

Abortion Among Young Women And Subsequent Life Outcomes

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CONTEXT: Young women frequently cite concerns about the effects of unplanned pregnancies on future life course outcomes, including education, employment and relationships, as reasons for seeking abortion. There is relatively little evidence as to whether abortion leads to improved life course outcomes for young women who choose this option.

METHODS: Data from 492 women participating in a 25-year longitudinal study of a New Zealand birth cohort were used in regression models that examined the relationship between pregnancy and abortion history prior to age 21 and selected social and economic outcomes at ages 21–25.

RESULTS: Compared with young women who became pregnant before age 21 but did not seek an abortion, young women who had an abortion had significantly better outcomes on six out of 10 measures spanning education, income, welfare dependence and domestic violence. Adjustment for confounding factors indicated that most of these differences were explained by family, social and educational characteristics that were present prior to pregnancy. Nonetheless, even after adjustment for confounding factors, young women who had abortions had higher levels of subsequent educational achievement than those who became pregnant but did not have abortions.

CONCLUSIONS: Abortion may mitigate some effects of early unplanned pregnancy. However, further study of its potential risks and benefits is needed so that women can make fully informed decisions as to whether to terminate unintended pregnancies.

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In research into why young women seek abortions, some of the more frequently given reasons relate to the educational, economic and partnership consequences of unwanted or mistimed pregnancy. For example, Broen et al.¹ interviewed women at three time points following an abortion, and found that concerns about the effect of having a child on education, career, finances and relationships were rated as important reasons for having an abortion. Similarly, Finer et al.² reported that frequently, young women who had abortions stated that they felt unprepared for motherhood, and cited interference with educational opportunities as a primary reason for choosing this option. Seventy-five percent of abortion patients surveyed by Torres and Forrest³ listed interference with education or being unable to afford a baby as a primary reason for having an abortion, while 50% listed potential relationship problems. Sihvo et al.⁴ reported that for women younger than 25, concerns about education and relationship status were the most important determinants of the decision to have an abortion.

These findings raise the issue of the extent to which the decision to have an abortion has advantages for the woman. Indirect evidence suggests possible benefits of abortion for subsequent life course outcomes. In particular, a substantial literature has linked teenage parenthood with educational underachievement,^{5–7} poverty,^{8–10} welfare dependence,^{9,11} domestic violence¹² and impaired

partnership relationships.^{7,12} For example, Hofferth, Reid and Mott⁵ found that teenage mothers completed 1.9–2.2 fewer years of schooling than women who first gave birth after age 30. Similarly, Moore et al.⁸ reported that lower ages at first birth were strongly associated with increasing risks of poverty for women at age 27, and Grindstaff⁹ showed that women who gave birth as adolescents were more likely than other mothers to become welfare-dependent. Finally, Harrykisson, Rickert and Wiemann¹² found that adolescent mothers were at increased risk for intimate partner violence and relationship problems.

One might assume that the adverse outcomes experienced by adolescent mothers are largely or wholly the consequence of mistimed or unwanted pregnancies, and that the adversities associated with teenage pregnancy may therefore be mitigated by abortion. However, only a limited number of studies have directly examined whether young women who have abortions have better life course outcomes than young women who become pregnant but do not seek abortions. Zabin, Hirsch and Emerson¹³ found that pregnancy clinic attendees who had abortions were more likely to complete high school and more likely to be employed two years later than were those who carried their pregnancies to term or had negative pregnancy tests. Similarly, Bailey et al.¹⁴ found that Brazilian adolescents who had abortions were more

likely than those not having abortions to be attending school one year later.

In this article, we examine life course outcomes following abortion before age 21 in a birth cohort of young women in New Zealand studied to the age of 25. In New Zealand, the provision of legal abortion is determined by the Contraception, Sterilisation and Abortion Act of 1977, and is overseen by the Abortion Supervisory Committee. Before a woman may undergo a legal abortion, she must approach her doctor and receive a referral to two specialist consultants. The consultants must agree that one of three conditions is met: The pregnancy would seriously harm the life or the physical or mental health of the woman or baby; the pregnancy is the result of incest; or the woman is severely mentally handicapped. An abortion will also be considered on the basis of age or when the pregnancy is the result of rape.¹⁵

The aims of this analysis were to examine the extent to which young women who had an abortion prior to age 21 showed advantaged outcomes when compared with women who became pregnant but did not seek an abortion. We hypothesized that when due allowance was made for prepregnancy factors, women who had an abortion would have relatively advantaged educational, economic and related outcomes. The analysis also compares women having an abortion by age 21 with those not becoming pregnant by 21. We hypothesized that when due allowance was made for prepregnancy factors, these two groups would have similar educational and related outcomes.

