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Mothers' Trajectories of Depressive Symptoms Across Mexican-Origin Adolescent Daughters' Transition to Parenthood

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Abstract

This study draws from a life-course perspective in examining trajectories of mothers' depressive symptoms across their adolescent daughters' adjustment to parenthood in 204 Mexican-origin families using latent class growth analysis. Four distinct trajectories were identified based on mothers' depressive symptoms prior to the birth and 10 and 24 months postpartum. Two trajectories were characterized by stable levels of depressive symptoms but were differentiated in their levels of symptoms (i.e., High/Stable and Low/Stable). The remaining two trajectories were characterized by changes from pre- to post-birth, with one group exhibiting increases in depressive symptoms (i.e., Low/Post-Birth Increase) and the other group characterized by decreases in depressive symptoms (i.e., Low/Post-Birth Decrease). Consistent with a risk and resilience perspective, mothers with more disadvantaged socioeconomic circumstances and fewer intrapersonal resources (i.e., self-esteem, ethnic identity affirmation) were more likely to be members of the High/Stable group. In addition, daughters of mothers in the High/Stable group were more likely to have lower self-esteem as compared to daughters in the other three groups. Collectively, these findings suggested that the High/Stable group was at risk for adjustment difficulties from the third trimester to two years postpartum. In contrast, membership in the Low/Post-Birth Decrease trajectory group was associated with lower depressive symptoms and higher self-esteem for mothers and daughters. Findings point to the need to identify mothers who are at risk for depressive symptoms during their adolescent daughters' pregnancy and offer prevention and intervention programs that reduce risks and enhance protective factors.

Keywords

Mexican American adolescents; mother-adolescent relationships; teen pregnancy; adolescent parenthood

The transition to motherhood during adolescence has significant implications for adolescents' and their young children's well-being and development (Whitman, Borkowski, Keogh, & Weed, 2001). Little is known, however, about the psychological consequences for *mothers* when their daughters transition to parenthood during adolescence (Brown, Caldwell, & Antonucci, 2008; Updegraff, Perez-Brena, Umaña-Taylor, & Pflieger, 2012). Understanding how mothers adjust to daughters' new parenting role is important because daughters rely on their mothers for support during pregnancy and the early years of parenthood (Contreras, Mangelsdorf, Rhodes, Diener, & Brunson, 1999; East & Chien, 2010; East & Felice, 1996). In this study, we examined mothers' trajectories of depressive symptoms across their daughters' pregnancy and during the first two years of parenting in

Mexican-origin families. The focus on Mexican-origin adolescent females is important, as they have the highest birthrates of all ethnic/racial groups in the U.S. (CDC, 2011). High birthrates, in combination with the large size and rapid growth of the Mexican American population in the U.S. (U.S. Census Bureau, 2011), highlight the public health impact of teen pregnancy.

This study had three research goals. Drawing on a life-course perspective (Elder, 1987) and empirical research on the transition to parenthood (Demo & Cox, 2000), the first goal was to identify distinct trajectories of mothers' depressive symptoms using longitudinal data spanning from adolescent daughters' ¹ third trimester of pregnancy to 24 months postpartum. We focused on mothers' depressive symptoms based on the extensive literature documenting its negative impact on family functioning and youth well-being (e.g., Cummings, Davies, & Campbell, 2000; Lovejoy, Graczyk, O'Hare, & Neuman, 2000). The second goal was to examine the correlates of mothers' trajectories of depressive symptoms from a risk and resilience perspective (Masten & Coatsworth, 1998; Rutter, 1987). Toward this end, we considered factors that may promote mothers' positive adaptation (e.g., self-esteem, ethnic identity affirmation) and those that may place mothers at risk (e.g., limited socioeconomic resources). Our third goal, also grounded in a risk and resilience perspective, examined whether mothers' trajectories of depressive symptoms were associated with adolescent daughters' depressive symptoms and self-esteem two years postpartum, after accounting for adolescent daughters' prenatal adjustment.

Mothers' Depressive Symptoms and Adolescent Daughters' Transition to Parenthood

A life-course perspective emphasizes the interdependent nature of life-course trajectories within families and argues for attention to how life course changes, such as an adolescent daughter's pregnancy and transition to parenthood, have implications for other family members (Elder, 1987; Elder, Caspi, & Burton, 1988). Using data from Burton's (1985) landmark study of adolescent childbearing in multigenerational Black families to illustrate, Elder et al. (1988) proposed that adolescent parenthood results in an involuntary transition for adolescents' family members with consequences that reverberate throughout the family of origin. Research with predominantly African American and European American samples highlights the links between adolescents' early pregnancy and their mothers' psychological development and well-being (e.g., Burton, 1996; Caldwell, Antonucci, & Jackson, 1998). Our study extends this work by examining mothers' trajectories of depressive symptoms across daughters' early parenting transition in Mexican-origin families.

Research on the transition to adolescent motherhood from a life-course perspective alerts us to the substantial variability in how individuals and family systems respond to adolescent daughters' transition to parenthood. Burton's (1996) ethnographic work provides evidence of different patterns of adaptation to family caregiving roles and responsibilities following teenage births in multigenerational Black families. Importantly, some mothers view their daughters' early parenting transition positively, whereas other mothers indicate that it is a source of stress and discontentment (Burton, 1996). The broader literature on the transition to parenthood, focused primarily on heterosexual couples, also emphasizes the considerable diversity in how individuals and couples adapt (for a review, see Demo & Cox, 2000). Several studies show that some couples exhibit no changes in individual or marital functioning, whereas other couples improve and still others decline (e.g., Belsky & Rovine,

¹Although adolescent daughters also become mothers during the course of the study, we consistently refer to them as adolescent daughters throughout the manuscript to minimize confusion in terminology.

