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**Outcomes for children and families following unplanned pregnancy: Findings from a longitudinal
birth cohort**

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Abstract

This study examined the associations between a measure of unplanned pregnancy and outcomes related to family socioeconomic conditions, family functioning, parent-child relationships, and child educational and behavior outcomes in a New Zealand birth cohort studied to 18 years. Associations were modelled between a measure of pregnancy planning (planned; unplanned) and 12 outcomes using multiple regression, negative binomial regression and logistic regression. The associations were adjusted for a series of factors related to parental characteristics, birth family characteristics, and maternal family background. After adjustment for sources of confounding, there were statistically significant ($p < .05$) and marginally significant ($p < .10$) associations between pregnancy planning and: family socioeconomic outcomes; family functioning; and measures of parent-child relationship quality. Estimates of Cohen's d ranged from .12 to .38, with a median value of .16, suggesting relatively weak associations after adjustment. Adjustment for confounding reduced the magnitude of the association between pregnancy planning and achieving secondary school qualifications, and between pregnancy planning and childhood conduct problems to statistical non-significance. The results suggest that even after accounting for potential sources of confounding, unplanned pregnancy was related to increased risks of adverse family socioeconomic, family functioning, and parent-child relationship outcomes. Programs designed to reduce the incidence of unplanned pregnancy may help to reduce risks in these areas for families and children.

Keywords: unplanned pregnancy, family socioeconomic outcomes, family functioning, parent-child relationship, child behavior, education, longitudinal study

Introduction

In recent decades there has been considerable interest in and debate over the issue of pregnancy planning. In general, debates have centred on the extent to which unplanned or unintended pregnancies brought to term impact the lives of families, mothers, and children (Singh et al. 2010; Gipson et al. 2008; Tsui et al. 2010; Henshaw 2009; Henshaw 1998; Brown and Eisenberg 1995). While estimates of the rates of unintended pregnancy vary, research has suggested that in Western developed countries, 37% to 48% of pregnancies were unintended, comprising 5% to 23% of all live births (Singh et al. 2010).

There is substantial research to suggest that unplanned pregnancy may be associated with a series of adverse outcomes for both parent and offspring. Adverse outcomes for parents include: post-partum depression (Mercier et al. 2013; Cheng et al. 2009; McCrory and McNally 2013); and lower rates of pre-natal health care (Joyce et al. 2000; Orr et al. 2008; Cheng et al. 2009). Adverse outcomes for offspring include: premature birth (Shah et al. 2011; Orr et al. 2000); low birth weight (Shah et al. 2011); reduced rates of breastfeeding (Joyce et al. 2000); poor child health and development (Crissey 2005; Baydar 1995; Forrest 1994; David 2006; Barber et al. 1999); increased risk of child physical abuse (Sidebotham and Heron 2003; Goto et al. 2005); and increased levels of aggressive behavior and related problems (Hayatbakhsh et al. 2011; Crissey 2005). Also, further research suggests that unplanned pregnancy may be associated with poorer parent-child relationship quality (Barber et al. 1999; Nelson and O'Brien 2012). These findings suggest a high cost of unplanned pregnancy at both the individual and societal level. Furthermore, given the higher rates of unplanned pregnancy amongst younger women and poorer women, it is likely that unplanned pregnancy is contributing to increasing social and economic inequality in Western societies (Finer and Zolna 2011).

There are several issues arising from the studies examining the linkages between unplanned pregnancy and outcomes. One issue is that the majority of studies in this area have looked at relatively short-term outcomes, such as maternal use of pre-natal care and birth outcomes (Gipson

et al. 2008; Tsui et al. 2010). It could be argued that the effects of unplanned pregnancy may be observed not only around the time of birth, but also throughout childhood and adolescence. A second issue is the fact that a number of these studies were retrospective in nature (Crissey 2005), with the ascertainment of pregnancy planning and outcomes being done long after the pregnancy had occurred. A third issue is that a number of studies have focussed narrowly on one particular kind of outcome or outcomes (Gipson et al. 2008; Tsui et al. 2010; Brown and Eisenberg 1995), whereas it is likely that the effects of unplanned pregnancy may be observed in a variety of outcomes. Finally, a number of studies have been unable to adequately address issues of confounding in the association between unplanned pregnancy and outcomes (Gipson et al. 2008; Tsui et al. 2010), which may lead to a misestimation of the causal influence of unplanned pregnancy.

