

PATRICIA L. EAST *University of California, San Diego*

NINA C. CHIEN *Child Trends**

JENNIFER S. BARBER *University of Michigan***

Adolescents' Pregnancy Intentions, Wantedness, and Regret: Cross-Lagged Relations With Mental Health and Harsh Parenting

The authors used cross-lagged analyses to examine the across-time influences on and consequences of adolescents' pregnancy intentions, wantedness, and regret. One hundred pregnant Latina adolescents were studied during pregnancy and at 6 and 12 months postpartum. The results revealed 4 main findings: (a) similar to what has been found in adult women, adolescents' lower prenatal pregnancy intendedness and wantedness predicted initial difficulties in parenting, (b) frequent depressive symptoms predicted subsequent lower pregnancy intendedness and wantedness, (c) adolescents' poor mental health and harsh parenting of their child predicted subsequent higher childbearing regret, and (d) high childbearing regret

and parenting stress were reciprocally related across time. In addition, adolescents' wantedness of their pregnancy declined prenatally to postbirth, and strong pregnancy intendedness and wantedness were not concurrently related to adolescents' poor prenatal mental health. The findings reveal how adolescents' thoughts and feelings about their pregnancies are influenced by and predictive of their mental health and parenting experiences.

The intendedness and wantedness of a pregnancy are important in many ways for both mothers' and children's well-being. Unintended pregnancy has been associated with mothers' postpartum depression and anxiety and children's poor health outcomes (reviewed in Gipson, Koenig, & Hindin, 2008). Unwanted childbearing has been found to predict mothers' postpartum depression and parenting stress (Miller, Sable, & Beckmeyer, 2009), mothers' harsh and negligent parenting (Barber, Axinn, & Thornton, 1999), and children's behavioral and socioemotional problems (Barber & East, 2011).

Much of the existing research, however, has assessed women's pregnancy intentions at only one time point and has examined pregnancy intention only as a predictor of postbirth outcomes. Surely mothers' feelings

Department of Pediatrics, Division of Child Development and Community Health, University of California, San Diego, 9500 Gilman Dr., Mail Code 0927, La Jolla, CA 92093-0927 (peast@ucsd.edu).

*Child Trends, 4301 Connecticut Ave. NW, Suite 350, Washington, DC 20008.

**Department of Sociology, University of Michigan, 426 Thompson St., Ann Arbor, MI 48106-1248.

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about wanting or intending to become pregnant may change from conception to birth and from birth to throughout the early postpartum years (Joyce, Kaestner, & Korenman, 2000b). Moreover, mothers' changing evaluations of their pregnancies as wanted or intended might reflect the stress and depression they feel as a result of parenting, as well as their experiences in parenting. No study of which we are aware has examined these reciprocal relations between mothers' feelings about their pregnancy and their mental health and parenting experiences. Indeed, repeated, longitudinal assessments of pregnancy intention or wantedness during and after pregnancy are scarce. In the current study we begin to address this issue by examining how pregnant adolescents' evaluations of the intendedness and wantedness of their pregnancy and feelings of regret about having a child are associated with their subsequent postpartum adjustment, as well as how adolescents' mental health and experiences in parenting influence their subsequent evaluations of their pregnancy.

ADOLESCENTS' PREGNANCY INTENTIONS, WANTEDNESS, AND REGRET

Unlike the pregnancy intentions of adult women, adolescents' pregnancy intentions have not been the subject of much research. Contrary to popular belief, not all adolescent pregnancies are unintended or unplanned. Indeed, more than one in five of all teenage pregnancies in 2002 were intended (Kissin, Anderson, Kraft, Warner, & Jamieson, 2008); 12% of the respondents in a recent urban sample of 15- to 19-year-olds stated that they had planned their pregnancy (Kavanaugh & Schwarz, 2009), and more than one third of a predominantly Latina sample of pregnant adolescents reported that they had wanted to become pregnant (Rubin & East, 1999). Although some research has looked at how wanting a baby or ambivalence about having a baby affects adolescents' likelihood of *becoming* pregnant (e.g., Stevens-Simon, Sheeder, Beach, & Harter, 2005), little is known about how *pregnant* adolescents' pregnancy intendedness or wantedness relates to their adjustment to parenting. In contrast to that of adult women, for whom high planfulness and wantedness of a pregnancy signal an adaptive readiness to parent, high wantedness and intendedness on the part of adolescents have been thought to suggest preexisting problems,

such as loneliness, low self-worth, and an emotional emptiness (Hamburg, 1986; Zabin, Astone, & Emerson, 1993). No study of which we are aware, however, has verified this, that is, has examined whether adolescents' pregnancy intentions or wantedness are related to their socioemotional functioning.

Although purposefully wanting and intending to become pregnant might be a sign of prior socioemotional problems among adolescents, it is still likely the case that an unwanted or unintended pregnancy portends undesirable outcomes for adolescent mothers and their children. To be sure, an unintended or unwanted pregnancy can be highly stressful because of adolescents' lack of readiness for parenthood, disruption to their schooling and life plans, and the abrupt financial burden associated with both the immediate obstetrical care as well as the long-term future costs of providing for a child (Martin, Hill, & Welsh, 1998). An unintended pregnancy can also bring about relationship dissolution with the baby's father, or the recognition of having a lifelong connection to the baby's father, both of which can be distressing. In addition, the challenges associated with an unwanted or unintended pregnancy can impede a mother's ability to be nurturing and responsive to her child (Barber & East, 2009) and contribute to adolescents' harsh parenting and high parenting stress.

Within the study of pregnancy intentions there has been recent recognition of the importance of women's feelings about becoming pregnant, partly in attempts to augment assessments of a pregnancy's planning status as well as to uncover potential levels of ambivalence about becoming pregnant (Stanford, Hobbs, Jameson, DeWitt, & Fischer, 2000). For example, Ispa, Sable, Porter, and Csizmadia (2007) found that mothers' acceptance of the pregnancy (assessed as how happy women were about the pregnancy and the extent to which they looked forward to having their baby) was associated with lower maternal stress and positive mother-toddler attachment. In the current study we assessed pregnant adolescents' feelings of regret about having a child at this time in their lives, a construct that likely reflects a multitude of emotional, economic, and relationship influences not captured in the planfulness or wantedness of a pregnancy. An adolescent may *want* to become pregnant, and even unconsciously *intend* to become pregnant,

but may still feel highly *regretful* about having a child. Thus, these three pregnancy constructs are quite different, with each revealing a unique aspect of women's thoughts and feelings about their pregnancy (Miller, Sable, & Csizmadia, 2008). Regret is a negative emotion that involves some degree of self-blame, wherein one chides oneself for not having acted differently to achieve a better outcome (Roese et al., 2009). General feelings of regret have been associated with depression and anxiety (Roese et al.), and regret about aborting a pregnancy or relinquishing a baby for adoption has been associated with maternal distress and depression (Donnelly & Voydanoff, 1996; Major et al., 2000). Across-time assessments of adolescents' regret about having a child have not been previously studied but could elucidate how regret relates to adolescents' subsequent mental health and parenting as well as how mental health and experiences in parenting affect adolescents' feelings of remorse about their childbearing.