METHODS

Study Design

The data used in these analyses came from the Christchurch Health and Development Study, a longitudinal study of a cohort of 1,265 children born in 1977 in the Christchurch, New Zealand, urban region who were studied from birth to age 25. The analyses were based on the 492 female participants for whom full information on pregnancy history and educational, income, welfare dependence, employment and partnership outcomes to age 25 was available. This sample represented 78% of the original cohort of females. All data were collected on the basis of signed parental consent and, from age 14 onward, signed consent of the cohort members themselves. All phases of data collection had ethical approval from the Canterbury Ethics Committee.

Sample members were interviewed at ages 15, 16, 18 and 21 about their pregnancy and abortion experience since the previous assessment. These reports showed that 125 women (25% of the sample) had had at least one pregnancy by age 21. A total of 172 pregnancies were reported, of which 55% had resulted in a live birth, 31% had been terminated by abortion and 14% had ended in miscarriage.

For our main analysis, we classified participants into three mutually exclusive groups: those who had had an

abortion before age 21 (48 women); those who had had a pregnancy but not an abortion before age 21 (77); and those who had never become pregnant before age 21 (367). However, this method of classification is not without limitations. In particular, 11 women who had had abortions also had had live births. Furthermore, the classification does not distinguish women who had had a live birth from those who had had a miscarriage. To address these issues, we devised a series of classification schemes to examine the sensitivity of the analysis to alternative representations of an individual's pregnancy and abortion history. In addition, all analyses were conducted including and excluding women whose only pregnancy had ended in miscarriage (11 participants).

To cross-validate the self-reported data, we compared our estimates with officially recorded pregnancy and abortion statistics for New Zealand.¹⁶ These comparisons suggested some underreporting of abortion. The observed rate of abortion by age 21 in the cohort (108 per 1,000) was 88% of the rate expected on the basis of population figures (123 per 1,000). However, this difference was not statistically significant.

Outcome Measures

We examined 10 measures, assessed at age 25, spanning educational, economic and partnership outcomes.

•**Educational.** Cohort members were questioned concerning their history of enrollment in tertiary (i.e., any post-secondary) education and training, and concerning any educational or vocational degrees or certification obtained since age 21. This information was used to classify participants on four dichotomous measures of educational achievement between ages 21 and 25: attendance at university; completion of a university degree (bachelor's level or above); enrollment in any form of tertiary education or training; and attainment of any tertiary educational or vocational qualification.

•**Economic.** Sample members were asked to estimate their personal gross income from all sources over the previous 12 months. For participants living alone or still living with parents or other family members, this estimate was also used as a measure of family income, because it represented the portion of household income over which the participant presumably had some decision-making power. For participants who were married or living with a romantic partner, who presumably made joint decisions over joint incomes, an estimate of family income was obtained by asking about the partner's gross income during the previous 12 months, and adding this to the personal income estimate.

In addition, women were questioned about their receipt of social welfare benefits since age 21. The proportion who reported receiving an unemployment benefit, domestic purposes benefit (for the support of single-parent families with dependent children), or sickness or invalids benefit at any point in the period served as an outcome measure. Participants were also questioned

about their current paid employment. Those who reported working a minimum of 30 hours per week were classified as being in full-time employment.

•**Partnership.** Sample members were questioned about their partner relationships over the past 12 months. Participants who reported having been in an intimate partner relationship for one month or longer in the past year were further questioned about their experience of partner violence and the quality of their relationship. Partner violence was assessed using a 22-item scale that incorporated selected items from the Revised Conflict Tactics Scale.¹⁷ The selected items spanned the domains of minor psychological aggression, severe psychological aggression, minor physical assault and severe physical assault. These items were summed to provide a scale measure of the extent of partner violence ($\alpha=0.85$).¹⁸ The measure of relationship quality was derived from the 25-item Intimate Relations Scale.¹⁹ Possible responses to each item ranged from 1 (“doesn’t apply”) to 3 (“definitely applies”). We used the negative feelings subscale to assess the level of dissatisfaction with the individual’s relationship ($\alpha=0.82$).