One means of addressing these issues is through the use of a prospective longitudinal study in which data on a wide range of predictors and outcomes were obtained from mothers at the time of birth and throughout childhood, and from the children as they progress through childhood and adolescence. Such a study would also allow for a more precise examination of possible confounding factors in the estimation of the causal influence of unplanned pregnancy on adverse outcomes.

Against this background, the present study uses data from a prospective longitudinal study (the Christchurch Health and Development Study) of a cohort studied from birth until the age of 18. The aims of the present study were:

1. To examine the associations between pregnancy planning and a range of outcomes related to: family socioeconomic issues; family functioning; parent-child relationships; and child educational and behavioural outcomes.
2. To estimate the linkages between unplanned pregnancy and outcomes net of potential confounding factors related to family characteristics and maternal background factors.

Methods

Participants

The data were gathered during the course of the Christchurch Health and Development Study (CHDS). In this study a birth cohort of 1265 children (635 males, 630 females) born in the Christchurch (New Zealand) urban region in mid-1977 has been studied at birth, 4 months, 1 year and annually to age 16 years, and again at ages 18, 21, 25 and 30 years (Fergusson et al. 1989; Fergusson and Horwood 2001). All study information was collected on the basis of signed consent from study participants and all information is fully confidential. All aspects of the study have been approved by the Canterbury (NZ) Ethics Committee.

Maternal pregnancy planning

At the interview conducted following the birth of the cohort member, mothers were asked a series of questions about their pregnancy with the index child (or children, in the case of twin births). One question asked whether the pregnancy had been “deliberately planned” (the mother reported that she and the child’s father stopped using contraception because they wished to have a child; answered yes/no). This information was used to classify each cohort member as having been born following either a planned pregnancy or an unplanned pregnancy. Further details of this measure are given in the online-only supplement.

Outcome measures

More detailed information concerning outcome measures are provided in the online-only supplement.

Family socioeconomic measures (to age 10)

Average family living standards. This was a global assessment of the material living standards of the family obtained by means of an interviewer rating on a five point scale that ranged from 1 = “very good” to 5 = “very poor”. These ratings were summed over the 10 year period and divided by 10.

Family income. Information on gross weekly family incomes from all sources was obtained at each interview from age 1 to age 10. These incomes were summed to provide an estimate of the family's total gross weekly income at each age, and for the period 0 to 10 years. For the purposes of the present analysis families were classified into quartile groups based on the distribution of family income.

Welfare dependence. Also at each interview, parents were asked to specify whether they received any kind of welfare benefit. Participants whose parents indicated that they had received a welfare benefit of any kind during the period 0-10 years were classified as being welfare dependent during that period.

Family functioning (to age 16)

Changes of parent (family changes). An overall measure of family instability was constructed on the basis of a count of the number of changes of parents experienced by the child up to age 16, due to parental separation/divorce, reconciliation, remarriage, death of a parent, fostering, and other changes of custodial parents.

Parental intimate partner violence (IPV). At age 18, sample members were questioned concerning their experience of parental intimate partner violence during their childhood (prior to age 16 years). The questioning was based on a series of eight items derived from the Conflict Tactics Scale (CTS; Straus 1979). Separate questioning was conducted for violence initiated by the father

against the mother and for violence initiated by the mother against the father. For the purposes of the present investigation these scales were summed to create an overall measure of parental intimate partner violence.

Measures of parent-child relationship.

Parental attachment (age 14). This was assessed using the parental attachment scale developed by Armsden and Greenberg (1987) and administered when sample members were aged 15 ($\alpha = 0.87$).