Changes in Pregnancy Evaluations Across Time

As stated above, most studies have assessed women's pregnancy intentions retrospectively (i.e., postconception) at a single time point (Brown & Eisenberg, 1995), with little known about whether or how women's evaluations of the intendedness of their pregnancy change across time. In the studies that have assessed women's childbearing intentions during pregnancy and at some time postbirth, research has found that mothers are more likely to switch the perception of their pregnancy from unintended to intended than the reverse (Joyce et al., 2000b, 2002). Similarly, Miller and colleagues (2009) found that mothers' ratings of their happiness about being pregnant migrated increasingly toward higher levels when referring to prenatal versus postbirth time points. Such instability in mothers' perceived pregnancy wantedness has been considered evidence of *postbirth rationalization*, whereby women who perceive their pregnancy as unintended or unwanted while pregnant alter their perceptions postnatally to state that the pregnancy was intended or wanted, presumably after caring for and bonding with their baby. This change of perception is a form of cognitive dissonance, wherein one endorses attitudes that are consistent with one's current

behavior or actions (Festinger, 1957). According to cognitive dissonance theory (Festinger), mothers who form a close, loving bond with an originally unwanted (or unintended) child would alter their perceptions of the initial unwanted (or unintended) status of the child so as to resolve the dissonance or inconsistency between their (current) behaviors and attitudes.

Postbirth rationalization might be an adult-only phenomenon, however: In adolescence, the opposite might occur; that is, because of adolescents' lesser maturity, greater difficulty in parenting, lack of social support, and competing role demands (Martin et al., 1998), their perceptions of the unintendedness and unwantedness of their pregnancy might *increase* from pregnancy to postbirth. Furthermore, most teenagers recognize that childbearing during adolescence is nonnormative and thus might be less likely to use postbirth rationalization and instead continue to describe their pregnancy as unintended or unwanted out of social desirability (Stevens-Simon, Beach, & Klerman, 2001). In the current study, we examined whether adolescents' perceptions of the intendedness and wantedness of their pregnancies become increasingly positive (which would support postbirth rationalization) or increasingly negative.

It is important to note that we assessed adolescents' intendedness and wantedness of their pregnancies in the current study while adolescents were pregnant and at 6 months and 1 year postpartum; therefore, our data involve the recollection of intentions and desires at or surrounding the time of conception. Because each subsequent assessment is more distant from the conception event, adolescents' memory of their motives and desires likely becomes increasingly clouded as more time elapses since conception. The limitations associated with retrospective reports of pregnancy intentions and wantedness, which are ubiquitous to the field of unintended childbearing, have been discussed elsewhere (Joyce et al., 2000b, 2002), with research nevertheless able to predict infant health and child well-being on the basis of pregnancies that were subsequently described as unwanted or unintended (Brown & Eisenberg, 1995; Hummer, Hack, & Raley, 2004; Joyce, Kaestner, & Korenman, 2000a). Thus, despite being retrospective, such reports have known predictive clinical significance and likely reflect mothers' satisfaction with and adjustment to parenting. Retrospective reports of pregnancy

intention and wantedness are in fact necessary to understand how adolescents' perceptions of their pregnancies change over time and possibly change as a function of postpartum mental health and parenting experiences. This study's measure of childbearing regret, though, was assessed as current feelings of regret and thus is not subject to recall bias.

Other Factors Related to Pregnancy Evaluations and Postpartum Adjustment

Within the literature on unintended pregnancy, a wide variety of factors related to the pregnancy, labor and delivery, and characteristics of the child have been found to be associated with women's feelings about their pregnancies (reviewed in Logan, Holcombe, Manlove, & Ryan, 2007). Most of the factors identified tend to make the birth and parenting experience more difficult, such as having pregnancy complications, a difficult labor and delivery, a sickly infant, or a temperamentally difficult child. Poverty, mothers' low educational attainment, and age have also been found to play a role in women's pregnancy intentions, with women who have lower income, are less educated, and/or are younger being more likely to identify a pregnancy as unintended and unwanted (Finer & Henshaw, 2006). Adolescents' future plans, such as whether they want to go to college, would also likely shape their wantedness of the pregnancy, their potential for postpartum depression, and their parenting stress (Stevens-Simon et al., 2005).

The current study sample involved only Mexican American adolescents, which was deliberate and important, for several reasons. Latinas currently have nearly twice the national teenage birthrate as women of other race/ethnicities (Hamilton, Martin, & Ventura, 2010), and Mexican Americans have the highest teen birth rate of all the Latino subgroups (Ventura, Mathews, Hamilton, Sutton, & Abma, 2011). Given that the adolescents in our sample were exclusively Mexican American, cultural attitudes are likely to be important for understanding the concepts under study. For example, although Latinas' level of acculturation has not been studied specifically as it relates to their pregnancy intentions, lesser acculturation may be a proxy for pro-birth attitudes or cultural norms regarding the importance of children and could underlie both adolescents' perceptions about the wantedness

of the pregnancy as well as their postpartum adjustment (Dore & Dumois, 1990; Unger & Molina, 2000).

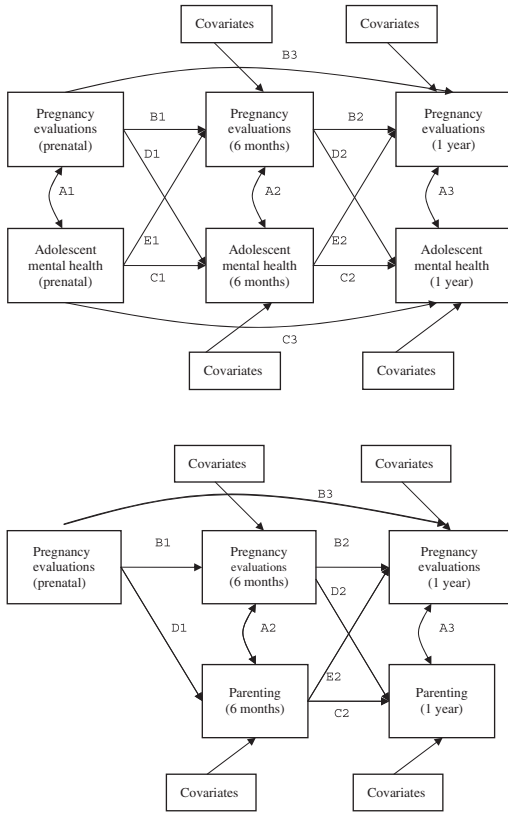
In the current study, we controlled for factors that might be independently associated with adolescents' evaluations of their pregnancy or their postpartum adjustment. Study controls included adolescents' age at delivery; level of acculturation; years of schooling completed; motivation to pursue their education; family income; difficulty of the pregnancy and delivery; and the baby's gender, neonatal health, and difficult temperament.

We should also note that all adolescents in the study were first assessed in their third trimester of pregnancy and thus were planning to continue the pregnancy and do the parenting themselves (i.e., not relinquish the child for adoption). Therefore, women who had very strong negative feelings toward the pregnancy may have aborted, thereby keeping in the sample only those with a more positive orientation toward the pregnancy. Latinas and teenagers, however, are less likely to seek abortions than older women or women of other race/ethnicity (Pazol et al., 2011), presenting the possibility that at least some of the participants continued their pregnancy despite not wanting to do so. The current sample, then, may be atypical, possibly either more positive or more regretful about their pregnancy than would be found in the general population. These issues and their ramifications for the interpretation and generalization of study findings are examined further in the DISCUSSION section.

