenting stress has been inconclusive. Spencer, Kalil, Larson, Spieker, and Gilchrist (2000) found that family conflict predicted higher levels of parenting stress. However, East and Felice (1996) did not find this association in a group of racially diverse young mothers. The discrepancy in the findings from these three studies may be due to the different measures that were used to measure conflict and differences in the racial make-up of the samples. Accordingly, more studies need to investigate the relationship between parenting stress trajectories and family conflict among racially diverse young mothers.

Research Questions

Two key research questions were explored in this study: (a) How many and which distinctive parenting stress trajectory classes are empirically identifiable in a sample of low-income young mothers during the second and third years of their children's lives? and (b) Do specific maternal, child, and contextual factors distinguish among the identified parenting stress trajectory classes?

Method

Data and Sample Description

This study used data from the Early Head Start Research and Evaluation Project, which was designed to evaluate the efficacy of the Early Head Start Program (EHS; see ACYF, 2001, for more information regarding the EHS Program). The initial sample consisted of families who met the EHS eligibility guidelines (i.e., family income at or below the federal poverty level), and the families were randomly assigned to either the program group or the comparison group. Parent services interview data obtained information on needs for family resources, use of public services, family health, and children's health. Parent interview data, consisting of children's development and family functioning, were collected when children were 14, 24, and 36 months old (ACYF, 2001). Data were collected between 1996 and 1998.

The sample for the present analyses included 580 mothers who were at most 19 years old when the focal child was born. This cutoff age was chosen on the basis of the convention in the teenage motherhood literature and the definition of teenage mothers in the EHS evaluation study. The mean age of participants was 17.84 years ($SD = 1.41$), and they ranged in age from 14 to 19 years. Thirty-four percent were European American, 41% were African American, 20% were Hispanic Non-White, and 5% were other ethnic groups. At baseline, 18% of the mothers had graduated from high school and 64% reported receiving some type of education or being employed. Seventy-five percent of the mothers were not married and not cohabiting, 10% were married, 9% were cohabiting, and the rest reported being divorced, widowed, or separated. In terms of public assistance, 26% of the mothers received Aid to Families With Dependent Children (AFDC), 83% used the Women, Infants, and Children Program (WIC), 42% received food stamps, and 72% were on Medicaid.

Measures

Parenting Stress

The Parenting Stress Index, Short Form (PSI), developed by Abidin (1990), is a widely used instrument that measures stress related to parenting and parent-child interactions. There is considerable psychometric support for using the PSI with lower socioeconomic status and minority populations (Reitman, Currier, & Stickle, 2002). This questionnaire was administered to mothers when children were 14, 24, and 36 months old. The Parenting Distress subscale, which contains 12 items, measures the distress a parent is experiencing in her role as a parent (Abidin, 1990). Items are scored on a 5-point scale. Cronbach's alphas for this sample, separately at each time point, were .79, .82, and .84, respectively.

The Parent-Child Dysfunctional Interaction subscale focuses on the mother's expectations of her child. It assesses the degree to which the child does not meet his or her parent's expectations and the extent to which the parent does not derive satisfaction from interactions with the child (Abidin, 1990). This scale contains 12 items, which are scored on a 4-point scale. Cronbach's

alphas for this sample, separately at each time point, were .74, .75, and .78, respectively. Because it is common in both research and clinical settings to combine the scores of the two subscales into a single composite score (Abidin, 1990) and because our intent was to use a single global index of parenting stress, the sum of the two subscales at each time point was used in this study.

Maternal Personal Resources

Maternal age

Age was measured when the mother gave birth to the focal child.

Knowledge of child development

The Knowledge of Infant Development Inventory (KIDI; MacPhee, 1981) is a 20-item scale that assesses parental knowledge about infant development. Participants were asked to indicate whether they “strongly agree,” “mildly agree,” “mildly disagree,” or “strongly disagree” with each item. Fourteen of the 20 items were administered when children were 14 months old. The 14 items that were selected have been shown to have good reliability and validity in previous studies (Gross, Spiker, & Haynes, 1997). The mean score of the KIDI items was used in the current study; higher scores reflect greater knowledge of infant development. Cronbach's alpha for this sample was .80.

