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Parental pregnancy wantedness and child social-emotional development

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Abstract

Objective—To examine how maternal and paternal pregnancy wantedness and couple concordance regarding pregnancy wantedness predict children's socioemotional development in kindergarten.

Methods—We used data from nationally representative US sample from the Early Childhood Longitudinal Study Birth Cohort. Exposures of interest were maternal and paternal pregnancy wantedness, and couple concordance regarding wantedness. Children's socioemotional development was evaluated by the child's kindergarten teacher using an adapted version of the Preschool and Kindergarten Behavior Scales. We examined bivariate associations between pregnancy wantedness and key socio-demographic variables in relation to children's socioemotional development. Multiple linear regression was used to assess the relationship between each pregnancy wantedness predictor and children's socioemotional development scores.

Results—Maternal report of unwanted pregnancy was inversely associated with children's socioemotional development score (Adj. β = -0.11, 95% CI: -0.21, -0.02). In analyses examining resident fathers, paternal report of mistimed pregnancy was associated with poorer children's socioemotional development (Adj. β = -0.09, 95% CI: -0.16, -0.02). Likewise, discordance of parental pregnancy wantedness predicted lower children's socioemotional development scores, but only when the mother wanted and the father did not want the pregnancy (Adj. β = -0.13, 95% CI: -0.24, -0.01).

Conclusion—Results suggest that unwanted pregnancy was associated with poorer socioemotional development in kindergarten. Discordancy in pregnancy wantedness among couples was also adversely associated with children's socioemotional development.

Keywords

pregnancy intention; unwanted pregnancy; children's socioemotional development; couples

INTRODUCTION

The estimated prevalence of emotional and behavioral problems among children living in the United States ranges from approximately 2% up to 7% among certain sub-populations.

Children in single-parent households and low-income families have higher rates of socio-emotional and behavioral problems compared to children in two-parent and higher income households. Poor social and emotional development in early childhood is a risk factor for adverse health and socioemotional outcomes in adolescence and adulthood, including psychosocial problems later in life, such as depression and loneliness, substance abuse, and adult criminality (1-4). Children with serious emotional and behavioral problems are more likely to receive special education and use mental health services than children without emotional and behavioral problems, resulting in significant costs to society (5).

Pregnancy wantedness and intentions have been linked to parental prenatal and postnatal behaviors that have the potential to have long-term effects on their children. Unintended and unwanted pregnancies have been associated with underutilized prenatal care (6-8), low birth weight and preterm births (9-11), reduced breastfeeding practices (12, 13), and decreased support among fathers (14), all of which could have an impact on child development. Research examining the relationship between parental pregnancy intentions and later child developmental outcomes has been limited (15-18). Especially little is known about the link between concordance between couple's pregnancy intentions and child developmental outcomes (8, 12).

Therefore, we examined how maternal and paternal pregnancy wantedness and couple concordance regarding pregnancy wantedness predict children's socioemotional development among kindergarten-aged children in the United States.

METHODS

Study Design and Sample

We used data from the Early Childhood Longitudinal Study Birth Cohort (ECLS-B) nine-month parent surveys to assess pregnancy wantedness of the mother, resident father, and of the couple jointly, in relation to children's socioemotional development as assessed by kindergarten teachers.

Starting in 2001, the ECLS-B followed children from infancy through kindergarten, at four points in time: nine months, two years, four years of age, and kindergarten in 2006 and 2007. Children who had not yet started kindergarten in 2006 and those children who repeated kindergarten were included in the 2007 wave of data collection. Data were collected on maternal and paternal (both resident and non-resident) characteristics and behaviors and children's cognitive, physical, socioemotional, psychomotor, and physical development from birth through kindergarten. These data were obtained through birth certificates, direct child assessments, and self-administered and computer-assisted personal interviews with mother and fathers or other caregivers (19).