THE CURRENT STUDY

The current study sought to tease apart the relations between the influences on and consequences of adolescents' evaluations of their pregnancies. Specifically, we analyzed how adolescents' pregnancy intendedness, wantedness, and regret predict their subsequent mental health and quality of parenting as well as how adolescents' mental health and parenting quality influence their subsequent pregnancy evaluations. Cross-lagged modeling was used to examine these mutual influences across time. The conceptual model of the pathways examined is shown in Figure 1. Indices of adolescents' mental health were feelings of depression and anxiety, and indices of adolescents' parenting were feelings of parenting stress and their use of harsh-rejecting parenting. Because the

FIGURE 1. CROSS-LAGGED PATH MODEL USED TO ANALYZE THE RECIPROCAL EFFECTS BETWEEN ADOLESCENTS' EVALUATIONS OF THEIR PREGNANCY AND THEIR MENTAL HEALTH (TOP PANEL) AND THEIR PARENTING (BOTTOM PANEL).



study involved three time points, cross-lagged models also can identify reciprocal or feedback relations between adolescents' pregnancy evaluations and their psychosocial functioning. For example, low pregnancy wantedness might contribute to high parenting stress, which in turn feeds back to reinforce low pregnancy wantedness. Alternatively, frequent depressive symptoms might lead to high childbearing regret, which in turn contributes to subsequent depression. Thus, cross-lagged methods allow one to unravel the causal connections motivating such dynamics by testing for reciprocal, bidirectional influences between variables across time (Gershoff, Aber, & Clements, 2009).

The current study addressed four central issues. First, we examined whether adolescents' evaluations of their pregnancies, their

psychological functioning, and their experiences in parenting changed across the study period. On the basis of the stresses inherent in adolescent parenting and on previous studies that have shown a steady increase in adolescents' emotional distress and parenting difficulties during the first postpartum year (Florsheim et al., 2003; Milan et al., 2004), we hypothesized that adolescents' reports of their pregnancy intendedness and wantedness would decrease across time, their feelings of childbearing regret would increase, their mental health would decline, and their parenting stress and harsh-rejecting parenting of their child would increase (Hypothesis 1).

Second, we examined whether adolescents' prenatal pregnancy intendedness and wantedness were concurrently related to their psychological health (path A1 in Figure 1). On the basis of previous discussions in the adolescent pregnancy literature, we hypothesized that adolescents' high prenatal pregnancy wantedness and intendedness would show contemporaneous relations with poor mental health (Hypothesis 2).

Third, on the basis of the poor maternal outcomes known to be associated with unintended and unwanted pregnancy and adoption/abortion regret among adult mothers, we hypothesized that adolescents' lower pregnancy intendedness, lower wantedness, and higher childbearing regret would predict subsequent poorer adolescent mental health and more difficulties in parenting (Hypothesis 3).

Last, we hypothesized that adolescents' poor mental health and stressed, harsh parenting would predict subsequent lower evaluations of pregnancy intendedness and wantedness and stronger feelings of childbearing regret (Hypothesis 4).

In addition, we assessed whether adolescents' pregnancy evaluations and their psychosocial functioning are reciprocally related, which would be evident if both paths D1 and E2 were significant, and separately (for adolescent mental health only) if both paths E1 and D2 were significant (see Figure 1). Such a pattern would reveal the process by which adolescents' pregnancy evaluations, mental health, and quality of parenting affect and sustain each other across time. Understanding this process is important given that the early postpartum period sets the stage for teenagers' acceptance of the parenting role, their relationship with their child, and, eventually, to their child's adjustment.

METHOD

Participants and Study Design

One hundred unmarried, first-time-pregnant Mexican American adolescents (15–19 years of age) were enrolled in the study. The overall study was designed to examine factors related to adolescents' adjustment to parenting. Pregnant adolescents were recruited from high schools; Women, Infants, and Children (WIC) program centers; and community clinics throughout southern California from 2003 through 2005. Ninety-seven percent of those approached to participate, and who were eligible, agreed to take part in the study. Eligibility criteria were as follows: being unmarried, Latina, living with one's family of origin, primigravida, and planning to continue the pregnancy and parent herself (as opposed to adopting out). Adolescents participated at three time points: (a) during their third trimester of pregnancy and when their babies were (b) 6 months and (c) 1 year old. Adolescents also completed a short in-person interview (about their baby's health) at 6 weeks postpartum. Five pregnant teens (of the 100 participants) were unable to participate prenatally but completed the follow-up assessments. Eighty adolescents participated at 6 months postpartum, and 77 remained in the study at 1 year postpartum (a 33% attrition rate). At enrollment, adolescents were an average age of 17.3 years ($SD = 1.2$) and an average of 7.5 months pregnant (range: 5–10 months). The majority of adolescents (75%) were born in the United States; the remainder were born in Mexico. Most participants were economically disadvantaged; their families' total average income was \$18,525 for an average household of six persons, and 95% of teens were receiving governmental financial assistance at the time of study enrollment. Adolescents' mothers provided information on family income and receipt of governmental assistance.

Procedure

All participants completed a short interview and a self-administered questionnaire at the three study time points. A female researcher, who was Latina and fluent in Spanish, visited the adolescents' homes to personally administer the interview and provide instructions for completing the questionnaire. Completion of the interview and questionnaire took about 1

hour. Participants were paid \$20 at each time point and were assured of the confidentiality of their responses. This study's procedures were approved by Patricia L. East's university Human Subjects Protections Program.

Measures

The study questionnaire had an approximate third-grade reading level (as ascertained by the Flesch–Kincaid readability method). We assessed the pregnancy evaluation variables (intendedness, wantedness, and regret about having a child) and the two mental health variables (depression and anxiety) at all three study time points using similar items and response options. We assessed the two parenting variables (parenting stress and harsh parenting) at 6 months and 1 year postpartum using identical items and response options.

Pregnancy intendedness, wantedness, and child-bearing regret. During the third trimester of pregnancy and at 6 months and 1 year postpartum, adolescents responded to the following two questions: (a) "How much did you intend for this pregnancy to happen?" (1 = *Not intended at all*, 2 = *Not intended that much*, 3 = *Intended somewhat*, 4 = *Very much intended*), and (b) "Do you regret having a child at this time in your life?" (1 = *Don't regret at all*, 2 = *Don't regret that much*, 3 = *Regret a little*, 4 = *Regret, 5 = Regret very much*). During their third trimester of pregnancy, adolescents were also asked "How much do you want this pregnancy?" (1 = *Not want at all*, 2 = *Don't want that much*, 3 = *Want a little*, 4 = *Want very much*), and this question was stated in the past tense at 6 months and 1 year postpartum (i.e., "How much did you want this pregnancy?").

Depressive symptoms. We assessed frequency of depression symptoms using five items from the Center for Epidemiological Studies Depression scale (Radloff, 1977) asking how often in the past month respondents "felt depressed," "felt sad," "felt happy" (reverse scored), "cried frequently," and "thought your life had been a failure." For purposes of the present study, items assessing fatigue and changes in appetite and sleep were excluded (because these are confounded with common symptoms of pregnancy and postpartum health), as were items that appear to address other

domains of mental health (e.g., self-esteem, anxiety, loneliness). Response options ranged from 1 (*Never*) to 5 (*Often*). Items had high internal reliability (α s = .92 prenatally, .94 at 6 months postpartum, and .91 at 1 year postpartum); thus, we averaged the responses within time to form three separate scores of depressive symptoms.

Anxiety. We used five items from the Revised Children's Manifest Anxiety Scale (Reynolds, 1982) to assess adolescents' feelings of worry and anxiety, asking how often during the past month they "worried a lot of the time," "worried about what is going to happen," "worried when you went to bed at night," "worried about something bad happening to you," and "[were] nervous." The five items selected were from the Worry scale, which is what we were primarily interested in, as opposed to the measure's other scales, Physiological Manifestation of Anxiety and Fear/Lack of Concentration (which contain items confounded with symptoms of pregnancy). Response options ranged from 1 (*Never*) to 5 (*Often*). The items had good internal reliability (α s = .79 prenatally, .77 at 6 months postpartum, and .90 at 1 year postpartum); thus, we averaged the responses within time to form three separate scores of anxiety.