Maternal and paternal care (parental bonding; age 16). At age 16, sample members were questioned about their relationship with both their mother and father using the Parental Bonding Instrument (PBI; Parker et al. 1979). The maternal and paternal care scales were employed for the present investigation ($\alpha = 0.85, .91$).

Parental use of regular or harsh physical punishment (to age 16). At ages 18 and 21 sample members were asked to describe the extent to which their parents used physical punishment during childhood (Fergusson and Lynskey 1997). This information was used to create a 4-level scale reflecting the most severe form of physical punishment reported for either parent. For the purposes of the present investigation, those cohort members who reported that parents used regular or harsh physical punishment were classified as being exposed to regular or harsh punishment to age 16.

Educational/behavioural outcomes.

Leaving school without qualifications (by age 18). At age 18, cohort members were assessed as to the extent of their educational qualifications they had received by that point in time. Those who reported having left secondary school without achieving qualifications were classified as having left without qualifications (19% of the sample).

Conduct and attention problems (ages 7-9). At ages 7, 8, and 9 years, information on child behavior problems was obtained from parental and teacher report. Parental reports were obtained from an interview with the child's mother using a behavior questionnaire that combined items from the Rutter, Tizard, and Whitmore (1970) and Conners (1970) parental questionnaires. Teacher reports were obtained using a combined version of the Rutter et al. (1970) and Conners (1969) teacher questionnaires. These questionnaires were used to construct measures of: a) conduct problems: the extent to which the child exhibited aggressive, oppositional, and conduct disordered behaviors; and b) attention problems: the extent to which the child exhibited restless, inattentive, or hyperactive behaviors. For the purposes of the present analysis, the parent and teacher reports were summed for each domain and the resulting scores averaged over the three year period to produce two scale score measures reflecting the extent of the child's tendencies to conduct and attention problems at ages 7-9 ($\alpha = .97, .93$).

Covariate factors. A number of possible confounding factors were examined for the purposes of inclusion in the present analyses. The factors described below are those which: a) were significantly ($p < .05$) associated with pregnancy planning; and b) were a statistically significant ($p < .05$) covariate in at least one analysis. Additional details are provided in the online-only supplement. These factors included:

Maternal age. Maternal age was recorded at birth.

Maternal and paternal education. This was assessed at the time of the cohort member's birth using a pair of three point scales which reflected the highest level of educational achievement attained by the mother and father.

Family socioeconomic status (SES) at birth. SES was assessed at the time of the cohort member's birth using the Elley-Irving (Elley and Irving 1976) scale of socio-economic status for New

Zealand. This scale classifies SES into 6 levels on the basis of paternal occupation, ranging from 1 = professional occupations to 6 = unskilled occupations.

Born into a single-parent family. A dichotomous measure obtained at birth representing whether the cohort member was born into a single-parent or two-parent family.

Number of children in family prior to birth. At the birth of the cohort member, mothers were asked how many children she had given birth to previously (who presently lived with the family).

Maternal parental relationship. Mothers were asked to provide a rating of the closeness of their relationship with their own mothers (or family maternal figure) using a five point scale ranging from 'very good' to 'very unsatisfactory'. Mothers also indicated if they had not had a mother or other maternal figure in their family.

Maternal family size. At the birth of the cohort member mothers were asked to indicate how many siblings they had had, including step-siblings and siblings who had died.

Maternal family happiness. Mothers were asked to rate the relative happiness of their childhood, using a five point scale ranging from 'very happy' to 'very unhappy'.

Statistical analyses

See online-only supplement.

Sample size

The available sample for the present analyses consisted of 1221 of the original cohort of 1265 individuals (96.5%). The individuals excluded ($n = 44$) were those individuals who were put up for adoption by their mother shortly after birth. Due to missing data on some outcome measures, sample sizes ranged from 879 to 1220, representing 69.5% to 96.4% of the original cohort.

Results

Associations between pregnancy planning and childhood outcomes (to age 16).