The ECLS-B is longitudinal study with a nationally representative sample of more than 10,000 children in the United States. Only children with completed teacher assessments (4650 children), which were used to measure the outcome, were included in analyses. The main reasons for there not being a completed teacher assessment were the child was not in kindergarten or higher grade, the child was homeschool, nonresponse from teachers, and the

parent not providing consent. Regarding the analysis of maternal and paternal pregnancy wantedness, of the 4650 total teacher's assessments on individual children, there were 500 and 850 missing maternal and paternal questionnaires, respectively. There were also 50 and 1200 missing maternal and resident father's pregnancy wantedness item responses, respectively, leaving a final analytic sample of 4100 mothers and children and 2600 fathers and children in our study. The couple level analyses were restricted to children with a completed teacher assessment and both maternal and paternal questionnaires with the pregnancy wantedness item responses included, which resulted in an analytic sample of 1150 (see Figure 1).

Measures

Children's Socioemotional Development—The outcome variable used in our analyses was children's socioemotional development. It was assessed using a twenty-one-item scale included in the teacher questionnaire that was administered to kindergarten teachers in 2006 and 2007 about the social and emotional behaviors of their students included as index cases in the longitudinal study. Scale items were from the Preschool and Kindergarten Behavior Scales – Second Edition (20) along with other items constructed specifically for the ECLS-B. These items assessed socio-emotional behavior of children as observed by their teachers; for example, whether the child is accepted and liked by other children, makes friends easily, pays attention well, and shares with others. Response categories ranged from 0 (never) to 4 (very often). Items that referred to negative behaviors, such as whether the child is restless and fidgety or has outbursts or tantrums, were reverse coded so that higher scores represented more positive socioemotional skills. Children's socioemotional development score was constructed by taking the average of all items actually reported and ranged from 0 to 4. The scale had high reliability in this sample; the Cronbach's alpha coefficient was 0.93.

Pregnancy Wantedness—The main predictor in the analysis was pregnancy wantedness, which we evaluated for the mothers, resident fathers, and in terms of the concordance between the two. Pregnancy wantedness was measured using a series of survey items administered at nine months postpartum. Respondents were asked, “Before you [your partner] became pregnant with your baby, had you or your baby's father [mother] stopped using all methods of birth control?” Respondents who responded “Yes” or “Never used birth control” were then asked, “Why were you or your baby's father [mother] not using any birth control?” Response categories included “wanted to get pregnant” among other reasons. Respondents who specifically responded that they “wanted to get pregnant” were then asked, “Did you become pregnant sooner than you wanted, later than you wanted, or about the right time?” All other respondents, whether they had stopped using birth control or not were asked, “At the time you [your partner] became pregnant with your baby, did you yourself actually want to have a baby at some time?” followed by the question on the timing of the pregnancy. We used three categories for assessing pregnancy wantedness in separate analyses for both mother and resident father analyses: “wanted”, “mistimed”, and “unwanted.” For mothers, a pregnancy was defined as “wanted” if 1) she responded that she wanted to get pregnant when asked why she and her baby's father were not using any birth control OR 2) “yes” or “probably yes” that she herself actually wanted to have a baby at some time at the time that she became pregnant AND “yes” that she became pregnant at

about the right time. A pregnancy was defined as “mistimed” if the mother responded that she wanted or probably wanted to have a baby at some time but became pregnant sooner or later than she wanted. A pregnancy was defined as “unwanted” if the mother responded that she did not want or probably did not want to have a(nother) baby at some time.

The same three categories were used to assess resident father's pregnancy wantedness, using the two items included in the resident father questionnaire. For resident fathers, a pregnancy was defined as “wanted” if the resident father responded that, at the time that his spouse/partner became pregnant with the child he ‘wanted his spouse/partner to have a(nother) baby at some time’ OR if he responded that his spouse/partner became pregnant at about the right time. A pregnancy was defined as “mistimed” if the father responded that he wanted his spouse/partner to have a(nother) baby at some time but that she became pregnant sooner or later than he wanted. A pregnancy was defined as “unwanted” if the resident father responded that he did not want his spouse/partner to have a(nother) baby at some time.