Parenting stress. We assessed minor parenting stresses specific to parenting with the Parenting Daily Hassles Index (Crnic & Greenberg, 1990), which asked how hassled the adolescent felt performing 10 typical parenting tasks ("continually cleaning baby's messes") and by 10 typical baby behaviors ("baby being difficult to manage in public places"). Response options ranged from 1 (*Not a hassle at all*) to 5 (*It's a very big hassle*). The 20 items had good internal reliability (α s = .93 and .94 at 6 months and 1 year postpartum, respectively); thus, we averaged the responses within time to form two separate scores of parenting stress.

Harsh-rejecting parenting. We used eight items drawn from the Parenting Practices Questionnaire (Robinson, Mandlco, Olsen, & Hart, 1995) to assess adolescents' harsh-rejecting parenting, for example, "I shout or yell at my child when he or she cries," "I push my baby away when he or she gets too clingy," and "I comfort my baby when he/she is upset"

(reverse scored). Response options ranged from 1 (*Never*) to 5 (*Often*). The items had good internal reliability (α s = .75 and .74 at 6 months and 1 year postpartum, respectively); thus, we averaged the responses within time to form two separate scores of harsh parenting.

Control Variables

Adolescent age. In the postpartum study interview, adolescents indicated their age at their baby's birth.

Adolescent acculturation. We assessed adolescents' level of acculturation at the prenatal time point using the 13-item Short Acculturation Scale for Hispanics (Marin, Otero-Sabogal, & Perez-Stable, 1987), which asks about integration into the dominant U.S. culture in language use, media use, and in one's social networks. The possible score range was 1 to 5, with high scores reflecting high acculturation into Anglo-American culture (α = .95).

Adolescents' completed years of schooling. In the prenatal interview, adolescents indicated how many years of schooling they had completed. Receipt of a general equivalency diploma was counted as 12 years of schooling.

Adolescents' motivation to pursue their education. Adolescents responded to two items on the prenatal questionnaire that asked how important education was to them and, separately, how much they wanted to continue their education after high school. The score range for each item was 1 (*Not important at all* and *Not want to at all*) to 5 (*Very important* and *Very much want to*). The items had good internal reliability (Cronbach's α = .81) and were averaged to form one score of adolescents' motivation to pursue post-high school education.

Family income. This was provided at study enrollment by adolescents' mothers, who indicated the family's total annual income.

Difficulty of pregnancy and delivery. Three questions were asked via the in-person interview with the adolescent at 6 weeks postpartum about whether she had experienced any significant pregnancy complications (e.g., preeclampsia, required bed rest; 0 = *no, none*; 1 = *yes, any*); whether she had a Cesarean section (0 = *no*,

1 = *yes*); and how difficult the labor was (1 = *Very easy*, 2 = *Somewhat easy*, 3 = *Somewhat difficult*, 4 = *Difficult*, 5 = *Very difficult*, 6 = *Extremely difficult*). We recoded difficulty of labor to reflect a relatively easy delivery (original responses of 1–4 were recoded as 0) or a relatively difficult delivery (original responses of 5 and 6 were recoded as 1). We then summed the resultant three dichotomous scores (pregnancy complications, had a Cesarean section, and a highly difficult labor) to yield a potential score range of 0 to 3, with higher scores reflecting a difficult pregnancy and delivery.

Baby gender. Adolescents indicated their baby's gender at the 6-week postpartum interview (0 = *male*, 1 = *female*).

Baby's neonatal health problems. Adolescents responded to four questions via interview at 6 weeks postpartum about whether their baby had been born prematurely (36 weeks or earlier), was of low birth weight (less than 5 lbs [2.27 kg]), had any significant health problems at birth (e.g., a heart valve problem, meconium in the placental sac, an infection), and had colic (defined as excessive crying or fussing, particularly after eating). Items were coded as present (1) or absent (0) and summed across the four items so that the potential score range was 0 to 4, with higher scores reflecting multiple baby health problems.

Infant temperament. We assessed each baby's temperament at 6 months postpartum using the adolescents' ratings on the Infant Characteristics Questionnaire (Bates, Freeland, & Lounsbury, 1979), which asks 12 questions about how fussy and difficult the baby is, for example, "How often does your baby get fussy or irritable during a typical day?", "How easy or difficult is it for you to calm or soothe your baby when he/she is upset?" The items had good internal reliability ($\alpha = .85$) and were averaged to form one score (range: 1–5), with high scores indicating a difficult infant temperament.

Analytic Strategy

To assess change across time in adolescents' pregnancy evaluations, mental health, and parenting experiences, we conducted paired *t* tests on each construct's mean scores. Next, we computed correlations to examine, on a pairwise

basis, the associations among the study variables at the various time points. Correlations were computed within Mplus (Muthén & Muthén, 1998–2007), which uses the full information maximum likelihood (FIML) feature and retains all cases. Third, we conducted cross-lagged path analyses within a structural equation modeling framework to estimate the cross-lagged relations between the study variables as outlined in Figure 1. Twelve path models, represented schematically in Figure 1, were tested, with the three pregnancy evaluation variables (intendedness, wantedness, and regret) each paired with the two measures of adolescents' mental health (depression, anxiety) and the two parenting measures (parenting stress, harsh parenting). The cross-lagged relations (e.g., prenatal regret on depression at 6 months; regret at 6 months on depression at 1 year) were the focus of our analyses. We adopted a continuous-time cross-lagged design that examined how pregnancy wantedness and adolescents' depression symptoms, for example, simultaneously influenced each other, spanning from prenatally to 1 year postpartum. These analyses tested the transactional (recursive) paths between constructs while simultaneously controlling for all potential relations among the variables in the model (Martens & Haase, 2006). As shown in Figure 1, all models also included autoregressive paths and within-time correlations (e.g., regret at 6 months was correlated with depression at 6 months). In this case, the autoregressive paths (paths B1, B2, C1, and C2 in Figure 1) functioned as a type of control for the cross-lagged paths; that is, once the portion of variance in the second-wave measure that is shared with the first-wave measure is accounted for, the variance that remains is change from the earlier wave. Thus, a significant cross-lagged path (i.e., depression₁ to pregnancy wantedness₂) when autoregressive paths between repeated measures are included in the model (i.e., wantedness₁ to wantedness₂) can be interpreted as indicating that depression₁ is associated with a change in wantedness₂ (Gershoff et al., 2009). Therefore, inferences about the temporal relations between constructs can be made from cross-lagged models (Singer & Willett, 2003).

We used three model fit indices to examine how well the models fit the data: (a) chi-square values, which are not significant when model fit is good; (b) the comparative fit index (Bentler,

1990), with values above .90 indicating a reasonably good fit (Hu & Bentler, 1999); and (c) the root-mean-square error of approximation, with values less than .08 indicating adequate fit (Browne & Cudeck, 1993). We retained all cases for the longitudinal analysis using the FIML method of handling missing data, which fits the model being tested directly onto the nonmissing data for each participant. Given the relatively small sample size, the estimator we used was maximum likelihood with robust standard errors, which approximates the Bentler–Yuan test statistic that performs well for models with small samples (Muthén & Muthén, 1998–2007).

Covariates in the Models

It would have been ideal to include all covariates onto all endogenous variables (i.e., all constructs assessed at 6 months and 1 year postpartum, as shown in Figure 1), but that would have resulted in a model with too many parameters for our sample size of 100. Therefore, we used a systematic process of determining which covariates were related to which endogenous variables and therefore should be included as covariates in the final models. First, we included all the covariates onto each endogenous variable (within the context of a full cross-lagged model), one endogenous variable at a time so as not to overload the model. We then noted which covariates were significantly related to each endogenous variable (at $p < .05$). We then ran a final model that included all these significant covariates, each modeled onto their respective endogenous variables; all other covariates were trimmed from the model. We followed this process to determine which covariates to include, and on which endogenous variables, for each of the 12 cross-lagged models. Given that the sample size limited our ability to model all covariates onto all endogenous variables, we believed this to be the next-best solution.