1990; Demo & Cox, 2000). Studying Caucasian working- and middle-class couples, for example, Belsky and Rovine (1990) found that 40% of the sample exhibited stable patterns of marital functioning from pregnancy to three years postpartum, and almost a third of the sample reported positive changes (e.g., increases in positive affect). The remainder of the sample reported declines in functioning (e.g., declines in positive affect) across the transition to parenthood.

Our first goal was to identify whether different patterns of adaptation also could be identified in mothers' depressive symptom trajectories across their daughters' adjustment to parenthood. Drawing from prior research, we anticipated that at least three patterns may emerge: (a) stable depressive symptoms across the transition and first two years postpartum, which may be reflected in high, moderate, or low levels of depressive symptoms; (b) increases in depressive symptoms from pre- to post-birth; and (c) declines in depressive symptoms from before to after the child's birth. We expected at least one stable pattern would involve moderate to high levels of mothers' depressive symptoms, given the risks associated with adolescent motherhood (Hoffman, 2008; Whiteman et al., 2001).

Correlates of Mothers' Trajectories of Depressive Symptoms

Our second goal was to examine factors associated with potentially different trajectories of mothers' depressive symptoms. A risk and resilience perspective posits that it is important to consider the *risk* factors that exacerbate the negative effects of challenging circumstances and the *resources* individuals have that can be protective by reducing the negative impact of risk (Masten & Coatsworth, 1998; Rutter, 1987). As families of teenage mothers are disproportionately likely to experience socioeconomic disadvantage (Hoffman, 2008), we focused on mothers' educational and economic circumstances as potential risk factors. In addition, mothers' self-esteem and ethnic identity affirmation were tested as potential resources, given prior work documenting their protective benefits (e.g., Hammen, 1988; Romero & Roberts, 2003).

Mothers' Socioeconomic Circumstances

The links among various indicators of limited socioeconomic conditions and maternal depression are documented in nationally representative data (Ertel, Rich-Edwards, & Koenen, 2011). Specifically, mothers who reported attaining less than a college education and had limited financial resources were more likely to experience depression. An extensive literature grounded in a family stress process model also documents the risks of socioeconomic disadvantage for parents' psychological functioning (Conger, Rueter, & Conger, 2000). Thus, we anticipated that mothers with more limited economic resources and educational attainment would describe stable/high levels of depressive symptoms or increases in depressive symptoms following daughters' parenting transition. The combination of economic disadvantage and the increased financial demands of a new family member may be challenging for mothers and relate to their adaptation across this transition period.

Self-Esteem and Ethnic Identity Affirmation

Mothers' intrapersonal and culturally based strengths prior to the baby's arrival may promote their adaptation, and thus, we focused on mothers' self-esteem and ethnic identity affirmation as two potential resources. Our focus on self-esteem was guided by research from a risk and resilience perspective, which has emphasized self-esteem as a protective personal resource when individuals are faced with adversity (Masten & Coatsworth, 1998; Rutter, 1987). Scholars suggest that self-esteem can protect individuals from the stress of negative life events, and specifically, against depression (Piko & Fitzpatrick, 2003). In one

study, individuals with a more negative self-concept became more depressed than their counterparts who had a more positive self-concept, even after controlling for initial levels of depression (Hammen, 1988). Thus, we expected that mothers with higher self-esteem would be more likely to report low and stable levels of depressive symptoms, or decreases in symptoms, across their daughters' transition to parenthood.

In studying ethnic minority families, it is also imperative to focus on how culturally based strengths may serve protective functions. Thus, we examined mothers' ethnic identity affirmation as a culturally specific resource. Ethnic identity affirmation reflects the degree to which individuals feel positively about their ethnic background (Umaña-Taylor, Yazedjian, & Bámaca-Gómez, 2004). Prior work documents the protective benefits of ethnic identity affirmation among Mexican Americans (Roberts & Romero, 2003). Ethnic identity affirmation may be particularly important for mothers of pregnant and parenting adolescent girls, given the social stigma associated with teen pregnancy in mainstream society (Jacono & Jacono, 2001). Similar to our expectations for self-esteem, we anticipated that mothers with higher levels of ethnic identity affirmation would be more likely to report low and stable levels of depressive symptoms, or declines in symptoms, across their daughters' transition.

Mothers' Trajectories of Depressive Symptoms and Adolescent Daughters' Adjustment

Our third goal was to test whether mothers' trajectories of depressive symptoms were linked to adolescent daughters' depressive symptoms and self-esteem two years postpartum, drawing on a risk and resilience perspective. Research linking early parenthood to adolescent girls' *depressive symptoms* are consistent in showing that adolescent mothers are a group at elevated risk for depressive symptoms both prior to and after the baby's arrival (Lanzi, Bert, Jacobs & Center for Prevention of Child Neglect, 2009; Reid & Meadows-Oliver, 2007; Whiteman et al., 2001). Also relevant is research documenting the transmission of depression from mothers to their offspring (Hammen, Brennan, & Le Brocque, 2011). Notably, some empirical work suggests that the intergenerational transmission of depression is particularly likely to occur under conditions of family risk (e.g., Hammen, Brennan, & Shih, 2004). In this study, we expected that mothers who reported increases in depressive symptoms or stable/high levels of depressive symptoms would have daughters who reported more depressive symptoms two years postpartum.