Self-efficacy

The Mastery subscale of the Structure of Coping Measure (Pearlin & Schooler, 1978) is a 7-item scale that measures the extent to which individuals perceive their life chances as being under their control or as being determined by fate and chance. This questionnaire was administered when children were 14 months old. Higher scores indicate higher levels of self-efficacy. Cronbach's alpha for this sample was .73.

Depression

The Center for Epidemiological Studies Depression Scale–Short Form (Radloff, 1977) is a widely used instrument that measures symptoms of depression. It contains 12 items that tap sadness, loneliness, loss of appetite, restless sleep, and lack of energy. The items were administered when children were 14 and 36 months old. The scale has a potential range from 0 to 36; higher scores indicate more depressive symptoms. Cronbach's alphas for this sample were .79 and .80, respectively. The measure at the first time point was used because the depressive symptoms levels appeared to be stable across time.

Child Characteristic: Temperament

Temperament was measured by mothers' report on the Emotionality, Activity, and Sociability subscale of Buss and Plomin's (1986) Temperament: Early Developing Personality Traits scale. The items were administered when children were 14 months old. The Emotionality subscale,

which contains five items, measures a child's tendency to become aroused easily and intensely. The mean score of the emotionality subscale was used. Cronbach's alpha was .81.

Contextual Influences

Sociodemographic characteristics

Sociodemographic information in this study included mother's partner status and ethnicity reported at baseline. Because of small numbers of different ethnic groups in the three trajectory classes (see below), ethnicity was coded into two groups, non-ethnic minority (1) and ethnic minority (0). Partner status was coded as 1 for having a partner and as 0 for not having a partner.

Program group assignment

Mothers were in either the EHS Program or the comparison group.

Adequacy of family resources

The adequacy of family resources was measured by the Family Resource Scale (FRS; Dunst & Leet, 1987) at three time points. The FRS consists of 39 items (on a 5-point Likert-type scale ranging from 1 = not at all adequate to 5 = almost always adequate) in which the mother indicated the extent to which enough resources were available for obtaining necessities in their families. Items measured both the adequacy of economic resources and emotional support. A composite score was used; higher scores indicated more adequate family resources. Cronbach's alphas at each time period were .87, .89, and .88, respectively. Because resource levels did not change significantly over time, the measure from the first time point was used in the analysis.

Stressful life events

Exposure to stressful life events was measured by asking whether each of a series of 20 stressful events and difficult circumstances had occurred in the past year, on the basis of items developed by Mathematica Policy Research (ACYF, 2001). A sample item was, "Have you been robbed, mugged, or attacked in the past year?" Scores were coded as 0 if the mother did not experience the specific incident or as 1 if the mother had experienced the stressful event. The 20 items were administered when children were 14 months old. Ten items were administered at 24 months, and only four items were administered at 36 months of age. The composite score was used; higher scores indicated more exposure to stressful life events. Because stressful life events did not change significantly over time, the first time point measure was used in the analyses.

Family conflict

The degree of family conflict was measured by the 5-item Conflict subscale of the Family Environment Scale (Moos & Moos, 1981), which taps conflictual family interaction and expressions of anger. The items were administered when children were 14, 24, and 36 months old. The scale has a potential range from 1 to 4; higher scores indicate more family conflict. Cronbach's alphas for this sample, separately at each time period, were .67, .69, and .71,

respectively. Again, because conflict levels did not change significantly over time, the first time point measure was used.

Data Analysis Strategies

Handling of Missing Data

Out of 14 variables used in the analysis, eight of them had missing data, ranging from 3% to 16%. Multiple imputation is an increasingly popular strategy that replaces each missing value with a set of plausible values (Allison, 2002). In multiple imputation, m versions of a data set are created by replacing missing values with plausible random values. Then, the m completed imputed data are analyzed separately, and the results from the m complete data sets are combined. Von Hippel (2005) has suggested that usually no more than 10 imputed data sets are needed for a thorough analysis. Also, on close examination, our missing data patterns appeared to be nonmonotone (i.e., arbitrary). Therefore, the Markov Chain Monte Carlo method was chosen (Yuan, 2000). We used SAS software (SAS Institute, 2001) to generate 10 sets of complete data, and then Mplus, Version 3.11 (Muthén & Muthén, 2004) to conduct the major analyses and combine the results.