RESULTS

Attrition Analysis

FIML allowed all cases to be retained for analysis. Nevertheless, we wanted to assess whether selective attrition occurred by comparing the 77 adolescents who remained in the study through the final time point with those who had dropped out by that time. We compared these two groups

of adolescents on the study variables assessed prenatally and on adolescents' background characteristics (e.g., age at delivery, family income, number of completed years of schooling). Only one marginally significant difference emerged: Adolescents who dropped out of the study were slightly older than those who remained in the study ($p < .10$).

Across-Time Change in Study Variables

We first examined whether adolescents' evaluations of their pregnancies, their mental health, and their experiences in parenting changed across time. Results from paired t tests indicated that adolescents' ratings of the wantedness of their pregnancy declined significantly from prenatally to 6 months postpartum ($p < .001$) and from prenatally to 1 year ($p < .001$; see Table 1). Regret about having a child also decreased significantly prenatally to 6 months postpartum ($p < .05$). Adolescents' depressive symptoms and harsh–rejecting parenting both increased from 6 months to 1 year postpartum ($p < .05$).

Correlations Among Study Variables

We next explored the pairwise relations among adolescents' pregnancy evaluations, their mental health, and their harsh parenting. The results indicated that lower prenatal (Time 1) pregnancy intendedness was related to higher parenting stress and harsher parenting at 6 months postpartum (see Table 2). Lower prenatal wantedness of the pregnancy also was related to higher parenting stress at both postnatal time points. Higher childbearing regret was consistently related to poorer mental health and higher parenting stress. Of note is that prenatal pregnancy intendedness and wantedness were not associated with adolescents' prenatal depressive symptoms or anxiety. Also of note is that the three pregnancy evaluation constructs were interrelated, as would be expected, with low intendedness, low wantedness, and high regret showing associations.

Cross-Lagged Analysis of Adolescents' Pregnancy Intendedness, Wantedness, and Regret and Their Mental Health and Parenting Across the First Year

The model fit indices for each of cross-lagged path models are shown in Table 3. Model fit was

Table 1. Descriptive Statistics of Adolescents' Pregnancy Evaluations, Mental Health, Parenting, and Control Variables (N = 100)

Variable	Range	Time 1 (Prenatal)		Time 2 (6 Months Postpartum)		Time 3 (1 Year Postpartum)		Significant Difference	
		M	SD	M	SD	M	SD		
Pregnancy intendedness	1–4	1.51	0.82	1.60	0.88	1.57	0.87		
Pregnancy wantedness	1–4	3.60	0.82	2.54	1.14	2.64	1.08	T1–T2**	T1–T3**
Regret having a child	1–5	1.88	1.16	1.53	0.93	1.69	0.95	T1–T2*	
Depressive symptoms	1–5	2.60	1.14	2.32	1.05	2.59	1.17	T2–T3*	
Anxiety	1–5	2.80	1.10	2.74	0.99	2.90	1.29		
Parenting stress	1–5			1.50	0.56	1.65	0.73		
Harsh–rejecting parenting	1–5			1.16	0.37	1.40	0.66	T2–T3*	
Adolescent age at baby's birth (years)	15–19	17.3	1.20						
Adolescent acculturation ^a	1–5	2.87	0.66						
Adolescent years of schooling	8–13	10.91	1.07						
Adolescent motivation to pursue post-high school education	1–5	4.21	0.71						
Family income (annual total)	under \$5,000– over \$60,000	18,525	8.725						
Difficulty of pregnancy, delivery	0–3			0.46	0.85				
Baby gender ^b	0, 1			0.57	0.50				
Baby health problems	0–4			0.50	0.94				
Baby temperament ^c	1–5			2.33	0.60				

Note: Difficulty of pregnancy and delivery, baby gender, and baby health problems were assessed at 6 weeks postpartum.

^aHigh scores indicate high acculturation into Anglo-American culture. ^b0 = male, 1 = female. ^cHigh scores indicate a difficult temperament.

* $p < .05$. ** $p < .01$.

adequate to good for all 12 models, with all chi-square tests nonsignificant. The standardized and unstandardized coefficients for the within-time correlations, autoregressive paths, and cross-lagged paths are also shown. The within-time correlations between adolescents' pregnancy evaluations and their adjustment (indicated as paths A1, A2, and A3 in Table 3 and Figure 1) revealed that higher pregnancy intendedness at 1 year was concurrently related to more frequent depression symptoms ($\beta = .33$) and anxiety ($\beta = .25$). Higher regret about the childbearing was concurrently related to more frequent depression symptoms ($\beta = .25$), anxiety ($\beta = .24$), and harsh–rejecting parenting ($\beta = .37$) at 1 year, and higher regret was also concurrently related to more frequent depressive symptoms at 6 months postpartum ($\beta = .26$). Similar to the correlation results, adolescents'

prenatal depression symptoms and anxiety were not related to the prenatal intendedness or wantedness of the pregnancy.

Cross-lagged paths. The cross-lagged paths (designated as D1, D2, E1, and E2 in Table 3 and Figure 1) for intendedness showed that lower prenatal pregnancy intendedness was related to higher parenting stress and harsher parenting at 6 months postpartum (β s = $-.23$ and $-.19$, respectively). More frequent depressive symptoms at 6 months postpartum was related to lower ratings of pregnancy intendedness at 1 year ($\beta = -.17$). The cross-lagged paths for wantedness showed that lower prenatal pregnancy wantedness was related to higher parenting stress at 6 months ($\beta = -.22$), and more frequent depressive symptoms at 6 months were predictive of lower pregnancy

Table 2. Correlations among Adolescents' Pregnancy Evaluations, Mental Health, and Quality of Parenting (N = 100)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. T1 intended	—										
2. T2 intended	.51***	—									
3. T3 intended	.49***	.34***	—								
4. T1 wanted	.08	.09	.04	—							
5. T2 wanted	.30**	.57***	.23*	.08	—						
6. T3 wanted	.25*	.37***	.37***	.34***	.44***	—					
7. T1 regret	-.24*	-.35***	-.27**	-.20*	-.25*	-.11	—				
8. T2 regret	-.01	-.05	-.06	-.24*	-.01	.03	.24*	—			
9. T3 regret	-.14	-.06	-.02	-.18	.07	-.07	.01	.24*	—		
10. T1 depression	-.08	.06	-.02	-.04	.07	-.20*	.04	.24*	.18	—	
11. T2 depression	-.07	-.06	-.07	-.10	.04	-.15	.11	.34***	.35***	.16	—
12. T3 depression	-.05	-.02	.12	-.05	.09	.06	.04	.17	.39***	.48***	.56***
13. T1 anxiety	-.03	.10	.04	-.07	.12	.18	.09	.23*	.19	.63***	.19
14. T2 anxiety	-.10	-.13	-.09	-.07	-.02	-.10	.04	.24*	.31**	.19	.64***
15. T3 anxiety	-.03	-.04	.16	-.13	.07	.06	.05	.06	.31**	.46***	.45***
16. T2 parenting stress	-.22*	-.13	.04	-.23*	-.13	-.09	.29**	.26**	.26**	.04	.31**
17. T3 parenting stress	-.15	-.02	-.06	-.30**	-.20*	-.19	.11	.08	.21*	.06	.27**
18. T2 harsh parenting	-.21*	.06	-.21*	-.14	-.04	-.11	.16	.07	.10	.21*	.21*
19. T3 harsh parenting	.05	.10	.06	-.01	-.06	-.07	.02	.01	.23*	.06	.18