To assess couple pregnancy wantedness, four categories were constructed using the maternal pregnancy wantedness and resident father pregnancy wantedness variables described above: “wanted by both”, “mother wanted, unwanted by father”, “unwanted by mother, father wanted”, and “unwanted by both.” Because we were more interested in couple discordance in pregnancy wantedness and limiting the number of categories of couple pregnancy wantedness, responses of mistimed pregnancy were not included in the couple-level variable.

Covariates—Covariates included household income (<\$25,000 and \$25,000), age (18 years, 19-24 years, and 25+ years), race (White, non-Hispanic; Black, non-Hispanic; Hispanic; Asian, non-Hispanic; and Other), education (some high school or less; high school diploma/GED; some college; and college graduate), and employment status of mothers and resident fathers.

Analysis

Bivariate analyses were used to examine the unadjusted associations between demographic characteristics and pregnancy wantedness variables (of mothers, resident fathers, and couples) with children's socioemotional development. Separate multivariate models were constructed, using mother's pregnancy wantedness, resident father's pregnancy wantedness, and couple pregnancy wantedness as the main predictors of children's socioemotional development while controlling for other covariates. Sample weights were applied to account for stratification, clustering, and unit non-response. In accordance with the ECLS-B data usage requirements set by the National Center for Education Statistics, all numbers reported have been rounded to the nearest 50. Data were analyzed using STATA Version 11.2 (Stata Corp., College Station Texas).

RESULTS

Mothers' pregnancy wantedness

In the bivariate analyses higher household income was associated with higher children's socioemotional development scores (see Table 1). Maternal age was found to be positively

associated with children's socioemotional development. Children born to Black mothers and mothers classified as 'other' race had significantly lower child development scores compared to children born to White mothers. Children born to mothers with a college degree or greater had higher children's socioemotional development scores compared to children born to mothers with some high school or less. Children of mothers with some college also had significantly higher child development scores compared to children born to mothers with only some high school or less. There was no statistically significant relationship between mother's employment status and children's socioemotional development.

Children born to mothers who reported not wanting a baby at the time that they became pregnant had lower socioemotional development scores in kindergarten compared to children born to mothers who reported wanting a baby at the time of pregnancy (see Table 2). There was also a weak inverse association between mothers' report of mistimed pregnancies and children's socioemotional developmental score in unadjusted models, however significance was lost after adjustment for covariates. After controlling for mother's age, race, education, employment status and household income, a statistically significant inverse association between maternal unwanted pregnancy and children's socioemotional development remained.

Resident father pregnancy wantedness

In bivariate analyses examining the relationship between resident father's (see Table 1) socio-demographic characteristics and children's socioemotional development, higher household income was associated with higher children's socioemotional development scores. Having a father with a college degree or higher was also found to be associated with higher child development scores. There were no significant associations between any other resident father's socio-demographic variables included in analyses.

In the unadjusted model examining resident father's characteristics and children's socioemotional development (see Table 3), children born to fathers who reported that the pregnancy was unwanted or mistimed had significantly lower children's socioemotional development scores when compared to children born to fathers who reported that the pregnancy was wanted. After adjusting for resident father's age, race, education, employment status and household income, only the association between mistimed pregnancy and children's socioemotional development remained statistically significant. In the adjusted model, there was no significant relationship between resident fathers reporting that they did not want the pregnancy and children's socioemotional development scores. None of the covariates included in the model were found to be significantly associated with children's socioemotional development in the multivariate model.