Growth Mixture Modeling

Data were analyzed using the growth mixture modeling approach, which is an extension of the conventional growth curve modeling. Conventional growth curve modeling is an effective statistical procedure for examining individual development over time and allows researchers to examine correlates that may affect the trajectory's shape (i.e., slope and intercept) (Singer & Willett, 2003). However, conventional growth curve modeling assumes that all individuals belong to a single population and that any given predictor influences all trajectories equally (Muthén, 2001)—assumptions that are likely to be inaccurate in research on young mothers' parenting stress trajectories, given that young mothers' longitudinal outcomes have been characterized by the presence of multiple developmental pathways (e.g., Furstenberg et al., 1987). Moreover, young mothers with different growth trajectories may have different associated characteristics. Growth mixture modeling is able to overcome this limitation of conventional growth curve modeling by assuming that there are unobserved classes of individuals that comprise any given population and that any predictor may not influence all trajectory classes equally.

For the purposes of this study, we conducted two major analyses. First, trajectory classes were extracted to empirically determine the number and nature of any distinctive parenting stress trajectory classes. Second, maternal, child, and contextual factors were examined to determine whether they distinguished among the identified parenting stress trajectory classes.

Results

Descriptive Statistics and Correlations Among Study Variables

Table 1 presents descriptive statistics for the sample. On average, parenting stress scores decreased slightly over the course of the child's second and third years (means were 45.40, 43.42, and 42.45, with standard deviations of 12.63, 13.17, and 13.55, when the children were 14, 24,

and 36 months old, respectively). Pearson correlation coefficients were computed to determine the magnitude and direction of the bivariate associations between parenting stress and the predictors. The bivariate relationships were all in the expected direction (see Table 2).

Table 1
Descriptive Statistics (N = 580)

| Variable | M | SD |
|-----------------------------------|--------|-------|
| Outcome | | |
| Parenting stress, Time 1 | 45.40 | 12.63 |
| Parenting stress, Time 2 | 43.42 | 13.17 |
| Parenting stress, Time 3 | 42.45 | 13.55 |
| Predictor | | |
| Maternal resources | | |
| Maternal age | 17.84 | 1.41 |
| Knowledge of child development | 3.03 | 0.37 |
| Self-efficacy | 15.39 | 3.40 |
| Depression | 7.81 | 6.69 |
| Child characteristic: Temperament | 2.98 | 0.89 |
| Contextual influences | | |
| Nonminority (%) | 34 | |
| With partner (%) | 18 | |
| EHS program (%) | 52 | |
| Family resources | 156.70 | 18.91 |
| Stressful life events | 4.71 | 2.74 |
| Family conflict | 1.76 | 0.56 |

Note. EHS = Early Head Start.
Descriptive Statistics (N = 580)

Table 2
Correlation Coefficients for All Variables

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|-----------------------------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|----|
| 1. Parenting stress, Time 1 | — | | | | | | | | | | | | | |
| 2. Parenting stress, Time 2 | .61** | — | | | | | | | | | | | | |
| 3. Parenting stress, Time 3 | .54** | .59** | — | | | | | | | | | | | |
| 4. Maternal age | -.04 | -.05 | .00 | — | | | | | | | | | | |
| 5. Knowledge of child dev. | -.15* | -.13* | -.08 | .11 | — | | | | | | | | | |
| 6. Self-efficacy | -.53* | -.44** | -.36* | -.03 | .11 | — | | | | | | | | |
| 7. Depression | .43** | .32** | .30** | .03 | .10** | -.22* | — | | | | | | | |
| 8. Child temperament | .29** | .22** | .23** | -.06 | -.08 | -.12* | .16** | — | | | | | | |
| 9. Nonminority | -.09* | -.13* | .01 | .20** | .38** | .02 | .15** | -.11* | — | | | | | |
| 10. With partner | -.04 | -.06 | .02 | .18** | .08 | -.06 | .10 | -.07 | .28** | — | | | | |
| 11. EHS program | -.04 | -.07 | -.06 | -.07 | -.01 | -.02 | -.04 | -.07 | .02 | -.02 | — | | | |
| 12. Family resources | -.30** | -.29** | -.22* | -.09 | .07 | .26** | -.16* | -.08 | .13** | .03 | -.01 | — | | |
| 13. Stressful life events | .15** | .15** | .14** | .11** | .13** | -.18* | .27** | .08 | .15** | .09 | -.01 | -.18* | — | |
| 14. Family conflict | .23** | .18** | .16** | -.10* | -.05 | -.27* | .14** | .06 | .00 | -.11* | .08 | -.08 | .18** | — |

Note. dev. = development; EHS = Early Head Start.
* $p < .05$. ** $p < .01$.