Variables	12	13	14	15	16	17	18	19
12. T3 depression	—							
13. T1 anxiety	.45***	—						
14. T2 anxiety	.39***	.25*	—					
15. T3 anxiety	.69***	.43***	.35***	—				
16. T2 parenting stress	.20*	.09	.37***	.20*	—			
17. T3 parenting stress	.23*	.22*	.30**	.23*	.54***	—		
18. T2 harsh parenting	.21*	.25*	.16	.20*	.22*	.30**	—	
19. T3 harsh parenting	.32***	.15	.19	.36***	.17	.32***	.38***	—

Note: T1 = Time 1, during the third trimester of pregnancy. T2 = Time 2, at 6 months postpartum. T3 = Time 3 at 1 year postpartum.

p* < .05. *p* < .01. ****p* < .001.

wantedness at 1 year ($\beta = -.19$). The cross-lagged paths for regret revealed that depressive and anxiety symptoms were predictive of subsequent regret, but earlier regret did not predict later depression or anxiety symptoms; specifically, more frequent prenatal depressive and anxiety symptoms were related to higher regret at 6 months postpartum (β s = .20 and .19, respectively), and more frequent depressive and anxiety symptoms at 6 months postpartum were predictive of higher regret at 1 year (β s = .25 and .26, respectively). In addition, more frequent harsh-rejecting parenting at 6 months was predictive of higher childbearing regret at 1 year ($\beta = .17$). One reciprocal relation emerged, with higher prenatal regret predictive of higher parenting stress at 6 months

($\beta = .29$), and higher parenting stress at 6 months predictive of higher regret at 1 year ($\beta = .20$; shown in Figure 2). Baby's difficult temperament was included as a control in this particular analysis; thus, such relations emerged independent of a challenging infant temperament.

The magnitude of effects of the pregnancy evaluation variables on subsequent adjustment (as reflected in the cross-lagged unstandardized coefficients) was modest for all three pregnancy-related variables (ranging from $-.08$ to $-.16$). The effect sizes for the adjustment variables predicting subsequent pregnancy evaluations were somewhat larger, in particular for adjustment indices predicting later regret (with coefficients ranging from .16 to .43).

Table 3. Fit Indices and Coefficients from Cross-Lagged Path Models of Adolescents' Pregnancy Evaluations and Adjustment (N = 100)

	Depressive Symptoms		Anxiety		Parenting Stress		Harsh – Rejecting Parenting	
Intendedness								
Model fit:								
$\chi^2(df)$	12.43 (16)		9.48 (13)		14.62 (13)		7.93 (4)	
CFI	1.00		1.00		0.981		0.909	
RMSEA	0.00		0.00		0.035		0.099	
	β	B	β	B	β	B	β	B
Within-time paths								
A1: Intended ₁ ↔ Adj ₁	-.09	-.08	-.04	-.04	—	—	—	—
A2: Intended ₂ ↔ Adj ₂	-.05	-.04	-.10	-.07	.08	.03	.19	.05
A3: Intended ₃ ↔ Adj ₃	.33***	.19	.26**	.19	-.17	-.07	.12	.06
Autoregressive paths								
B1: Intended ₁ → Intended ₂	.52***	.56	.52***	.55	.50***	.54	.51***	.55
B2: Intended ₂ → Intended ₃	.20	.20	.20	.19	.27*	.26	.19	.19
B3: Intended ₁ → Intended ₃	.44***	.47	.39***	.41	.40***	.42	.35*	.37
C1: Adj ₁ → Adj ₂	.18	.17	.25**	.22	—	—	—	—
C2: Adj ₂ → Adj ₃	.47***	.51	.24*	.31	.53***	.69	.39**	.76
C3: Adj ₁ → Adj ₃	.33**	.34	.27*	.32	—	—	—	—
Cross-lagged paths								
D1: Intended ₁ → Adj ₂	-.01	-.02	-.03	-.03	-.23**	(-.16)	-.19**	-.08
D2: Intended ₂ → Adj ₃	.08	.11	.06	.09	.08	.07	.05	.04
E1: Adj ₁ → Intended ₂	.09	.07	.11	.08	—	—	—	—
E2: Adj ₂ → Intended ₃	-.17*	-.14	-.09	-.08	.05	.07	-.14	-.32
Wantedness								
Model fit:								
$\chi^2(df)$	16.37 (13)		23.87 (17)		7.87 (10)		6.00 (4)	
CFI	0.956		0.893		1.00		0.920	
RMSEA	0.051		0.064		0.00		0.071	
	β	B	β	B	β	B	β	B
Within-time paths								
A1: Wanted ₁ ↔ Adj ₁	-.03	-.02	-.05	-.04	—	—	—	—
A2: Wanted ₂ ↔ Adj ₂	.04	.05	-.03	-.02	-.14	-.08	-.02	-.01
A3: Wanted ₃ ↔ Adj ₃	.09	.07	.03	.03	-.08	-.04	-.07	-.04
Autoregressive paths								
B1: Wanted ₁ → Wanted ₂	.09	.12	.09	.13	.09	.13	.10	.14
B2: Wanted ₂ → Wanted ₃	.42***	.41	.42***	.40	.44***	.42	.43***	.41
B3: Wanted ₁ → Wanted ₃	.29***	.38	.29***	.38	.28***	.37	.28***	.37
C1: Adj ₁ → Adj ₂	.18	.17	.23*	.20	—	—	—	—
C2: Adj ₂ → Adj ₃	.45***	.49	.22	.29	.52***	.68	.38**	.76
C3: Adj ₁ → Adj ₃	.32**	.33	.26*	.31	—	—	—	—
Cross-lagged paths								
D1: Wanted ₁ → Adj ₂	-.10	-.14	-.03	-.04	-.22*	-.16	-.14	-.06
D2: Wanted ₂ → Adj ₃	.13	.13	.15	.17	-.13	-.09	-.04	-.03
E1: Adj ₁ → Wanted ₂	.10	.10	.14	.15	—	—	—	—
E2: Adj ₂ → Wanted ₃	-.19*	-.19	-.06	-.07	.05	.09	-.06	-.17

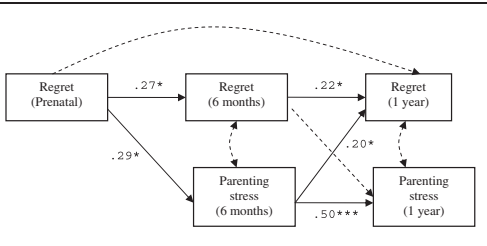
Table 3. Continued

	Depressive Symptoms		Anxiety		Parenting Stress		Harsh – Rejecting Parenting	
	β	B	β	B	β	B	β	B
Regret								
Model fit								
$\chi^2(df)$	10.21(14)		6.49(13)		22.42(15)		7.82(18)	
CFI	1.00		1.00		0.881		1.00	
RMSEA	0.00		0.00		0.07		0.00	
Within-time paths								
A1: Regret ₁ ↔ Adj ₁	.05	.06	.10	.12	—	—	—	—
A2: Regret ₂ ↔ Adj ₂	.26*	.23	.15	.11	.19	.09	.03	.01
A3: Regret ₃ ↔ Adj ₃	.25*	.18	.24*	.22	.11	.05	.37***	.20
Autoregressive paths								
B1: Regret ₁ → Regret ₂	.26*	.21	.24	.19	.27*	.21	.27*	.21
B2: Regret ₂ → Regret ₃	.18	.18	.22*	.22	.22*	.22	.27**	.27
B3: Regret ₁ → Regret ₃	-.05	-.04	-.05	-.04	-.15	-.12	-.07	-.06
C1: Adj ₁ → Adj ₂	.18	.17	.23*	.21	—	—	—	—
C2: Adj ₂ → Adj ₃	.48***	.53	.23*	.31	.50***	.63	.38**	.77
C3: Adj ₁ → Adj ₃	.35***	.37	.33**	.39	—	—	—	—
Cross-lagged paths								
D1: Regret ₁ → Adj ₂	.07	.06	-.03	-.03	.29*	(.14)	.16	.05
D2: Regret ₂ → Adj ₃	-.08	-.10	-.07	-.10	-.06	(-.04)	-.02	.00
E1: Adj ₁ → Regret ₂	.20*	.17	.19*	.16	—	—	—	—
E2: Adj ₂ → Regret ₃	.25**	.23	.26*	.20	.20*	(.33)	.17*	.43