Covariate Factors

A range of covariate factors were chosen from the study’s database on the basis of their association with pregnancy history before age 21 and their associations with educational and achievement outcomes as observed in previous studies of this cohort.

•**Family background characteristics.** Maternal and paternal education were assessed at the time of the cohort member’s birth and were categorized as “no formal qualifications,” “secondary qualifications” or “tertiary qualifications.” Family material living standards were assessed by means of interviewer ratings that were obtained annually from when the survey child was a year old until the child was 10, using a five-point scale that ranged from “very good” to “very poor.” These ratings were averaged over the 10-year interval to provide a measure of family living standards during this period. Further, family socioeconomic status was assessed at birth using the Elley-Irving revised index of socioeconomic status for New Zealand.²⁰ This index ranks families into six groups on the basis of paternal occupation (ranging from 1, signifying “professional,” to 6, denoting “unskilled”).

•**Childhood behavior and educational achievement.** Childhood conduct problems at ages 7–9, assessed via parent and teacher reports of the extent to which the child

exhibited conduct-disordered and oppositional behaviors, were obtained using a scale that combined selected items from the Rutter²¹ and Conners^{22,23} child behavior rating scales. For these analyses, parent and teacher ratings were summed and then averaged over the three-year interval to provide an overall measure of the extent of conduct problems in middle childhood ($\alpha=0.97$).²⁴

Child cognitive ability (IQ) was assessed at ages eight and nine using the Revised Wechsler Intelligence Scale for Children (WISC-R).²⁵ Total scores were computed on the basis of results on four verbal and four performance subscales. The split half reliabilities of these scores were 0.93 at age eight and 0.95 at age nine. We combined the observed WISC-R total IQ scores at ages eight and nine by averaging over the two administrations. In addition, at age 13, cohort members were given the Test of Scholastic Abilities (TOSCA),²⁶ which is designed to assess the extent to which the child exhibits the skills and competencies necessary for academic work in high school. TOSCA was scored as recommended in the test manual to give a total scholastic ability score ($\alpha=0.95$).

At the assessments at ages 11–13, teacher ratings were obtained of the child’s school performance in each of five curriculum areas (reading, handwriting, written expression, spelling and mathematics). Ratings were made using a five-point scale (“very good” to “very poor”), were summed across years and curriculum areas, and then were averaged to provide a teacher rating grade point average for each child ($\alpha=0.96$). Problems with school, including issues with teachers, peers or problem behavior, were assessed at age 15 via parents’ ratings of the nature and severity of five kinds of school problems (e.g., not getting along with teachers, being teased or bullied at school, engaging in difficult behavior in class). A total school problems score was obtained by summing the number of problems identified by parents.

A measure of secondary school achievement was provided by a count of the number of passing grades (A, B or C) attained in School Certificate examinations, a national series of examinations available to all students that was usually undertaken in the third year of high school (ages 15–16). Additionally, cohort members who reported having attained no secondary school qualifications by age 21 were classified as having left school without qualifications.

Statistical Analyses

The bivariate associations between the three categories of pregnancy and abortion history and the outcomes were modeled by fitting a series of regression models to the observed data. For continuous outcomes, least squares regression models were fitted.* For dichotomous outcomes, logistic regression models were fitted.† In each case, the parameters of the fitted model were used to derive tests of significance of the overall association of pregnancy history with each outcome and pairwise

*These models were of the form $Y_i = B_0 + B_1X_{1i} + B_2X_{2i} + U_i$, where Y_i was the outcome for the i th participant; X_1 and X_2 were design variates representing pregnancy with abortion and pregnancy without abortion, respectively, compared with never being pregnant; and U_i was a disturbance term.

†These models were of the form $\text{logit}(Y_i) = B_0 + B_1X_{1i} + B_2X_{2i}$, where $\text{logit}(Y_i)$ was the log odds of the outcome Y for the i th participant, and X_1 and X_2 were design variates.

comparisons between groups.* A similar procedure was used to examine the associations between covariates and the measure of pregnancy and abortion status.