Correlation Coefficients for All Variables

Research Question 1: Extracting Trajectory Classes

This set of analyses explored the existence of a mixture of two or more heterogeneous subgroups (i.e., the K classes of the mixture) with varying patterns of growth trajectories (i.e., means, variances) in young mothers' parenting stress. To determine the number of potential latent trajectory classes in the data, we estimated three growth mixture models: (a) a two-class model, (b) a three-class model, and (c) a four-class model. These growth mixture models were compared among themselves and with the $K = 1$ model (i.e., conventional growth curve).

The 14-month assessment (Time 1) was considered the baseline and, as such, was coded as 0. The time unit was defined in terms of 10-month segments; thus, the 24-month assessment (Time 2 was 10 months later than Time 1) was coded as 1. Using the same logic, time at 36-month assessment was coded as 2.2 (because Time 3 was 22 months beyond Time 1). The multiple random starts facility in Mplus was used. Also, because Hipp and Bauer (2005) have suggested that simply generating 10 sets of start values is not sufficient, we specified 50 sets of start values in the program.

The classes were identified on the basis of the mean of the growth factors alone (i.e., the growth factor variances were not allowed to differ across classes) because freeing the variances across classes resulted in a model that did not converge. The growth mixture model test statistics to determine the *K* classes are presented in Table 3. As shown in Table 3, the likelihood statistics and information criteria-based indexes indicated that the four-class model fit better than the single, two-class, and three-class models. However, the Lo–Mendell–Rubin (LMR) test indicated that the four-class model did not fit better than the three-class model. A nonsignificant LMR test indicated that the null model (i.e., three-class model) failed to be rejected (Lo, Mendell, & Rubin, 2001). Also, in the four-class model, there was one class that only contained a small number of individuals (i.e., 17 mothers; less than 3% of the sample). In addition, when the factors (i.e., maternal resources, child characteristics, and contextual influences) exogenous to the trajectory classes were later added to the model, the proportions of class membership remained fairly stable for the three-class model but not for the four-class model. Only 5% of the mothers changed class membership after external variables were entered into the model. On the basis of these observations, a decision was made to retain the three-class model.

Table 3
Model Fit Statistics for K = 1, 2, 3, and 4 (N = 580)

| No. of classes | Log likelihood | No. of parameters | AIC | BIC | LMR <i>p</i> for <i>K</i> - 1 |
|----------------|----------------|-------------------|-----------|-----------|-------------------------------|
| 1 | -6,666.66 | 8 | 13,349.31 | 13,384.21 | |
| 2 | -6,628.46 | 11 | 13,278.92 | 13,326.91 | .22 |
| 3 | -6,608.99 | 14 | 13,245.97 | 13,307.06 | .03 |
| 4 | -6,577.29 | 17 | 13,188.59 | 13,262.76 | .08 |

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; LMR = Lo-Mendell-Rubin.

Model Fit Statistics for K = 1, 2, 3, and 4 (N = 580)

The three trajectory classes are shown graphically in Figure 1. In the figure, class means for each time point are also specified. The chronically high class captured a group of mothers who exhibited consistently high levels of parenting stress (intercept $M = 69.64$, $p < .01$; slope $M = -1.60$, *ns*). According to the established norms, a parenting stress level of more than 62 is considered a great risk for possible child maltreatment (Abidin, 1990). The increasing class included mothers who started with a low level of parenting stress that gradually increased over time (intercept $M = 43.72$, $p < .01$; slope $M = 7.99$, $p < .01$). By the end of the third time point, mothers' stress level had almost reached the clinical level of 62. The decreasing class captured a group of mothers who started with stress levels that were similar to those of the increasing group but gradually decreased over time (intercept $M = 43.33$, $p < .01$; slope $M = -2.55$, $p < .01$). All classes had significant intercept variances but nonsignificant slope variances. The covariances

between the intercepts and slopes were also nonsignificant for each class. Of the sample, 10% ($n = 57$) were in the increasing group, 7% ($n = 41$) were in the chronically high group, and 83% ($n = 482$) were in the decreasing group. For each class, the mean posterior probabilities of those with modal assignment to that class ranged from .61 to 1.00.