We also examined whether mothers' trajectories of depressive symptoms were associated with adolescent daughters' *self-esteem* for several reasons. First, self-esteem is conceptualized as a protective aspect of adolescent well-being, as it is linked to more positive psychological functioning and less adjustment difficulties, including among adolescent mothers (e.g., Ramos-Marcuse et al., 2010). Higher self-esteem also has been associated with adolescent mothers' parenting, including higher levels of parenting satisfaction (Ramos-Marcuse et al., 2010) and more parental knowledge (Hurlbut, Culp, Jambunathan, Butler, 1997). Second, prior research links maternal depression to lower levels of adolescent self-worth and to changes in self-worth over time (Garber & Cole, 2010), suggesting that mothers' depressive symptom trajectories also may be linked to adolescent daughters' self-esteem. Thus, we also expected that mothers who described stable/high levels of depressive symptoms or increases in symptoms would have adolescent daughters who reported lower self-esteem two years postpartum.

The Present Study

In sum, the first goal was to identify distinct trajectories of mothers' depressive symptoms from adolescent daughters' third trimester of pregnancy to two years postpartum. We hypothesized at least three possible patterns, including stable depressive symptoms (i.e., high, moderate, or low levels) and increases or decreases in depressive symptoms following the birth of the child. Our second goal was to identify risk and protective factors pre-birth that were associated with these trajectories. We hypothesized that mothers with more limited educational and economic resources would be more likely to report either increases in depressive symptoms following the birth or stable/high levels of depressive symptoms. In addition, mothers with higher self-esteem and ethnic identity affirmation were expected to report low, stable levels or declines in depressive symptoms following the child's birth. Finally, our third goal was to test whether mothers' trajectories were associated with adolescent daughters' depressive symptoms and self-esteem two years postpartum (controlling for initial levels of adolescent daughters' adjustment). We hypothesized that mothers' stable/high levels of depressive symptoms or increases in depressive symptoms from pre- to post-birth would be associated with adolescent daughters' higher depressive symptoms and lower self-esteem two years postpartum.

Method

Participants

Data for the current study came from the first three waves (W1, W2, and W3) of a longitudinal study of 204 Mexican-origin pregnant adolescent girls and their mother figures (Jahromi, Umaña-Taylor, Updegraff, & Lara, 2012). Adolescent girls in their third trimester of pregnancy who met the following criteria were eligible for participation: (a) Mexican-origin; (b) unmarried; (c) between 15 and 18 years of age; and (d) had a biological mother (88.7%; $n = 181$) or mother figure who was willing to participate. Those who did not have a biological mother who was available or able to participate (11.3%; $n = 23$) were asked to select the female family member who served as their mother figure. Mother figures included grandmothers (2.9%), aunts (2%), sisters (0.5%), or other female family members (6.4%). Given the majority of mother figures were adolescents' biological mothers, we refer to them as mothers hereafter for ease of discussion.

Mothers averaged 40.75 years of age ($SD = 6.93$), reported an average education level of 9th grade ($SD = 3.7$ years), and a median household income of \$22,070 ($SD = \$21,442$; range = \$600 to \$114,000) at W1. A majority of mothers were employed at W1 through W3 (i.e., 63%, 62%, and 58%, respectively). Most mothers were born in Mexico (68.1%), and the remainder were born in the U.S. (30.4%), or another country (i.e., Guatemala or El Salvador; 1.5%). Those born outside of the U.S. had resided in the U.S. for an average of 23.2 years ($SD = 14.9$).

Adolescents averaged 16.24 years of age ($SD = .99$) and were 30.85 weeks pregnant ($SD = 4.15$) at the W1 interview. Of the 204 adolescents, 191 (94%) were having their first child. More than half of adolescents were attending high school (56%) or had already earned a high school degree or GED (5%) at W1. At W2 and W3, 40% and 29% were in school, respectively, and 18% and 29% had a high school degree/GED, respectively. Further, some adolescents worked for pay (19%, 34%, and 38% at W1 – W3, respectively). More than half of adolescents resided with their mothers at W1 (87%), W2 (69%), and W3 (59%). Adolescents' fathers also were present with mothers in 32%, 37%, and 41% of households at W1-W3, respectively. Fewer than 5% of households at each wave included adolescents' father but not their mother. Biological fathers of the infant were present in 23% (W1) to 39% (W3) of households. Adolescents described themselves as primary caregivers to their

child most often (i.e., 52% at W2; 73% at W3), and shared caregivers with their mothers less often, (44% at W2; 21% at W3); mothers as primary caregivers was rare (4% at W2; 6% at W3).

Procedure

Adolescents and their mothers were recruited during adolescents' third trimester of pregnancy (W1) from high schools and community centers in a Southwestern metropolitan area. Parental consent and youth assent were obtained for participants who were younger than 18 years old, and informed consent was obtained for participants who were 18 years and older. W2 and W3 data were collected 10 and 24 months postpartum. At W2, at least one dyad member participated in 197 dyads (96% family retention rate), and at W3 the retention rate was 88% (179 dyads). Examination of differences in participating versus non-participating dyads for W2 revealed no significant differences in family income, mothers' education, mothers' age, adolescents' age, or mothers' age at first birth. Differences emerged, however, for adolescents' age at their first child's birth, $F(1, 202) = 13.86, p < .001$, such that non-participating adolescents were younger ($M = 15.00, SD = 1.07$) than participating adolescents ($M = 16.38, SD = 1.03$). For this reason, adolescents' age at their first child's birth was included as a control variable in all analyses. For W3, there were no significant differences between participants and non-participants in demographic characteristics.