Table 1 shows the cohort classified into two groups according to pregnancy planning (planned; unplanned). The Table shows the percentage (for dichotomous outcomes) or the mean and standard deviation (for continuous or count measures) for each outcome across a series of domains, including: family socioeconomic outcomes; family functioning; measures of parent/child relationship quality; and educational and behavioural outcomes. The associations between pregnancy planning and outcomes were modelled using logistic regression (for dichotomous outcomes), negative binomial regression (for count measures), and multiple regression (for continuous outcome measures). The Table also reports the test of significance for the association between pregnancy planning and each outcome (see online-only supplement). The Table shows:

1. Family socioeconomic outcomes (to age 10). Pregnancy planning was significantly ($p < .0001$) associated with each measure of family socioeconomic outcomes. Cohort members whose mothers described their pregnancies as being unplanned: lower levels of family living standards; were more likely to be classified as being in the lowest quartile for family income; and were more likely to be welfare dependent; than cohort members whose mothers reported a planned pregnancy.
2. Family functioning (to age 16). Those cohort members whose mothers described their pregnancies as being unplanned had: a significantly ($p < .0001$) higher number of family changes; and higher scores on a measure of parental intimate partner violence ($p < .05$); than cohort members whose mothers reported a planned pregnancy.

3. Parent-child relationship. Cohort members whose mothers reported unplanned pregnancies had: significantly ($p < .001$) lower scores on a parental attachment measure (at age 14); significantly ($p < .01$) lower scores on measures of maternal and paternal care (at age 16); and were significantly ($p < .001$) more likely to have reported regular or harsh physical punishment during childhood; than cohort members whose mothers reported a planned pregnancy.
4. Educational/behavioural outcomes. Cohort members whose mothers reported unplanned pregnancies had: significantly ($p < .001$) lower rates of attainment of secondary school qualifications (by age 18); significantly ($p < .001$) higher scores on a measure of conduct problems (at ages 7-9); and significantly ($p < .0001$) higher scores on a measure of attention problems (at ages 7-9); than cohort members whose mothers reported a planned pregnancy.

INSERT TABLE 1 HERE

Associations between pregnancy planning and covariate factors

In the next step of the analyses, the associations between pregnancy planning and a series of potential confounding factors related to maternal, paternal, and family characteristics were examined. These factors included: maternal age; maternal and paternal education; family socioeconomic status (SES) at birth; family composition (two-parent or single-parent); number of children in family prior to the birth of the cohort member; a measure of the quality of the mother's relationship with her own mother; mother's number of siblings; and the mother's assessment of the happiness of her childhood. The results of these analyses are displayed in Table 2, which shows for each covariate factor the mean and standard deviation (for continuous or count measures) or percentage (for dichotomous measures) for each pregnancy planning group. The Table shows:

1. Those mothers who reported an unplanned pregnancy: were significantly ($p < .0001$) younger; were significantly ($p < .05$) less likely to have formal educational qualifications; were significantly

($p < .05$) more likely to have reported an unsatisfactory relationship with their own mothers; had a significantly ($p < .0001$) larger family size; and were significantly ($p < .0001$) more likely to report their childhood as having been “unhappy” or “very unhappy”; than mothers who reported a planned pregnancy.

2. Cohort members whose mothers who reported an unplanned pregnancy: had fathers who were significantly ($p < .05$) less likely to have formal educational qualifications; had significantly ($p < .0001$) lower levels of family SES; were significantly ($p < .0001$) more likely to have been born into a single-parent family; than cohort members whose mothers reported a planned pregnancy.

The results of these analyses suggest that those individuals whose mothers reported an unplanned pregnancy were more likely to have been born into families with higher levels of socio-economic adversity, and to mothers who had experienced higher levels of socioeconomic adversity and family stress during childhood.