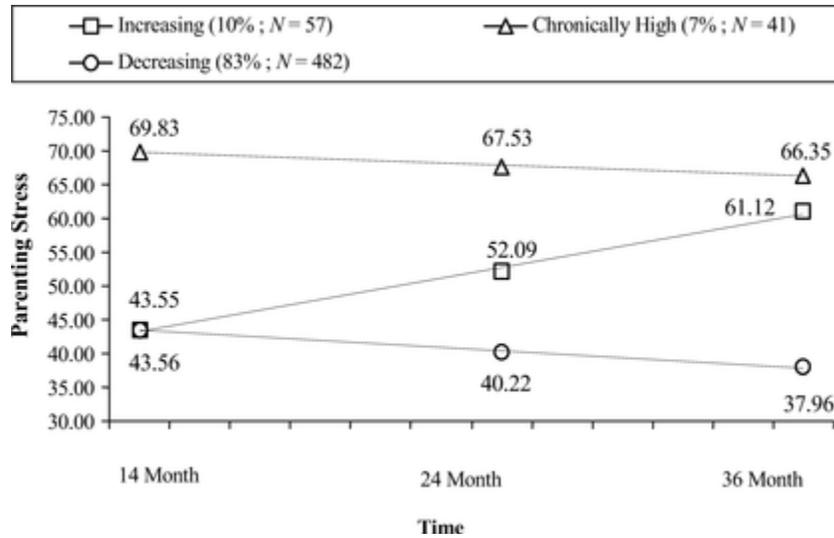


Figure 1. Growth curves for young mothers' parenting stress for each latent class.

Research Question 2: Predicting Trajectory Class Membership

The next step was to examine the influences of the predictors on the probabilities of membership in these three trajectory classes. Table 4 shows the results from the multinomial logistic regression of the latent class variables on the predictors within the context of growth mixture modeling. This analysis indicates how a given predictor affects the likelihood that a mother belongs to a particular trajectory class. The decreasing group was the comparison group for the other two classes. Odds ratios over 1 denote a positive relationship, below 1 denote a negative relationship, and exactly 1 denote no effect. In Table 4, the odds ratios indicated that the likelihood of being in the chronically high group was significantly higher, compared with the decreasing group, for young mothers who had less self-efficacy, had higher levels of depression, had children with difficult temperaments, and did not belong to the EHS Program group. Maternal depression and self-efficacy (marginally) were the only significant predictors that distinguished between the increasing and decreasing groups; mothers with lower levels of depression and higher levels of self-efficacy were less likely to belong to the increasing group.

Table 4
Odds Ratios for Predicting Latent Trajectory Class Membership

| Variable | Increasing vs. decreasing | Chronically high vs. decreasing |
|-----------------------------------|---------------------------|---------------------------------|
| Maternal resources | | |
| Maternal age | 0.89 | 0.87 |
| Knowledge of child development | 0.78 | 0.67 |
| Self-efficacy | 0.91 | 0.62** |
| Depression | 1.18** | 1.22** |
| Child characteristic: Temperament | 1.08 | 2.75* |
| Contextual influences | | |
| Nonminority | 0.97 | 0.72 |
| With partner | 1.03 | 0.79 |
| EHS program | 1.25 | 0.30* |
| Family resources | 0.99 | 0.98 |
| Stressful life events | 0.93 | 0.90 |
| Family conflict | 0.78 | 1.67 |

Note. EHS = Early Head Start.
 * $p < .05$. ** $p < .01$.

Odds Ratios for Predicting Latent Trajectory Class Membership

Discussion

Advantaged by the longitudinal and broad nature of the EHS data set and the innovation of growth mixture modeling, the present study broadens our understanding of parenting stress in two specific ways: by identifying three distinct parenting stress trajectory classes and by examining maternal, child, and contextual predictors that discriminate among these parenting stress trajectory classes. Each contribution is addressed in turn.

Identification of Parenting Stress Trajectory Classes

Beyond examining merely a snapshot of parenting stress at a single time point, three trajectory classes of parenting stress were identified in this study: a chronically high group (7% of the sample), an increasing group (10% of the sample), and a decreasing group (83% of the sample). The present findings are consistent with the current view in the literature that young mothers are a heterogeneous group (Quint et al., 1994) and that young motherhood does not necessarily lead to inevitable negative outcomes, as the majority of mothers (83%) reported low levels of parenting stress at the start and gradually declined over time.