Couple concordance of pregnancy wantedness

Unadjusted and adjusted models were constructed to examine the relationship between couple concordance of pregnancy wantedness and children's socioemotional development (see Table 4). In the unadjusted model, children born to a mother who reported having wanted the pregnancy and a father who reported not having wanted the pregnancy when becoming pregnant had significantly lower socioemotional development scores compared to

children born to parents who both wanted the pregnancy. This relationship remained significant after controlling for both maternal and resident fathers' demographic characteristics in the multivariate model. There was no significant unadjusted or adjusted association between both parents reporting not wanting the pregnancy or the mother reporting not wanting the pregnancy while the father reported wanting the pregnancy with children's socioemotional development.

DISCUSSION

Our results suggest that maternal and paternal pregnancy wantedness and couple concordance in pregnancy wantedness may be important for their children's socioemotional development in kindergarten. Children born to mothers reporting having not wanted the pregnancy had lower socioemotional development scores in kindergarten than those born to mothers who wanted the pregnancy. Children born to fathers who reported that the pregnancy was mistimed also had poorer socioemotional development in children outcomes compared to children born to fathers who reported wanting the pregnancy. Couple discordance in pregnancy intention, in which the mother wanted and father did not want the pregnancy, was associated with lower socioemotional development scores of children.

Our finding that pregnancies unwanted by the mother are associated with poorer socioemotional development in children is in accordance with previous research (21, 22). A study conducted in Prague examining the long-term effects of children born to women who were denied abortion showed higher maladaptation scores in children at age 9 along with continued less favorable social and emotional adaptation into adulthood (21). Using data from the U.S. National Longitudinal Survey of Youth, Joyce et al. showed that youth between the ages of 14 and 21 years born to mothers who reported unwanted pregnancy had more problem behaviors than those youth born to mothers who reported intending to get pregnant (22). Although some of the items from their measure, the Behavior Problems Index, are represented in the Preschool and Kindergarten Behavior Scales used in our study, our measure of children's socioemotional development has the advantage of being an independent measure based on teacher report of socioemotional development in children within the school setting.

Barber et al. demonstrated that experiencing an unwanted pregnancy was associated with reduced time and attention that mothers give their young children (23). Other studies have also reported disturbances in the mother-child relationship due to an unwanted pregnancy (18). Given that maternal unwanted pregnancy has been found to be associated with maternal depressive symptoms (24-26), one explanation for these results is that the depressive symptoms that may result from unwanted childbearing could impact maternal childrearing behaviors.

Regarding pregnancy wantedness of fathers, we found mistimed pregnancy to be associated with poorer children's socioemotional development. Previously paternal pregnancy wantedness has been shown to be associated with toddlers' mental proficiency and attachment security, which was mediated by father engagement and greater mother-father relationship conflict (16). Although we were surprised to find paternal report of mistimed

pregnancy but not unwanted pregnancy to be associated with lower socioemotional development scores compared to scores of children from wanted pregnancies, one possibility is that this may be attributable to misclassification of paternal pregnancy wantedness due to social desirability. Some fathers may have reported a pregnancy as being mistimed even though they did not want to have a child or another child at the time that their partner became pregnant.

In our analysis of couple concordance of pregnancy wantedness, we found an inverse relationship between discordance in parental pregnancy wantedness and children's socioemotional development scores, specifically when the mother reported wanting the pregnancy and the father reported not wanting the pregnancy. This is in contrast to prior research that has reported little influence of father's pregnancy intentions when there is discordance in pregnancy intentions between parents on the risk of adverse health and developmental outcomes for infants (12). Interestingly, we did not find unwanted pregnancy reported by both parents to be associated with lower children's socioemotional developmental scores compared to children of parents who both reported wanting the pregnancy. This suggests that discordance in pregnancy wantedness among couples may be an indicator of marital conflict between the mother and the father, which has been associated with poor child development (23). There is evidence that interventions that address marital/relationship conflict can have a positive impact on child development, including children's socioemotional competence. Kirkland et al. evaluated the impact of a six-week education program focused on couple and co-parenting dynamics and relationship quality on married and unmarried Head Start parents and children ¹. They found that parents who participated in the relationship education program reported lower levels of coparenting disagreements and better child social competence and emotional wellbeing compared to parents who did not receive the relationship education intervention. Another study found long-lasting 10-year positive effects of a pre-kindergarten intervention that involved a 16 weeks of couples group meetings for parents focused on marital issues on marital satisfaction and children's adaptation ².