In-home interviews were conducted at all three waves by female interviewers. Mothers and daughters were interviewed simultaneously in separate rooms/areas of the household by female interviewers for approximately 2.5 hours. Interviewers read items aloud and recorded participants' responses on the paper survey. Due to the self-evaluative nature of the self-esteem and depressive symptom items, participants were offered the option of completing these items on their own. Interviews were conducted in participants' preferred language (e.g., English or Spanish), with 60% of adolescents and 25% of mothers completing the interviews in English across the three waves. Each participant received \$25 for their participation in W1, \$30 for W2, and \$35 for W3. All procedures were approved by the Human Subjects Review Board.

Measures

Mothers' depressive symptoms (W1, W2, W3)—Mothers completed the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). This measure has been validated with Mexican Americans and in English and Spanish (Mosicicki, Locke, Raie, & Boyd, 1989). Respondents rated the frequency that each of 20 symptoms occurred on a 4-point scale in the past week (0 = *Rarely or none of the time*, 3 = *Most of the time*), with higher mean scores indicating higher levels of depressive symptoms. Although this measure is a screening rather than diagnostic tool, means scores of 1.2 or higher are considered to be a conservative cutoff and .80 or higher are used as a more liberal cutoff for clinically significant levels of depressive symptoms in community based samples (Le, Muñoz, Soto, Delucci, & Ippen, 2004). We describe our findings in terms of whether they were above or below the conservative and more liberal clinical cutoffs for depressive symptoms. Cronbach's alphas were .91, .87, and .92 for Waves 1 - 3, respectively.

Background characteristics (W1)—Mothers reported their age in years at the time of the interview. Adolescents' age and age at first birth was calculated based on their birthdate, interview date, and delivery date. Mothers and adolescents reported their country of birth, and those born outside the U.S. reported the number of years they had lived in the U.S.

Educational and economic resources (W1)—Mothers indicated the highest level of education completed; responses ranged from 1st grade (coded as 1 year of education) to a master's degree (coded as 18 years of education), with high school degree coded as 12, and college degree coded as 16. Annual household income was indexed by the sum of mothers' annual income, income contributions of other household members, and public assistance.

Mothers' intrapersonal and culturally based resources (W1)—For *self-esteem*, mothers completed the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1979). Items (e.g., "I take a positive attitude toward myself") asked about the timeframe of the last year, were scored on a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), and were averaged for a scale score (Cronbach's α 's were .72, .78, and .78 at W1, W2, and W3, respectively). Higher scores indicated higher levels of self-esteem. Validity and reliability with Latinos has been demonstrated in prior work (Umaña-Taylor & Updegraff, 2007).

Ethnic identity affirmation is a subscale of the Ethnic Identity Scale developed by Umaña-Taylor et al. (2004). The 6-item affirmation subscale assesses negative and positive feelings toward one's ethnic group (e.g., "My feelings about my ethnicity are mostly negative"). Participants responded to items on a 4-point Likert scale ranging from 1 (*does not describe me at all*) to 4 (*describes me very well*). Items were reverse coded so that higher scores reflected a more positive view of one's ethnicity (α 's = .79, .82, and .84 for W1-W3).

Adolescent adjustment (W3)—Adolescent adjustment was measured at W1 and W3 with adolescents' reports of their self-esteem and depressive symptoms using the same measures described above for their mothers. Cronbach's α 's were .78 and .83 for adolescents' self-esteem and .87 and .93 for adolescents' depressive symptoms at W1 and W3, respectively.

Results

The results are organized around our three goals: (1) to identify trajectories of Mexican-origin mothers' depressive symptoms from their adolescent daughters' third trimester of pregnancy to 24 months postpartum; (2) to examine prenatal predictors of these trajectories; and (3) to investigate the links between mothers' trajectories of depressive symptoms and adolescent daughters' psychosocial adjustment. Given that participating versus non-participating families differed by adolescents' age at their first child's birth, all analyses included adolescents' age at their first child's birth as a control variable. Missing data were handled using maximum likelihood estimation. Means, standard deviations, and bivariate correlations are in Table 1.

Goal 1: Trajectories of Mothers' Reports of Depressive Symptoms

To address our first goal, latent class growth analysis (LCGA) was conducted in Mplus 6.0 (Muthen & Muthen, 2010) to identify distinct trajectory classes of mothers' depressive symptoms across daughters' parenting transition. Several criteria were used to determine the correct number of trajectory classes (Muthen & Muthen, 2010; Nylund, Asparouhov, & Muthen, 2007). First, a lower information criterion (i.e., AIC, BIC, ABIC) indicates that a model with K number of classes is a better solution than a model with K-1 number of classes. Second, the Lo-Mendell-Rubin Likelihood ratio test (LMRT) compares the model fit for a K-class model against a K-1 class model and a significant difference between models indicates the model with K number of classes fits the data better than the model with K-1 number of classes. Third, posterior probabilities and their summary statistic (i.e., the entropy score) indicate the level of measurement accuracy, with scores ranging from 0 to 1 and a score near .80 and above indicating an accurate classification (Clark & Muthen, 2010).

Fourth, the final class solution was evaluated for its interpretability. Based on these criteria (see Table 2), the four-class solution was chosen as the best fitting model. See Figure 1 for an illustration of the four trajectories.