To adjust the observed associations for confounding, the regression models were extended to include the covariate factors.† In fitting these models, both forward and backward methods of covariate selection were used to identify the best fitting and most parsimonious model representation for each outcome. From the parameters of the final fitted model for each outcome, we constructed tests of the adjusted association with pregnancy and abortion status, as well as tests of pairwise differences between groups. Estimates of the adjusted means or percentages for each outcome were obtained using the methods described by Lee.²⁷

Finally, as noted above, the complicated pregnancy history of a number of cohort members led to some classification issues. To examine the sensitivity of the analysis to the way in which the woman's pregnancy and abortion history had been classified, we reanalyzed the data, using two alternative classification approaches. In one, we based the classification on the woman's first pregnancy only; in the other, we used pregnancy without abortion and pregnancy with abortion as correlated dichotomous predictor variables to take into account the possible overlap between abortion and pregnancy without abortion. All analyses were then repeated excluding the 11 women whose only pregnancy had resulted in miscarriage.

RESULTS

Bivariate Analyses

•**Outcome measures.** For all outcomes, women who had had a pregnancy and had not sought an abortion fared significantly less well than those who had not had a pregnancy (Table 1). Furthermore, in six out of the 10 comparisons, women who had had an abortion had significantly advantaged outcomes when compared with those who had had a pregnancy but not an abortion: They were significantly more likely to have attended university, to have gained a university degree and to have gained a tertiary qualification other than a university degree, and were less likely to have been welfare-dependent. They also had significantly higher mean personal income and experienced a significantly lower mean level of partner violence than those who had become pregnant but not sought an abortion.

Finally, the bivariate analyses revealed that in seven out of the 10 comparisons, those who had had an abortion had outcomes that were not significantly different from outcomes among those who had had no pregnancy by age 21. The two groups were similar with respect to all education outcomes, mean family income and both partnership measures.

•**Covariates.** Relative to women who either had had an abortion or had not become pregnant by age 21, those who had been pregnant but not sought an abortion

TABLE 1. Bivariate associations between women's pregnancy and abortion history prior to age 21 and social and economic measures at ages 21–25, Christchurch Health and Development Study, New Zealand

Measure	Abortion (N=48)	Pregnancy but no abortion (N=77)	No pregnancy (N=367)	χ^2
Education, ages 21–25				
% who attended university	29.2	11.7†,‡	39.6	18.61***
% who gained university degree	18.8	3.9†,‡	31.3	19.54***
% who enrolled in tertiary study	50.0	39.0†	57.8	21.33***
% who gained tertiary qualification	41.7	22.1†,‡	52.0	9.20*
Economic				
Mean personal income, age 25 (000s of NZ\$; range, 0–120)	24.2† (13.7)	17.7†,‡ (15.2)	31.7 (19.2)	20.63***
Mean family income, age 25 (000s of NZ\$; range, 2.1–150)	43.6 (29.3)	35.9† (24.1)	53.1 (34.0)	8.31**
% ever welfare-dependent, ages 21–25	54.2†	68.8†,‡	25.1	55.88***
% employed full-time, age 25	41.7†	30.0†	73.6	56.95***
Partnership§				
Mean exposure to partner violence, age 24–25 (range, 0–21)	2.0 (2.7)	3.2†,‡ (3.6)	1.8 (2.5)	11.38***
Mean dissatisfaction with partnership, age 25 (range, 10–29)	13.6 (3.2)	14.4† (4.8)	12.5 (3.2)	7.80**

*p<.05. **p<.01. ***p<.001. †Significantly different from the figure for no pregnancy at p<.05. ‡Significantly different from the figure for abortion at p<.05. §Based on participants who reported an intimate partner relationship at ages 24–25 (42 women who had had an abortion, 69 who had had a pregnancy but no abortion, and 307 who had had no pregnancy). Note: Figures in parentheses are standard deviations.

tended to come from educationally and economically disadvantaged backgrounds (Table 2, page 10). They had significantly lower intelligence scores and levels of educational achievement in childhood, and were significantly more likely to leave school without educational qualifications.