One limitation of our study was the incomplete data on the main predictor and outcome for some children, especially for fathers. However, given that we are likely to have data missing from children most at risk for having poor socioemotional development scores, their non-inclusion would have resulted in an attenuation of the associations observed. It is also possible that there was some misclassification of pregnancy wantedness due to recall and social desirability biases. Because the ECLS-B did not survey parents prior to the pregnancy or birth of the child, we had to rely on retrospective accounts of whether mothers and fathers wanted to have a baby at the time that they became pregnant. It is possible that parents' reports of pregnancy wantedness at the time of becoming pregnant may have changed over time due to parenting and co-parenting satisfaction and competence, perceptions of marital relationship, paternal involvement in parenting, among other reasons. Due to the large amounts of missing data and loss to follow-up of non-resident fathers, our analyses were restricted to resident fathers, making it possible that our results are only generalizable to this subset of fathers. Nonetheless, we were able to examine the relationship between parental pregnancy wanted and children's socioemotional development using a nationally representative sample of two-headed household families in United States. This study

contributes to a limited body of research as this study sought to fill this gap in our knowledge by examining pregnancy wantedness of the mother, resident father, and of the couple jointly, in relation to children's socioemotional development. To date, little research has examined the relationship between pregnancy wantedness, especially of fathers', and children's socioemotional development. To our knowledge, no studies have looked at couple concordance in pregnancy wantedness in relation to children's socioemotional development.

We found unwanted pregnancy to be associated with poorer children's socioemotional development in kindergarten. Discordance in pregnancy wantedness among couples is also adversely associated with children's socioemotional development. Findings from this study suggest couples' counseling aimed at reducing discordance in pregnancy intentions by improving couples planning of pregnancies may have a positive impact on children's socioemotional development.

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In accordance with ECLS-B data usage requirements of the National Center for Education Statistics, sample sizes (n) have been rounded to the nearest 50.
 * Mother and resident fathers questionnaires were missing based on three categories: 1) Unlocatable: the case could not be found at the parent's residential address on the birth record and attempts to find the case failed; 2) Refusal: case was found but parent refused to complete the questionnaire; and 3) Other: including language barrier, too far to interview, out of the country and other reasons for non-completion.
 * This analysis excluded mistimed pregnancies. It only considered data from wanted versus unwanted pregnancies.

Figure 1.

Flowchart of sample sizes for mothers', fathers', and couple analyses of pregnancy wantedness and child social development.

Table 1

Average difference in child social development score at kindergarten by mother and resident father's characteristics.

Background Characteristics		Mother		Resident Father	
	n	β (95% CI)	n	β (95% CI)	
Household Income					
<\$25,000	1350	REF	550	REF	
\$25,000	2800	0.13 (0.06, 0.20) ***	2050	0.09 (0.01, 0.17) *	
Age					
18	150	REF	50	REF	
19-24	1100	0.21 (-0.05, 0.44)	350	0.28 (-0.17, 0.72)	
25+	2850	0.40 (0.19, 0.62) ***	2200	0.36 (-0.08, 0.80)	
Race					
White, non-Hispanic	2050	REF	1500	REF	
Black, non-Hispanic	600	-0.14 (-0.23, -0.05) ***	200	-0.09 (-0.21, 0.04)	
Hispanic	600	-0.03 (-0.10, 0.04)	350	-0.07 (-0.17, 0.02)	
Asian, Non-Hispanic	500	0.07 (0.00, 0.14)	250	0.03 (-0.07, 0.14)	
Other	350	-0.21 (-0.40, -0.02) *	250	-0.04 (-0.14, 0.06)	
Education					
Some high school or less	650	REF	300	REF	
High school diploma/GED	1200	0.07 (-0.05, 0.19)	700	0.05 (-0.06, 0.15)	
Some college	1050	0.12 (0.01, 0.24) *	600	0.11 (-0.002, 0.23)	
College graduate+	1250	0.29 (0.19, 0.39) ***	1000	0.19 (0.07, 0.31) **	
Employment status					
Unemployed	1900	REF	200	REF	
Employed	2200	-0.003 (-0.07, 0.06)	2450	0.08 (-0.08, 0.23)	