INSERT TABLE 2 HERE

Associations between pregnancy planning and outcomes, after adjustment for confounding factors

It could be argued that the observed associations between pregnancy planning and the outcomes displayed in Table 1 may be attributed to the parental and family factors shown in Table 2. In order to examine this issue, the regression models fitted in Table 1 were extended to include the confounding factors shown in Table 2, using forward and backward methods of variable inclusion to arrive at a stable and parsimonious set of models. The results of these analyses are shown in Table 3, which shows estimates of the adjusted mean (for continuous and count measures) and percentage (for dichotomous measures), after adjustment for significant confounding factors (see online-only supplement). The Table also shows estimates of Cohen’s d for statistically significant and marginally significant associations, and lists the statistically significant covariate factors for each model. The Table shows:

1. After adjustment, the associations between pregnancy planning and family socioeconomic outcomes remained statistically significant ($p < .01$). Cohort members whose mothers described their pregnancies as being unplanned had: lower levels of family living standards; were more likely to be classified as being in the lowest quartile for family income; and were more likely to be welfare dependent; than cohort members whose mother reported a planned pregnancy. Estimates of Cohen's d ranged from .17 to .38, suggesting that the strength of the adjusted association between maternal pregnancy status and family socioeconomic outcomes was relatively weak to moderate.
2. After adjustment for confounding, the associations between pregnancy planning and family changes also remained statistically significant ($p < .05$), but the association between pregnancy planning and parental IPV was reduced to marginal significance ($p < .10$). After adjustment, cohort members whose mothers described their pregnancies as being unplanned had: a higher number of family changes; and marginally higher scores on the measure of parental IPV; than cohort members whose mother reported a planned pregnancy. Estimates of Cohen's d ranged from .14 to .17, indicating weak associations.
3. Adjustment for confounding factors reduced the magnitude of the associations between pregnancy planning and parent/child relationship outcomes, but they remained statistically significant ($p < .05$). Cohort members whose mothers described their pregnancies as being unplanned had: significantly lower scores on the measure of parental attachment; significantly lower scores on both parental care measures; and were significantly more likely to report receiving regular/harsh physical punishment; than cohort members whose mothers reported a planned pregnancy. Again, estimates of Cohen's d suggest weak associations, with values ranging from .13 to .19.
4. After adjustment for confounding factors, the associations between maternal pregnancy status and each of the educational and behavioural outcomes was reduced to marginal significance ($p < .10$) or statistical non-significance ($p > .10$). After adjustment, those cohort members whose mothers reported an unplanned pregnancy had marginally higher attention problems scores

than those cohort members whose mother reported a planned pregnancy. The estimate of Cohen's d was .12, indicating a weak association.

INSERT TABLE 3 HERE

Discussion

In this paper we have used data from a longitudinal study to examine the linkages between pregnancy planning and a range of outcomes related to family socioeconomic circumstances, family functioning, parent-child relationships, and childhood and adolescent educational and behavioral outcomes. The findings of these analyses and their implications are outlined below.

First, in agreement with previous research (Singh et al. 2010; Gipson et al. 2008; Tsui et al. 2010; Joyce et al. 2000; Baydar 1995; Brown and Eisenberg 1995; Shah et al. 2011; Orr et al. 2008; Henshaw 2009; Orr et al. 2000; Henshaw 1998; Crissey 2005; Barber et al. 1999; Nelson and O'Brien 2012), there were consistent bivariate associations between pregnancy planning and each of the outcomes. Unplanned pregnancy was associated with: poorer family socioeconomic outcomes in childhood; higher levels of family dysfunction; lower scores on measures of parent-child relationship quality in adolescence and higher levels of regular or harsh physical punishment; lower rates of achieving educational qualification and higher scores on measures of childhood behavior problems.

The present study also showed that pregnancy planning was significantly ($p < .05$) associated with a range of potentially confounding factors related to: the socioeconomic circumstances of the family that the cohort member was born into; maternal age; parental education; maternal family background factors including family size, family stability, and maternal ratings of family happiness and relationship quality. Controlling for these factors reduced the magnitude of the associations between pregnancy planning and outcomes. However, even after controlling for confounding, there remained statistically significant ($p < .05$) or marginally significant ($p < .10$) associations between pregnancy planning and: family socioeconomic outcomes; family functioning outcomes; measures of

parent-child relationships, and attention problems in childhood. After controlling for confounding, the associations between pregnancy planning and achieving secondary school qualifications, and between pregnancy planning and conduct problems in childhood, were no longer statistically significant. Estimates of Cohen's d for the adjusted associations ranged from .12 to .38, with a median value of .16, suggesting relatively weak associations between pregnancy planning and outcomes after controlling for sources of confounding. In addition, the results of supplementary analyses (see online-only supplement) suggested that the risks associated with unplanned pregnancies did not differ according to whether the mother was distressed or not distressed about the pregnancy.