Trajectories of Depressive Symptoms—For each of the four trajectory classes, the linear and quadratic effects are presented in the upper half of Table 3, and the means, standard deviations, and results of mean difference tests are portrayed in the lower half of Table 3. Classes are described here in reference to the conservative (1.20) and more liberal (.80) clinical cutoffs for depressive symptoms (Le et al., 2004). The first class was labeled *High/Stable* and included 39% of mothers. The stability of mothers' depressive symptoms was evident in the non-significant linear and quadratic effects for this class. Based on both the liberal and conservative cutoffs, this class of mothers reported clinically significant levels of depressive symptoms at all three waves. In addition, mothers' depressive symptoms were significantly higher than all other classes at all three waves. The second class, labeled *Low/Stable*, also was characterized by non-significant linear and quadratic effects. The mothers in this class (20% of the sample) reported levels of depressive symptoms that were below both the conservative and liberal cutoffs at all three waves. Their levels of depressive symptoms differed from the High/Stable group at all three waves, but not from the remaining two classes of mothers at W1 or W3. The third class, *Low/Post-Birth Decrease*, included 27% of the sample. Both the linear and quadratic effects were significant for this class. These mothers were characterized by similar levels of depressive symptoms as mothers in the Low/Stable class at W1 and W3, but significantly lower depressive symptoms than all other classes at W2. At all three waves, mothers in the Low/Post-Birth Decrease class reported depressive symptom levels that were below the conservative and liberal clinical cutoffs. The fourth class, labeled *Low/Post-Birth Increase* (13% of the sample), comprised mothers who reported depressive symptoms that were below the liberal and conservative clinical cutoffs at W1 and W3, but slightly above the liberal (but not conservative) clinical cutoff at W2. Both the linear and quadratic effects were significant for this class. The Low/Post-Birth Increase differed significantly from the High/Stable class at all three waves, and also from the Low/Post-Birth Decrease class at W2.

As a preliminary step before addressing Goals 2 and 3, we tested whether these trajectory classes differed by mother and adolescent nativity and years living in the U.S. using logistic regressions. The only significant difference was that US-born adolescents were more likely to have mothers who belonged to the Low/Post-Birth Decrease as compared to the High/Stable, $\beta = 1.46, p < .01$, and Low/Post-Birth Increase groups, $\beta = 2.09, p < .01$. We also tested for trajectory differences in (a) biological versus non-biological mother and (b) adolescents who were versus were not having their first child; no significant differences emerged.

Goal 2: Correlates of Mothers' Depressive Symptom Trajectories

For our second goal, we tested whether mothers' (a) socioeconomic circumstances (i.e., education level, household income), and (b) intrapersonal and culturally based resources (i.e., self-esteem, ethnic identity affirmation) were associated with trajectory group membership using a series of logistic regressions estimated in Mplus 6.0 (Muthén & Muthén, 2010). Table 4 provides the means and standard deviations by trajectory class and significant logistic regression estimates indicating the likelihood of belonging to a certain class as compared to the High/Stable class (the reference group) based on higher/lower socioeconomic and interpersonal resources. Significant differences in logistic regression estimates that do not include the High/Stable class as the reference group are described in the text, but are not in Table 4.

Mothers' Socioeconomic Circumstances—Mothers with lower income were more likely to belong to the High/Stable class than the Low/Post-Birth Decrease and Low/Stable class. In addition, mothers with lower educational attainment were significantly more likely to belong to the High/Stable than Low/Post-Birth Decrease class.

Mothers' Intrapersonal and Culturally Based Resources—Mothers' self-esteem also was significantly associated with class membership, such that mothers with higher self-esteem were more likely to belong to all other classes as compared to the High/Stable class. In addition, mothers with higher self-esteem were more likely to belong to the Low/Post-Birth Decrease class as compared to the Low/Stable class, $\beta = 1.75, p < .05$. For ethnic identity affirmation, mothers who reported higher ethnic identity affirmation were more likely to belong to the Low/Post-Birth Decrease and Low/Stable classes as compared to the High/Stable class.

Goal 3: Mothers' Trajectories and Adolescent Daughters' Well Being

To test our third goal of examining trajectory class differences in adolescent adjustment at W3 (see Table 4), we conducted logistic regressions with adolescents' age at first birth and adolescents' adjustment at W1 included as control variables. Adolescents' self-esteem was significantly associated with class membership, such that adolescents with higher self-esteem were more likely to have mothers who belonged to all other classes as compared to the High/Stable class. Finally, there was a significant association between class membership and adolescents' depressive symptoms. Adolescents with lower depressive symptoms were more likely to have mothers who belonged to the Low/Post-Birth Decrease than the High/Stable class.

Discussion

Understanding how mothers differentially adapt to their adolescent daughters' early parenting role is important because adolescents rely on their mothers for support during and after their transition to parenthood (Contreras et al., 1999; East & Felice, 1996). Using a longitudinal, multi-informant design, this study extends research on adolescent parenthood by documenting distinct trajectories of Mexican-origin mothers' depressive symptoms across their daughters' adjustment to parenthood. Further, we documented how these different trajectories were linked to mothers' socioeconomic circumstances and intrapersonal and culturally based resources prenatally and to daughters' adjustment two years postpartum.

Trajectories of Mothers' Depressive Symptoms

Our first goal was to identify trajectories of mothers' depressive symptoms across daughters' adjustment to motherhood, building on life course theorists' premise that the key life transitions of one family member have implications for the life course experiences of other family members (Burton, 1996; Elder 1987; Elder et al., 1988). Consistent with research on adolescent parenthood from a life course perspective (e.g., Burton, 1996), the broader literature on the transition to parenthood (Belsky & Rovine, 1990; Demo & Cox, 2000), and our hypotheses, we found that several different patterns characterized mothers' depressive symptoms across their daughters' early parenting transition. Of concern are mothers in the *High/Stable* class whose depressive symptom levels exceeded the more conservative clinical cutoff at all three waves. These mothers reported high and stable levels of depressive symptoms that differed significantly from mothers in the other three classes. Prior work with low-income Latina women suggests that these mothers had levels of depressive symptoms that indicate risk for a depressive disorder (e.g., Le et al., 2004). As such, these findings point to the need to screen mothers of adolescent daughters during

pregnancy and identify mothers who need to be referred for more extensive evaluation, and possibly, treatment for a depressive disorder.