Note: The letters (A1, A2, etc.) correspond to the paths shown in Figure 1. Adj: adjustment variables of depressive symptoms, anxiety, parenting stress, and harsh – rejecting parenting. The subscripts (e.g., Adj₁, Adj₂) correspond to the time of assessment, such that Adj₁ = adjustment variable as assessed at Time 1. Standardized coefficients (β) are shown to the left of every column and unstandardized coefficients (B) are shown to the right. CFI = comparative fit index; RMSEA = root-mean-square error of approximation. Dashes indicate an absent path in the model.

* $p < .05$. ** $p < .01$. *** $p < .001$.

FIGURE 2. CROSS-LAGGED PATH MODEL RESULTS FOR CHILDBEARING REGRET AND PARENTING STRESS.



Note: Significant Standardized Parameter Estimates are Shown. Solid Paths are Significant; Dotted Paths are Nonsignificant.

* $p < .05$. *** $p < .001$.

DISCUSSION

The findings from this study reveal how adolescents' evaluations of their pregnancies are influenced by and predictive of their mental health

and experiences in parenting. Although the pregnancy intentions of adult women have been well studied in concert with their postpartum health and well-being (Brown & Eisenberg, 1995), less is known about how adolescents' pregnancy intentions relate to their subsequent adjustment. The study results suggest four general conclusions. First, consistent with hypotheses, adolescents' pregnancy wantedness declined significantly prenatally to postbirth. To provide some description beyond the mean levels, 76% of adolescents indicated that they wanted their pregnancy "very much" while pregnant, and this decreased to 26% at 1 year postpartum. Correspondingly, 5% of teens responded that they did not want this pregnancy "at all" while pregnant; this increased to 33% at 1 year. This is a relatively large subgroup of teenagers who claimed to not want the pregnancy. Given

the long-term negative consequences associated with unwanted childbearing (Barber et al., 1999), these teens may be at risk for negligent parenting or acrimonious parent–child relations at some point in the future, in particular if this trend continues. This pattern of declining pregnancy wantedness found in the current adolescent sample is not like the pattern observed in adult women, who tend to report greater wantedness postpartum compared with what they reported prenatally, presumably because they have begun to form a loving bond with their baby (Joyce et al., 2000b, 2002). One explanation as to why rationalization does not occur among teenagers is that they do not adequately bond with their babies, as several studies have found (e.g., Berlin, Brady-Smith, & Brooks-Gunn, 2002). Given poor mother–infant bonding, adolescents would not need to alter their attitudes to be consistent with their behavior, as would be interpreted within a cognitive dissonance framework (Festinger, 1957). Research aimed at identifying the factors that underlie increases in unwantedness would be useful. For example, it might be that the adolescent's relationship with the baby's father deteriorates after the baby arrives (Florsheim et al., 2003), and the teen's anger and resentment toward her partner become transferred onto feelings about the pregnancy.

Our results also show that adolescents' depressive symptoms and harsh–rejecting parenting increased significantly from 6 months to 1 year postpartum, indicating that parenting becomes increasingly difficult for young teenage mothers, in particular during the latter half of the first year. Adolescents' depressive symptoms appear to improve briefly at 6 months postpartum, compared with prenatal levels, but then return to prenatal levels at 1 year postpartum. Perhaps this slight dip in depression reflects family support or attention, or perhaps a sense of pride and accomplishment in their parenting status before the challenges of parenting a demanding and mobile 1-year-old come into play. These trends are highly consistent with those found in other studies of new teenage parents (Florsheim et al., 2003; Milan et al., 2004) and suggest that adolescents' postpartum adjustment may worsen at the 1-year mark, as opposed to improving.

A second issue we addressed was whether adolescents' pregnancy intentions and wantedness are associated with poor prenatal mental health, with previous research suggesting that teenagers who want to become pregnant or

strongly intend to become pregnant do so out of loneliness, low self-esteem, or feelings of depression (Hamburg, 1986; Zabin et al., 1993). Our findings suggest that this may not be the case, with high pregnancy wantedness and intendedness not related to prenatal depression or anxiety symptoms. It should be noted, though, that we assessed adolescents' mental health during the third trimester of pregnancy and, if an adolescent's depression and anxiety symptoms were present prior to pregnancy, they may have improved by the time she was well into the later stages of pregnancy. Future studies that assess mental health before pregnancy would be needed to conclude more definitively whether psychological difficulties *contribute to* adolescents' strong desires and intentions to become pregnant.

Of particular significance in the current study was whether adolescents' pregnancy evaluations have lasting effects on their mental health and quality of parenting and whether teens' mental health and experiences in parenting affect their subsequent evaluations of their pregnancy. Consistent with our hypotheses, results from cross-lagged analyses indicated that lower prenatal intendedness of the pregnancy predicted higher parenting stress and more frequent harsh parenting at 6 months postpartum. Lower prenatal wantedness of the pregnancy also predicted higher parenting stress at 6 months. Note, though, that these associations were relatively modest in magnitude and forecasted to adjustment only at 6 months postpartum; no paths significantly predicted adjustment at 1 year. The failure to find predictors of 1-year adjustment is likely a function of earlier adjustment (i.e., parenting at 6 months) accounting for large portions of the variance in parenting at 1 year. Nevertheless, the fact that prenatal pregnancy intendedness and wantedness predicted 6-month parenting, and that parenting was highly stable from 6 months to 1 year, indicates that such pregnancy evaluations might set adolescents on a particular course of parenting that continues throughout the early postpartum years. This general pattern is consistent with what has been found with adult women (Barber et al., 1999), and it is troubling considering that, nationally, nearly three fourths of all teenage pregnancies are unintended and that nearly one in four is unwanted (Kissin et al., 2008). Teenage parenting certainly is enormously challenging

in and of itself; if the pregnancy was unintended and unwanted, this would surely exacerbate the difficulties associated with early parenting.

Regarding whether poor mental health and stressed, harsh parenting influence subsequent evaluations of the pregnancy, our results confirmed this relation for pregnancy intendedness and wantedness (with more frequent depressive symptoms at 6 months predictive of lower ratings of pregnancy intendedness and wantedness at 1 year) and for childbearing regret (with all four adjustment indices at 6 months predicting stronger feelings of regret at 1 year). These findings are important, because it has heretofore not been known whether or how women's mental health or experiences in parenting contribute to their subsequent pregnancy evaluations. Previous studies that have found an association between unintended pregnancy and postpartum maternal depression might be flawed due to an unaccounted influence of prenatal depression coloring perceptions of pregnancy intention (e.g., Grussu, Quatraro, & Nasta, 2005). Indeed, this study shows that adolescents' mental health and parenting experiences appear to play an important role in interpreting their actions and motivations that led to the pregnancy and in their feelings of regret and remorse about having a child as a teenager.