The results of the present study suggest that pregnancy planning may be related to a wide range of socioeconomic and psychosocial outcomes in for both families and children during childhood and adolescence. Although the adjusted associations were relatively weak, they spanned a wide range of outcomes, with unplanned pregnancy being related to increased levels of adverse family socioeconomic circumstances, increased levels of family dysfunction, and poorer parent-child relationships. These findings augment previous observations in this area of research, which have shown that unplanned pregnancy is related to poorer child health outcomes (Barber et al. 1999; Gipson et al. 2008; Forrest 1994; Crissey 2005; David 2006; Brown and Eisenberg 1995; Shah et al. 2011; Orr et al. 2000; Henshaw 1998), adverse maternal behavior (Nelson and O'Brien 2012; Gipson et al. 2008; Tsui et al. 2010; Brown and Eisenberg 1995; Orr et al. 2008), and increased risk of exposure to physical abuse (Sidebotham and Heron 2003; Goto et al. 2005), suggesting that the linkages between pregnancy planning and outcomes may be more pervasive than previously thought. However, the present findings show that pregnancy planning was not associated with educational outcomes or conduct problems, after controlling for confounding. This finding contrasts with those of other studies that have observed significant associations between pregnancy planning and childhood aggressive behavior (Hayatbakhsh et al. 2011; Crissey 2005). The reasons for this discrepancy are unclear, but further research is required to better understand the potential linkages between pregnancy planning and aggressive, conduct-disordered behavior in children.

The findings of the present study also highlight the importance of pregnancy planning, and the development of effective programs for decreasing the incidence of unplanned pregnancy, to safeguard the wellbeing of children and families (Crissey 2005; Gipson et al. 2008; Tsui et al. 2010; Singh et al. 2010; Levi and Dau 2011; Taylor and James 2011; Files et al. 2011). In particular, the findings suggest that efforts to decrease the incidence of unplanned pregnancy may lead to improvements in personal and family socioeconomic circumstances, improvements in family functioning, and improving parent-child relationships. Improvements in these areas could also lead to reductions in intergenerational cycles of unplanned pregnancy. The findings of the present study also suggest the importance of developing programs and interventions to support women who decide to take an unplanned pregnancy to term, in order to minimize the effects of both the unplanned pregnancy.

These conclusions need to be considered in the light of limitations of the study. These limitations include the fact that the study was based on a specific cohort studied in a specific social context. This is particularly relevant given cultural shifts in average maternal age, patterns of adoption and elective abortion. Also, it should be noted that the data on pregnancy planning were obtained via self-report, and maternal data concerning a number of confounding factors obtained retrospectively, which may have affected the reliability of some measures. Notwithstanding these limitations, the present study suggests that unplanned pregnancy was related to a wide range of outcomes pertaining to socioeconomic circumstances, family functioning, and parent-child relationship quality, highlighting the need for effective programs to reduce the incidence of unplanned pregnancy and to mitigate the potential effects of such pregnancies when brought to term.

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Table 1. Associations between pregnancy planning and childhood outcomes (to age 16).