Like the High/Stable class, the *Low/Stable* class reported levels of depressive symptoms that did not change during this transition period. In addition, mothers' depressive symptoms in the Low/Stable class were *below* the liberal and conservative cutoff for clinical symptoms (Le et al., 2004). Thus, this stable pattern represents a subgroup of mothers (20% of the sample) that are experiencing relatively low levels of depressive symptoms during their daughters' transition to parenthood. Together, the High/Stable and Low/Stable classes represent over half of the sample, suggesting that mothers of adolescent daughters in this study were slightly more likely to describe stable (59%) than fluctuating (41%) levels of depressive symptoms. These findings are consistent with life-course based research on adolescent motherhood showing that different patterns of adaptation emerge across this transition (e.g., Burton, 1996) and with research on the transition to parenthood showing that individuals and couples exhibit varied trajectories of adjustment (e.g., Belsky & Rovine, 1990; Demo & Cox, 2000).

The remaining mothers described trajectories of depressive symptoms that fluctuated following their daughters' transition to parenthood, as evidenced by significant quadratic effects. One class of mothers, *Low/Post-Birth Increase*, reported an increase in depressive symptoms from the third trimester to ten months postpartum. Although their depressive symptoms were below the clinical cutoff prenatally, this increase resulted in depressive symptoms that were slightly above the liberal clinical cutoff following the baby's birth. In contrast, mothers in the *Low/Post-Birth Decrease* class reported a decline in depressive symptoms pre- to post-birth. These mothers reported significantly lower levels of depressive symptoms than all other mothers after their daughters' parenting transition. Notably, both classes of mothers returned to pre-birth levels of depressive symptoms by two years postpartum. These findings are consistent with research on the transition to parenthood, which has shown evidence of both increases and decreases in functioning across this transition (Demo & Cox, 2000).

Correlates of Mothers' Depressive Symptom Trajectories: Risk and Protective Factors

Our second goal was to examine risk and protective factors (prenatally) that differentiated the trajectories of mothers' depressive symptoms. Guided by a risk and resilience perspective (Masten & Coatsworth, 1998; Rutter, 1987), we hypothesized that limited socioeconomic circumstances would serve as a risk factor, given the chronic stressors associated with socioeconomic disadvantage (e.g., Conger et al., 2000; Ertel et al., 2011). In addition, self-esteem and ethnic identity affirmation were conceptualized as intrapersonal resources that may be protective for mothers' depressive symptoms (Masten & Coatsworth, 1998; Rutter, 1987; Piko & Fitzpatrick, 2003). Our findings were generally consistent with these expectations. Mothers in the High/Stable class had lower income, and lower levels of self-esteem and ethnic identity affirmation relative to mothers in the other three classes; they also had lower educational attainment relative to the Low/Post-Birth Decrease class. Together, these findings provide a cohesive picture of the High/Stable class as facing multiple risks (i.e., high initial levels of depressive symptoms that were stable; limited income, low educational attainment) with few protective resources, as defined by feelings of self-worth and a strong connection to one's ethnic group. Such findings are consistent with a risk and resilience perspective in drawing attention to how the presence of risk factors without the availability of protective resources is problematic when individuals are faced with challenging life circumstances (Masten & Coatsworth, 1998; Rutter, 1987).

Also consistent with a risk and resilience perspective are findings highlighting mothers' intrapersonal resources in the Low/Post-Birth Decrease class. This class of mothers was

characterized by the most optimal functioning and also by relatively more intrapersonal resources; that is, they were more likely to report higher self-esteem (relative to the High/Stable and Low/Stable classes) and higher ethnic identity affirmation (relative to the High/Stable class). These findings are consistent with our hypotheses and with prior work highlighting the protective nature of self-esteem for depression (Hammen, 1988; Piko & Fitzpatrick, 2003) and of ethnic identity affirmation for Mexican Americans (Romero & Roberts, 2003). Given the negative stigma associated with teenage pregnancy in the U.S. (Jacono & Jacono, 2001), mothers' positive feelings about their ethnic group may be important in providing them with resources to negotiate their daughters' early parenting role. These findings also underscore the importance of considering culturally specific strengths, which are central to the development of culturally sensitive interventions. More generally, although we cannot draw conclusions about the direction of effects, our findings suggest that mothers characterized by a combination of low initial levels of depressive symptoms, high self-esteem, and strong positive feelings about their ethnic group may adjust better to their daughters' parenting transition. These findings suggest that multifaceted intervention approaches that address both potential risk and protective factors may lead to more successful outcomes.

Mothers' Trajectories of Depressive Symptoms and Adolescent Daughters' Adjustment

Our third goal addressed the question of whether mothers' trajectories of depressive symptoms were associated with adolescent daughters' psychological functioning two years postpartum, after accounting for daughters' prenatal adjustment. Our findings provided some evidence of these linkages. In particular, membership in the High/Stable class was associated with lower levels of adolescent daughters' self-esteem relative to daughters in the other three classes. In addition, membership in the Low/Post-Birth Decrease class was associated with daughters' lower levels of depressive symptoms compared to daughters in the High/Stable class. These findings are consistent with prior work highlighting intergenerational similarities in depression (e.g., Hammen et al., 2011), particularly under conditions of family risk (Hammen et al., 2004), and with research linking maternal depression to changes in adolescents' self-worth over time (Garber & Cole, 2010).