Our results also showed that regret about having a baby was reciprocally related to parenting stress across time, such that higher prenatal regret predicted higher parenting stress at 6 months, which in turn predicted higher regret at 1 year. Thus, adolescents' prenatal feelings of regret appear to have recursive effects, not only in shaping their adjustment to parenting but also in triggering future feelings of remorse. Parenting stress, even the daily, normative hassles examined in this study, have been shown to impede positive parent-child relations (Ispa et al., 2007; Miller et al., 2009) and to co-occur with children's acting-out behaviors (Cnic & Greenberg, 1990). One can imagine a scenario, then, wherein this cycle is perpetuated across the child's early years, setting in motion a dynamic and circular cycle of high maternal regret leading to parenting stress, which leads to poor mother-child relations and children's behavioral problems. Continued study of the long-term ramifications of adolescents' childbearing regret seems warranted.

Limitations

To our knowledge, this study is among the first to use repeated, longitudinal assessments of adolescents' pregnancy intentions and wantedness. As an initial effort to ascertain how women's pregnancy evaluations change across time, this study was necessarily limited. Foremost among these limitations is the recognition that retrospective reports of pregnancy intendedness and wantedness are likely biased by one's recollections of events. Indeed, women's constructions of their desires and motivations for pregnancy likely became increasingly clouded as more time elapsed from the conception time period. It is noteworthy that regret was the only pregnancy-related construct to show a bidirectional relation with adolescent adjustment and that regret was also the only pregnancy-related variable to be measured as a current feeling state at the time of assessment. It is possible that pregnancy wantedness might have shown similar relations if it had been assessed as current wantedness of the child. Because "pregnancy intention" necessarily involves preconception intentionality, this construct is less easily altered to fit with a current feeling state. Nevertheless, the fact that pregnancy wantedness and intendedness were gathered retrospectively might have weakened their associations with current assessments of adolescent adjustment and warrant that such relations be considered cautiously.

In addition, although we included numerous maternal background, pregnancy, delivery, and child-related characteristics in analyses as controls, other factors not accounted for could have affected either adolescents' pregnancy evaluations or their postpartum adjustment (e.g., the quality and status of the adolescent's relationship with the baby's father, his reaction to the pregnancy, his support and involvement in parenting; Florsheim et al., 2003). Whether one wants to become pregnant and have a child is certainly a highly complicated decision. Because all adolescents in the current sample were unmarried and living with their family of origin (as eligibility criteria) and were from poor families, the intendedness and wantedness of the pregnancy encompassed not only whether they wanted to have a child at this time in their life but also whether they wanted to have a child without a married partner, while still living at home with parents, and likely without the economic means to fully support a child. All of these life circumstances of the participating

mothers should be considered when interpreting our findings.

The current results are based on a relatively small and nonrepresentative sample of adolescents, and the generalizability of the results should be interpreted accordingly. In addition, all participants were Mexican American, and thus the results reflect relations for this racial–ethnic group only. Latina women often hold fatalistic beliefs about becoming pregnant, believing that it is God’s will to be able to conceive as opposed to an outcome that is planned (Hirsch, 2008). This is a reflection not of ambivalence but of strong beliefs of predeterminism. Moreover, Latinos frequently hold traditional attitudes about having large families and having children only within marriage (Wildsmith & Raley, 2006). Because all teenagers in the current study were unmarried, this could have heightened their feelings of shame about having an out-of-wedlock pregnancy. Conversely, a premarital pregnancy might be perceived as a gateway to marriage and therefore not necessarily a cause for remorse. It should also be noted that acculturation level is often used as a proxy of Latinas’ values and beliefs (Unger & Molina, 2000) and that adolescents’ acculturation level was statistically controlled in this study’s analyses (where appropriate). It is unlikely, however, that acculturation captured all of the nuances associated with the adolescents’ desires, motivations, and beliefs about childbearing in general and about their pregnancy in particular; thus, cultural influences on Latinas’ pregnancy evaluations likely remain.

It also should be noted that this study was conducted in California between 2003 and early 2005—when abortion services were accessible to adolescents without significant restrictions (e.g., parental notification) and when public assistance for abortion was available through California’s Medicaid program (Medi-Cal). Even when access to abortion is not a problem, however, many women, in particular Latinas and teenagers, view abortion as an unacceptable option because of moral or religious reasons, cultural attitudes regarding the importance of children, or for fear of the procedure. Latina women and teenagers are known to be less likely to have abortions than women of other age groups or races–ethnicities (Pazol et al., 2011). Thus, it is likely that at least some young women in the current sample continued their pregnancy despite not wanting to do so. Consequently, the

sample that remained may have been atypical in some way, possibly more ambivalent or more regretful about their pregnancy than would be found in the general population. That said, however, pregnant teenagers who had strong negative feelings about the pregnancy may have aborted, thus keeping in the sample only those with more positive orientations to the pregnancy. Both of these scenarios are possible, and both should be considered.

In the current study we used gradated ratings of adolescents’ pregnancy intentions, wantedness, and childbearing regret, allowing us to detect changes in the level of such constructs across time. Moreover, we assessed pregnancy wantedness directly and explicitly; we did not surmise wantedness through questions about the timing of a pregnancy (as implemented in the National Survey of Family Growth; see <http://www.cdc.gov/nchs/nsfg.htm>). Other studies in the field have been unable to examine changes in level of pregnancy wantedness or intendedness because most studies have produced a three-category (“intended,” “unwanted,” and “mistimed”) variable. Because the trichotomy of categorizing pregnancies is so common within the field, however, the current results cannot be easily mapped onto existing findings. In addition, assessments of adolescents’ intendedness to become pregnant likely encompass aspects of adolescent development completely separate from “intending” to become pregnant (Stevens-Simon et al., 2001). For example, not “intending” to become pregnant may have resulted from the spontaneity of the sexual encounter or to an inadvertent lapse in contraceptive use. In addition, adolescents’ misinformation surrounding their fertility and their lack of ability to make conscious, deliberate, and proactive decisions about pregnancy prevention are believed to contribute in large part to adolescents’ “unintended” pregnancies (Gordon, 1990). The current set of results should be considered in the context of this complexity, with the recognition that adolescents themselves may not be fully aware of their pregnancy intendedness.

Conclusions

Despite these limitations, this is the first study, to our knowledge, that examined the across-time reciprocal relations between adolescents’ evaluations of their pregnancies and their mental health and parenting experiences. Clarifying

the across-time relations between adolescents' pregnancy evaluations and their postpartum adjustment is important given that a large percentage of teenage pregnancies are unwanted and unintended (Finer & Henshaw, 2006) and that adolescents often show significant parenting impairments and psychological distress during their child's first year (Berlin et al., 2002; Milan et al., 2004). In broad terms, the current results provide initial evidence of a more dynamic and transactional relation between adolescents' pregnancy evaluations and their psychological functioning than previously known. These findings contribute to contemporary theories of how women's childbearing motivations and desires influence future parenting and mother-child relations (e.g., Miller et al., 2008, 2009) by specifying these associations for adolescent mothers. Indeed, the consequences of adolescents' pregnancy intentions, wantedness, and regret for their and their children's well-being have been rarely studied and are poorly understood. The current findings confirm that, similar to adult mothers, adolescents who evaluate their pregnancies as highly wanted and intended appear to adjust more favorably to parenting. Conversely, adolescents who evaluate their pregnancies as highly unintended and unwanted appear to experience an initial problematic adaptation to parenting. Professionals working with pregnant and parenting adolescents might benefit from knowing that a wanted and intended pregnancy is a predictor of favorable adjustment to parenting and not a harbinger of future difficulties.

NOTE

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