Outcome	Pregnancy planning		
	Planned	Unplanned	p
<u>Family socioeconomic outcomes</u>			
Mean (SD) family living standards (0-10 years) ¹	2.78 (0.45)	3.04 (0.48)	<.0001
n	751	429	
% in lowest quartile for family income (0-10 years)	16.2	34.5	<.0001
n	739	418	
% welfare dependent ever (0-10 years)	22.2	46.4	<.0001
n	742	418	
<u>Family functioning</u>			
Mean (SD) number of family changes (0-16 years)	0.89 (2.03)	1.75 (2.98)	<.0001
n	770	450	
Mean (SD) parental intimate partner violence (IPV) score (0-16 years)	9.08 (2.07)	9.56 (2.79)	<.05
n	641	348	
<u>Parent/child relationship</u>			
Mean (SD) parental attachment score (age 14)	74.07 (8.76)	71.80 (9.51)	<.001
n	607	335	
Mean (SD) maternal care score (age 16)	30.73 (5.77)	29.03 (6.75)	<.001
n	590	324	
Mean (SD) paternal care score (age 16)	28.32 (7.18)	26.83 (8.21)	<.01
n	576	303	

% regular/harsh physical punishment (0-16 years)	14.4	23.8	<.001
n	654	361	
<u>Educational and behavioural outcomes</u>			
% left school without qualifications	15.4	26.1	<.001
n	641	348	
Mean (SD) conduct problems score (7-9 years)	49.40 (7.24)	51.15 (8.41)	<.001
n	696	388	
Mean (SD) attention problems score (7-9 years)	19.68 (4.76)	20.95 (5.39)	<.0001
n	696	388	

¹ Higher scores indicate lower estimates of living standards

Table 2. Associations between pregnancy status and maternal and family covariate factors.

Covariate factor	Pregnancy planning		
	Planned	Unplanned	p
Mean (SD) maternal age	26.24 (4.20)	24.64 (5.61)	<.0001
% mother lacked formal educational qualifications	49.0	56.2	<.05
% father lacked formal educational qualifications	46.7	52.8	<.05
% mother in paid employment at pregnancy	44.9	52.9	<.01
% family in lowest SES category	9.0	19.3	<.0001
% born into single-parent family	1.2	19.8	<.0001
Mean (SD) number of children in family prior to birth	0.88 (0.86)	1.23 (1.44)	<.0001
% mother reporting unsatisfactory relationship with maternal grandmother (or no mother figure)	4.7	8.0	<.05
Mean (SD) mother's number of siblings	3.19 (2.31)	4.02 (2.92)	<.0001
% mother's reporting childhood as "unhappy" or "very unhappy"	4.8	7.6	<.05

Table 3. Adjusted means and percentages for the associations between pregnancy status and childhood outcomes (to age 16), after adjustment for maternal and family covariate factors.

Covariate factor	Pregnancy Planning			Cohen's d	Significant covariates
	Planned	Unplanned	p		
<u>Family socioeconomic outcomes</u>					
Mean family living standards ¹	2.83	2.94	<.0001	.23	1, 2, 3, 4, 5, 7
% in lowest quartile for family income rank	18.8	25.8	<.01	.17	3, 4, 5, 8
% welfare dependent	27.6	36.5	<.0001	.38	1, 2, 4, 5, 6, 7
<u>Family functioning</u>					
Mean number of family changes	1.01	1.43	<.01	.17	1, 2, 4, 7, 9
Mean parental IPV score	9.13	9.46	<.10	.14	1, 2
<u>Parent/child relationship</u>					
Mean parental attachment score	73.68	72.31	<.05	.15	5, 7
Mean maternal care score	30.46	29.28	<.01	.19	2, 3, 9
Mean paternal care score	28.16	27.12	<.05	.14	1, 2
% regular/harsh punishment	15.9	20.7	<.05	.13	1, 3, 4, 7
<u>Educational and behavioural outcomes</u>					
% left school without qualifications	20.6	24.2	>.10	--	1, 2, 4, 6
Mean conduct problems score	49.84	50.42	>.20	--	1, 2, 4, 7, 8, 9
Mean attention problems score	19.91	20.53	<.10	.12	1, 4, 7, 8, 9

Covariates: 1=maternal age; 2=maternal education; 3=paternal education; 4=family SES at birth; 5=family composition (single-parent family); 6=number of children in family; 7=mother's relationship quality with maternal grandmother; 8=maternal family size; 9=maternal family happiness;

¹ Higher scores indicate lower estimates of living standards