It is notable that adolescent daughters' self-esteem and depressive symptoms did not differentiate the likelihood of membership in the Low/Stable versus Low fluctuating classes (i.e., Low/Post-Birth Increase, Low/Post-Birth Decrease). Although the interpretation of null findings is speculative, it may be that there are *not* long-term implications of some short-term fluctuations in mothers' depressive symptoms, particularly when they have other resources to draw on and when their depressive symptoms are initially low and return to prenatal levels by two years postpartum. Mothers may benefit from the knowledge that fluctuations in depressive symptoms following daughters' transition appear to be time-limited. Replication and extension of these findings to other ethnic groups will be important, however, in further establishing how changes in mothers' depressive symptoms have implications for daughters' adjustment as new mothers.

Implications

Our study provides a number of potential implications for intervention. First, our findings reflected variability in how mothers adjust to daughters' parenting transition that depended partly on their *initial levels* of depressive symptoms when their daughters were in their third trimester of pregnancy. That is, mothers who reported *low* initial levels of depressive symptoms (i.e., Low/Stable, Low/Post-Birth Increase, Low/Post-Birth Decrease) also reported low levels again by two years postpartum. In addition, the daughters of mothers in these three classes did not differ in their levels of adjustment. Thus, by two years postpartum, mothers who entered this transition with low levels of depressive symptoms

were able to adapt more easily to their daughters' early parenting transition. In contrast, mothers whose initial levels of depressive symptoms were high (i.e., above the clinical cutoff; High/Stable class) remained at risk across the transition and first two years postpartum. Interventions that address mothers' depressive symptoms should occur prior to their daughters' transition to parenthood to promote better adjustment for adolescents, and ultimately, for their young children. It is important to note that our first assessment of mothers' depressive symptoms occurred during daughters' third trimester of pregnancy. Thus, it is impossible to determine whether mothers exhibited depressive symptoms as a result of their daughters' pregnancy or as a result of a pre-existing condition. In future research, it will be beneficial to assess mothers' clinical history of depressive symptomatology prior to their daughters' pregnancy.

Second, our study underscores the potential significance of a *multifaceted* prevention approach that addresses both risk and protective factors prior to daughters' parenting transition. In addition to mothers' initial high levels of depressive symptoms, our study highlighted socioeconomic disadvantage as a risk factor. Further, mothers who had the least difficulty in their adjustment also had more *intrapersonal* resources, defined in this study as positive feelings of self-worth and strong ties to one's ethnic group, prior to their daughters' transition. Thus, efforts to provide a combination of services that focus on mental health issues, promote mothers' intrapersonal strengths, and address economic hardship may be most successful in supporting these mothers as they face a significant transition with their daughters. Our findings suggest prenatal screening and identification of mothers who exhibit risk factors in combination with limited protective resources may be the most optimal approach.

Limitations, Future Directions, and Conclusion

This study's limitations provide directions for future research. First, this study focused on adolescent girls who transitioned to motherhood in middle/late adolescence. How mothers adapt to daughters' parenting transitions in early adolescence is one important direction of future research. Second, our study's initial assessment was when adolescent daughters were in their third trimester of pregnancy; thus, we do not have information regarding mothers' depressive symptoms (or history of depression) prior to their daughters' pregnancy. In the future, prospective data that captures mothers' and daughters' psychological functioning prior to the pregnancy will shed further light on this issue. Third, it was not possible to identify the direction of effects, and many of the processes examined here are likely to be reciprocal over time. Future research using designs, such as cross-lag panel models, will help to clarify how mothers and daughters influence one another across this transition. Fourth, it will be important to identify potential mediators and moderators of the linkages between mothers' and daughters' adjustment in future work. One possibility, in line with a family stress process model (Conger et al., 2000), is that parent-adolescent relationships may mediate mother-daughter adjustment linkages. Fifth, it will be important to incorporate fathers in future work (both adolescents' and their babies' fathers) to better understand their role during this transition and adjustment. Finally, our sample includes a specific subgroup of Latinos (i.e., Mexican Americans) from a region of the U.S. with an established Latino population. Thus, it will be important to extend this work to other Latino subgroups and other ethnic/racial groups and regions in the U.S.

In conclusion, Mexican-origin adolescent females are a group at substantial risk for teenage motherhood (CDC, 2011), and thus, efforts to understand mothers' adaption to daughters' early parenting transition are crucial. Our approach revealed that some subgroups of Mexican-origin mother-daughter dyads may be at risk for adjustment difficulties but others may not. Additionally, our findings highlighted a range of risk and protective factors that can be targeted in a multifaceted intervention *prior* to the baby's arrival. Additional research

aimed at understanding how mothers' and daughters' adjustment has implications for their own and their children's well-being across this transition and beyond is essential for developing effective prevention and intervention approaches.

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Figure 1.

Latent Class Growth Analysis Estimates of Mothers' Depressive Symptoms at Adolescents' Third Trimester (W1), and 10 Months (W2) and 24 Months (W3) Postpartum

Note. Depressive symptoms were scored by creating an average and scale ranged from 0-3. A conservative cutoff for clinical symptoms is 1.2 and a liberal cutoff for clinical symptoms is .80 (Le et al., 2004).