Adjusted Analyses

After adjustment for background factors, women who had had an abortion did not differ from others who had become pregnant in eight of the 10 comparisons (Table 3, page 10). However, the proportion of women with tertiary qualification attainment was 1.7 times as high among those who had had an abortion before age 21 as among those who had been pregnant but had not sought an abortion (95% confidence interval, 1.1–2.6), and the proportion who attained a university degree was

*Specifically, a Wald test of the joint hypothesis that $B_1=B_2=0$ led to a chi-square test of significance (with 2 degrees of freedom) of the overall association between pregnancy history and the outcome. Similarly, the test of significance on the parameter B_1 provided a test of the pairwise difference between those who had had an abortion and those who had never been pregnant, the test on the parameter B_2 provided a test of the pairwise comparison between those who had been pregnant but had not sought an abortion and those who had never been pregnant, and the difference between the parameters B_1 and B_2 provided a test of the pairwise comparison between women who had had an abortion and other women who had had a pregnancy.

†For continuous outcomes, these models were of the general form $Y_i=B_0 + B_1X_{i1} + B_2X_{i2} + \sum B_jZ_{ji} + U_i$; for dichotomous outcomes, logit $(Y_i)=B_0 + B_1X_{i1} + B_2X_{i2} + \sum B_jZ_{ji}$, where Z_j were the covariate factors.

TABLE 2. Bivariate associations between pregnancy and abortion history prior to age 21 and measures of family background and childhood behavior and educational achievement

Measure	Abortion	Pregnancy but no abortion	No pregnancy	χ^2
Family background				
% whose mother lacked formal educational qualifications	52.0	74.4†,‡	43.7	22.45***
% whose father lacked formal educational qualifications	54.3	61.6	45.5	6.85*
Mean family living standard, ages 1–10 (range, 1–5)§	2.9 (0.5)	3.2†,‡ (0.4)	2.8 (0.4)	8.97**
Mean socioeconomic status category at birth (range, 1–6)§	3.7 (1.6)	4.3†,‡ (1.3)	3.3 (1.4)	7.06**
Childhood behavior/educational achievement				
Mean conduct problems score, ages 7–9 (range, 41–83)	50.1† (7.0)	51.8† (8.4)	47.1 (5.0)	18.92***
Mean IQ score, ages 8–9	102.8 (15.2)	97.7†,‡ (16.1)	104.2 (15.6)	4.13*
Mean TOSCA†† score, age 13 (range, 0–69)	36.2 (13.9)	31.3†,‡ (15.8)	38.0 (14.2)	4.22*
Mean GPA, ages 11–13 (range, 1–5)§	2.4 (0.8)	2.6† (0.8)	2.2 (0.8)	8.02**
Mean no. of school problems reported, age 15 (range, 0–4)	0.4† (0.8)	0.4† (0.8)	0.1 (0.5)	8.45**
Mean no. of School Certificate‡‡ passing grades (range, 0–7)	2.6† (2.3)	1.8†,‡ (2.1)	4.0 (2.0)	36.07***
% who left school without qualifications	28.0†	44.9†,‡	6.1	67.67***

*p<.05. **p<.01. ***p<.001. †Significantly different from the figure for no pregnancy at p<.05. ‡Significantly different from the figure for abortion at p<.05. §Lower means correspond to more positive outcomes. ††Test of Scholastic Abilities. ‡‡School Certificate is a national series of examinations usually taken in the third year of high school. Note: Figures in parentheses are standard deviations.

2.8 times as high among the former as among the latter (95% confidence interval, 1.2–6.3).

In addition, women who had had no pregnancy by age 21 were less likely than women who had had a pregnancy, regardless of its outcome, to have any period of welfare dependency between ages 21 and 25, and were more likely to be employed full-time at age 25.

TABLE 3. Adjusted associations between pregnancy and abortion history prior to age 21 and social and economic measures at ages 21–25

Measure	Abortion	Pregnancy but no abortion	No pregnancy	χ^2
Education, ages 21–25				
% who attended university	36.2	22.0	36.0	4.36
% who gained university degree	26.7	9.7†,‡	27.3	5.48
% who enrolled in tertiary study	57.7	64.4	55.3	2.10
% who gained tertiary qualification	51.4	30.4†,‡	49.7	7.65*
Economic				
Mean personal income, age 25 (000s of NZ\$)	25.5	21.9†	30.8	9.64**
Mean family income, age 25 (000s of NZ\$)	44.3	38.8†	52.8	6.05*
% ever welfare-dependent, ages 21–25	52.3†	57.4†	28.0	26.97***
% employed full-time, age 25	44.2†	35.9†	72.9	36.21***
Partnership§				
Mean exposure to partner violence, age 24–25	1.8	2.6	1.9	0.70
Mean dissatisfaction with partnership, age 25	13.3	13.4	12.7	1.59