However, our identification of three distinctive parenting stress trajectory patterns also differed from previous longitudinal studies conducted with middle-class families. Crnic and Booth (1991) found that stress levels increased linearly as children aged from 9 to 36 months old, but only 10% of the mothers in this sample experienced an increasing level of parenting stress. In addition, Crnic, Gaze, and Hoffman (2005), Deater-Deckard et al. (1996), and Hauser-Cram et al. (2001) showed that parenting stress remained fairly stable (i.e., mothers who initially were high in parenting stress were likely to be distressed at subsequent assessments), although only 7% of our mothers experienced stability at high levels of parenting stress (i.e., chronically high).

The differences between our findings and previous results may be due to differences in the research methodology used, the lengths of time studied, and the developmental stages involved. For example, Crnic and Booth (1991) cross-sectionally compared the parenting stress of three groups of mothers who had children of different age groups (i.e., 9–12 months, 18–24 months, and 30–36 months) to determine the levels of stress instead of studying the same mothers longitudinally. Although Crnic et al. (2005) followed mothers longitudinally (i.e., assessed five times when their children were in preschool), the parenting stress scores were divided into high and low categories, and stability was defined by being consistently in one category. Deater-Deckard et al.'s (1996) and Hauser-Cram et al.'s (2001) studies spanned across 4 years (i.e., preschool to grade school) and 10 years (i.e., preschool to middle childhood), respectively. Parenting stress levels might indeed appear to be fairly stable and less fluctuating over longer periods of time or after the third year of children's lives. Future studies need to investigate low-income young mothers' parenting stress levels over a longer period of time, including into children's later years. Nevertheless, the present findings advanced our understanding of the diversity of parenting stress patterns during the toddler years among high-risk mothers.

Factors That Differentiated Among Parenting Stress Trajectory Classes

We also contributed to the understanding of factors that differentiate among different parenting stress trajectory classes. The present findings are consistent with previous theoretical speculation that parental characteristics are the most powerful predictors of parenting experiences (Crnic & Low, 2002). These results suggest that maternal personal resources (i.e., self-efficacy and maternal depression) are important predictors of the extent to which mothers experience stress over time. Mothers who had high levels of self-efficacy were less likely to belong to the chronically high and increasing groups. In contrast, mothers who had high levels of depression were more likely to belong to the chronically high and increasing groups.

Bandura's (1992) social cognitive theory states that individuals possess self-efficacy beliefs that enable them to exercise a measure of control over their thoughts, feeling, and actions. Thus, from an applied perspective, mothers who perceive that there is little they can do to change their life chances may need additional support because they may have difficulty recognizing available emotional and instrumental support. In addition, some practitioners have argued that to achieve lasting changes in parenting stress levels, the intervention must create lasting improvements in parents' confidence and sense of being effective in parenting (Tucker, Gross, Fogg, Delaney, & Lapporte, 1998). Our finding that self-efficacy was related to being in the decreasing parenting stress trajectory adds to the empirical evidence suggesting that self-efficacy is not only a protective factor at one single point in time but is also related to reductions in parenting stress over time.

Conger et al. (1997) have suggested that parents' psychological symptoms might exacerbate the effects of stressful life circumstances on parental functioning. Most previous studies have used clinical samples and examined the association between depression and parenting stress at only a single time point. The present findings added to the literature in two ways. First, we demonstrated that depression was not only associated with parenting stress at a single time point, but also with the risk of mothers belonging to the chronically high and increasing parenting stress groups. Second, our study was conducted with a community instead of clinical sample.

The present findings also revealed the importance of considering maternal, child, and contextual levels of factors simultaneously when examining the individual differences in parenting stress trajectories. In the comparison between the chronically high and decreasing groups, mothers who had lower levels of self-efficacy, had higher levels of depression, had children with more difficult temperaments, and did not participate in the EHS Program were more likely to belong to the chronically high group. Our findings are consistent with previous cross-sectional studies that found positive associations between difficult child temperament and parenting stress. Moreover, the present findings further demonstrated that difficult child temperament not only contributes to the stress at one single time point but that it has a strong influence on parenting stress over the long term. However, it should be noted that because the direction of causal effects could not be determined in the current study, it is also possible that experiencing high levels of stress can cause mothers to perceive their children's temperaments as being more difficult.