In accordance with the ECLS-B data usage requirements set by the National Center for Education Statistics, sample sizes (n) have been rounded to the nearest 50.

* p<0.05

** p<0.01

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Table 2

Unadjusted and adjusted models for the average difference in kindergarten child social development score by mother's pregnancy wantedness at nine months following birth.

	Unadjusted Model		Adjusted Model	
	n	β (95% CI)	β (95% CI)	
Mother's pregnancy wantedness				
Wanted	1650	REF	REF	
Unwanted	550	-0.22 (-0.33, -0.12) ***	-0.11 (-0.21, -0.02) *	
Mistimed	1850	-0.07 (-0.13, -0.01) *	-0.02 (-0.09, 0.04)	

In accordance with the ECLS-B data usage requirements set by the National Center for Education Statistics, sample sizes (n) have been rounded to the nearest 50.

Adjusted model controls for mother's age (18; 19-24; 25+), race (White non-Hispanic; Black, non-Hispanic; Hispanic; Asian, non-Hispanic; Other), education (some high school or less; high school diploma/GED; some college; college graduate+), employment status (unemployed; employed), and household income (<\$25,000; \$25,000; \$25,000).

** p<0.01

* p<0.05

*** p<0.001

Table 3

Unadjusted and adjusted models for the average difference in child social development score by resident father's pregnancy wantedness at 9 months following birth.

		Unadjusted Model β (95% CI)	Adjusted Model β (95% CI)
Father's pregnancy wantedness			
Wanted	1200	REF	REF
Unwanted	650	-0.09 (-0.15, -0.02) *	-0.06 (-0.13, 0.01)
Mistimed	750	-0.11 (-0.18, -0.04) **	-0.09 (-0.16, -0.02) *

In accordance with the ECLS-B data usage requirements set by the National Center for Education Statistics, sample sizes (n) have been rounded to the nearest 50.

Adjusted model controls for resident father's age (18; 19-24; 25+), race (White non-Hispanic; Black, non-Hispanic; Hispanic; Asian, non-Hispanic; Other), education (some high school or less; high school diploma/GED; some college; college graduate+), employment status (unemployed; employed), and household income (<\$25,000; \$25,000; \$25,000).

* $p < 0.05$

** $p < 0.01$

Table 4

Unadjusted and adjusted models for the average difference in kindergarten child social development score by couple pregnancy wantedness at 9 months following birth.

	Unadjusted Model		Adjusted Model	
	n	β (95% CI)	β (95% CI)	
Couple pregnancy wantedness				
Mother and Father wanted	750	REF	REF	
Mother wanted, Father did not want	250	-0.13 (-0.24, -0.01) *	-0.13 (-0.26, -0.01) *	
Mother did not want, Father wanted	50	-0.02 (-0.29, 0.25)	0.01 (-0.23, 0.25)	
Mother and Father did not want	100	-0.05 (-0.23, 0.13)	-0.02 (-0.20, 0.17)	

In accordance with the ECLS-B data usage requirements set by the National Center for Education Statistics, sample sizes (n) have been rounded to the nearest 50.

Adjusted model controls for mother and resident father's age (18; 19-24; 25+), race (White non-Hispanic; Black, non-Hispanic; Hispanic; Asian, non-Hispanic; Other), education (some high school or less; high school diploma/GED; some college; college graduate+), employment status (unemployed; employed), and household income (<\$25,000; \$25,000).

* p<0.05