Table 1

Correlations, Means, and Standard Deviations for all Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. M. Depressive Symptoms-W1	-											
2. M. Depressive Symptoms-W2	.48	-										
3. M. Depressive Symptoms-W3	.46	.48	-									
4. A. Age at First Birth	.00	-.10	-.03	-								
5. Household Income – W1	-.28	-.25	-.19	.16	-							
6. M. Education Level – W1	-.23	-.11	-.05	.10	.40	-						
7. M. Self-esteem-W1	-.49	-.35	-.37	.02	.26	.32	-					
8. M. Ethnic Identity Affirmation-W1	-.33	-.24	-.24	.07	.18	.16	.23	-				
9. A. Self-Esteem-W1	-.12	-.10	-.07	.02	.10	.10	.17	-.01	-			
10. A. Self-Esteem-W3	-.27	-.20	-.21	.03	.15	.04	.14	.13	.47	-		
11. A. Depressive Symptoms W1	.14	.05	-.01	.07	-.10	-.16	-.06	.03	-.49	-.38	-	
12. A. Depressive Symptoms W3	.25	.09	.22	.00	-.19	-.06	-.16	-.10	-.30	-.57	0.46	-
Mean (SD)	0.84 (0.58)	0.83 (0.58)	0.76 (0.57)	19.00 (3.84)	27.244 (20.385)	9.11 (3.61)	3.22 (0.42)	3.67 (0.54)	3.23 (0.45)	3.39 (0.47)	0.88 (0.51)	0.84 (0.57)

Note. Based on the sample size of $n = 204$ estimated with maximum likelihood methods, correlations with an absolute value $> .12$ are significant at $p < .05$.

M. means Mother and A. means Adolescent.

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 2

Model Fit Statistics for Choosing the Best Latent Class Growth Analysis (LCGA) solution

Fit Criteria	1 Profile	2 Profile	3 Profile	4 Profile	5 Profile
AIC	978.55	819.30	804.83	793.38	821.42
BIC	1008.41	859.12	857.92	863.06	901.05
ABIC	979.90	821.10	807.23	796.52	825.01
LMRT		-481.20	-420.77	-409.25	-396.37
<i>p</i> -value		0.00	0.00	0.00	0.75
Entropy		.70	.78	.75	.83

Note. LMRT means Young-Lo Mendell Rubin Likelihood ratio test. Bolded estimates within each row indicate the best fitting estimate for each indicator of model fit. The profile solution with the most bolded estimates indicates it was the best fitting profile solution.

Table 3

Estimates of Growth and Means and Standard Deviations for the Four Classes of Mothers' Depressive Symptoms

	High/Stable (<i>n</i> =80)	Low/Stable (<i>n</i> =40)	Low/Post-Birth Decrease (<i>n</i> = 54)	Low/Post-Birth Increase (<i>n</i> = 26)
Means Estimates of Growth				
Intercept	1.25 ***	0.65 ***	0.42 ***	0.65 ***
Linear	0.12	-0.03	-0.42 ***	0.61 **
Quadratic	-0.09	0.00	0.18 ***	-0.33 ***
Descriptive Statistics				
Mean - Time 1	1.30 _a	0.61 _b	0.40 _b	0.61 _b
(<i>SD</i>)	(0.56)	(0.32)	(0.29)	(0.31)
Mean - Time 2	1.30 _a	0.63 _c	0.19 _b	0.93 _c
(<i>SD</i>)	(0.58)	(0.08)	(0.12)	(0.10)
Mean - Time 3	1.14 _a	0.58 _b	0.32 _b	0.54 _b
(<i>SD</i>)	(0.62)	(0.31)	(0.26)	(0.30)

Note. Means within the same row which do not share a subscript differ at the $p < .05$ level. A conservative cutoff for clinical symptoms is 1.2 and a liberal cutoff for clinical symptoms is .80 (Le et al., 2004).

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$

Table 4

Means and Standard Deviations and Logistic Regression Coefficients for Mothers' Socioeconomic, Self-Esteem, and Ethnic Identity Affirmation and Adolescents' Adjustment as a Function of Latent Class Trajectories

	High/Stable (<i>n</i> =80)			Low/Post-Birth Decrease (<i>n</i> = 54)			Low/Stable (<i>n</i> =40)			Low/Post-Birth Increase (<i>n</i> = 26)			
	M	(SD)		M	(SD)	(SE)	M	(SD)	B	(SE)	M	(SD)	(SE)
Mothers' Socioeconomic and Intrapersonal Resources – W1													
Household Income	19,282	(12,752)		34,361	(19,693)	0.02***	34,683	(25,840)	0.02***	(0.01)	27,609	(23,796)	0.01 (0.01)
Mothers' Education	8.48	(3.82)		10.22	(3.53)	0.15*	9.00	(3.28)	0.08	(0.07)	9.04	(3.34)	0.10 (0.09)
Self-esteem	3.02	(0.42)		3.47	(0.31)	3.92***	3.27	(0.40)	2.16**	(0.70)	3.30	(0.34)	2.52** (0.86)
Ethnic Identity Affirmation	3.50	(0.68)		3.84	(0.38)	2.44*	3.72	(0.44)	0.77*	(0.39)	3.79	(0.34)	1.61* (0.71)
Adolescents Adjustment – W3													
Self-esteem	3.22	(0.52)		3.47	(0.42)	1.62**	3.54	(0.37)	1.88***	(0.62)	3.53	(0.39)	2.78** (1.10)
Depressive Symptoms	0.98	(0.64)		0.74	(0.47)	-1.17**	0.77	(0.56)	-0.21	(0.48)	0.71	(0.52)	-2.49 (1.45)

Note. Logistic regressions were estimated with the High/Stable class used as the reference group. For household income, the mean and standard deviation estimates were rounded to the nearest dollar.

* $p < .05$;

** $p < .01$

*** $p < .001$.