Previous research has suggested that the Head Start Program benefits children in a number of ways (e.g., Hubbs-Tait et al., 2002). In this study, young mothers also appeared to benefit from participating in the intervention, as those who participated in EHS were less likely to belong to the chronically high level of parenting stress group, which, in turn, reduces the risk for child maltreatment. Professionals could encourage young mothers to take advantage of the EHS Program (and other similar programs), and policymakers would also do well to ensure that resources are made available for early intervention.

Knowledge of child development, family resources, stressful life events, and family conflict did not distinguish among any of the parenting stress trajectory classes. On close examination, there was not much variability on these variables, making it more difficult for them to discriminate among classes. Future studies need to examine these variables more carefully.

On the basis of the current developmental theories, we hypothesized that young mothers at different ages, and presumably different developmental stages (i.e., maturity in cognitive and psychosocial development), might experience stress differently. However, no such effect was found. This null result might be due to mothers who were younger being more likely to still live at home with their families of origins and being more likely to receive both instrumental and emotional support from the grandparents of the children. Therefore, younger mothers did not necessarily experience higher levels of stress.

Although some scholars have argued that young motherhood might be considered an adaptive life strategy or normative for some ethnic minority youths (Stack & Burton 1994), our results suggest that ethnicity has no effect on parenting stress trajectory classes. On the basis of this result, one might argue that within the low-income community, early childbearing might be normative for mothers from European backgrounds as well, as McMahon's (1995) work has shown that most of the low-income women in her sample, particularly those who gave birth as adolescents, did not appear to see any advantages in postponing childbearing.

Even though not specifically related to parenting stress, Kalil and Kunz (2002) also have shown that marital status at the time of the childbirth is critical in determining young mothers' psychological outcomes in later life. The present findings did not support this argument. It might be that there are now fewer stigmas attached to single motherhood than was true in the 1970s,

when the previous study was conducted. Also, we did not measure the quality of the marital relationship, as a high level of partner intimacy has been found to be essential in positive parenting experience (Crnic & Low, 2002). Future studies need to examine the link between one's romantic relationship status and parenting stress trajectories.

Limitations and Directions for Future Research

Despite the contributions of this study, it has several limitations that suggest possible future research directions. First, the use of only three time points limits the complexity of the growth curve that can be fitted to the present data; additional time points would allow for the exploration of nonlinear trajectories. Second, Bauer and Curran (2004) have cautioned that, in growth mixture models, mixtures can be extracted even when none exist if the data are nonnormal but contain only a single population. Thus, the current results should be viewed as tentative, and more studies need to be conducted in the future to replicate and extend these findings. Future studies could also consider validating the trajectory classes against some theoretically related distal outcomes (e.g., parenting behavior). For example, it might be expected that the chronically high parenting stress group would display harsher parenting behaviors than would the decreasing parenting stress group.

Third, all the constructs except program status in this study were measured with self-report data. Therefore, one might argue that common method variance may have influenced the results. Accordingly, using data gathered from multiple sources, such as observations from home visitors and other family members, is recommended.

Fourth, future studies also need to look into cultural and multigenerational household variables that might contribute to young mothers' parenting stress trajectories. In this study, we did not explore the impact of cultural variables. LeVine (1980) has suggested that different cultural groups' historical and socioeconomic environments, as well as their underlying cultural beliefs, may inform their specific parenting experiences. In addition, previous studies (Ostberg & Hagekull, 2000; Wakschlag et al., 1996) have suggested that multigenerational household variables (e.g., intergenerational relationships, parity–birth order) play a critical role in mothers' parenting experiences. Future studies should explore these cultural and multigenerational factors.

Fifth, this study examined only mothers' parenting stress trajectories. Although previous studies have found that mothers and fathers had similar levels of parenting stress (Deater-Deckard & Scarr, 1996), the factors that are associated with maternal and paternal parenting stress might be different. For example, whereas fathers' parenting stress was tied most strongly to their satisfaction with their marital relationships, women's parenting stress was tied most strongly to their children's attributes (Deater-Deckard & Scarr, 1996). Therefore, future studies need to examine differences in the correlates of fathers' and mothers' trajectory patterns.

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