*p<.05. **p<.01. ***p<.001. †Significantly different from the figure for no pregnancy at p<.05. ‡Significantly different from the figure for abortion at p<.05. §Based on participants who reported an intimate partner relationship at ages 24–25 (42 women who had had an abortion, 69 who had had a pregnancy but no abortion, and 307 who had had no pregnancy). Note: Analyses are adjusted for all measures shown in Table 2.

Supplementary Analyses

The results of the analyses using the two alternative classifications of women’s pregnancy and abortion status prior to age 21 were generally consistent with the findings from the main analyses.

First, in all bivariate analyses, associations between the pregnancy and abortion classification and all outcomes were statistically significant (p<.01). Women who had been pregnant and not had an abortion had consistently poorer outcomes (reduced educational achievement, lower income, higher welfare dependence, poorer partner relationships) than those who had had an abortion; women who had not been pregnant had better outcomes than either of the other groups.

Second, in all analyses, adjustment for confounding factors showed that most of the differences between women who had had an abortion and others who had become pregnant were explained by the covariates. However, even after adjustment, all analyses produced evidence of significant or marginally significant tendencies for women who had had an abortion to have better educational outcomes than those who had had a pregnancy but not an abortion. Analyses using both alternative classification approaches showed significantly higher levels of degree attainment among those having abortions (p≤.05). In addition, the analysis using the two dichotomous variables showed that compared with women who had had a pregnancy but not an abortion, those who had had an abortion were marginally more likely to have gained any tertiary qualification (p<.10) and had a significantly higher rate of partner violence (p<.05).

Third, in all analyses, after covariate adjustment, women who had had an abortion had a significantly higher rate of welfare dependence and a lower rate of full-time employment than those who had never been pregnant (p<.01).

Finally, consistent with the findings in Table 3, in all analyses, the adjusted results showed that in comparison with those who had never been pregnant, those who had become pregnant but had not had an abortion had a significantly lower income (p<.001), a higher rate of welfare dependence (p<.01), less involvement in full-time employment (p<.01), a lower level of degree attainment (p<.05) and a lower level of tertiary qualification (p<.05). In addition, the analyses based on the classification using the dichotomous variables suggested a significant tendency for pregnancy without abortion to be associated with a higher rate of exposure to partner violence (p<.01).

DISCUSSION

Previous research has suggested that the major reasons that young women seek abortion is to reduce the perceived effects of an unwanted or mistimed pregnancy on life course plans.^{1–4} In this article, we have used data gathered in a 25-year longitudinal study to explore the extent to which abortion prior to the age of 21 mitigated the educational, economic and social disadvantages that have been associated with early pregnancy.

This analysis showed that compared with women who had become pregnant but had not had an abortion, prior to adjustment for confounding factors, those who had had an abortion had relatively advantaged outcomes on most measures of educational achievement, income, avoidance of welfare dependence and partnership relationships. At first sight, these findings may suggest benefits of abortion. However, subsequent analyses suggested that the differences were largely explained by the fact that those who had sought abortion were a more socially and educationally advantaged group prior to pregnancy. When due allowance was made for prepregnancy factors, only the educational differences between pregnant women seeking and not seeking abortion remained statistically significant. Furthermore, educational outcomes were similar among those who had had an abortion and those who had not become pregnant. These results were confirmed in a series of analyses using different approaches to classifying pregnancy and abortion history.

Our results clearly suggest that having an abortion mitigated the educational disadvantage associated with early pregnancy. These results are consistent with previous findings suggesting that abortion among young women may protect their educational opportunities.^{13,14} For the women in our sample, perhaps the choice to have an abortion allowed greater freedom to pursue educational goals. At the same time, similar advantages did not extend to the areas of income, welfare dependence and partnership outcomes.

These conclusions should be considered in the light of a number of limitations of our research. First and foremost, our study was based on a birth cohort studied in a specific social context, in which particular procedures must be followed before women may obtain a legal abortion. Thus, our findings may be specific to the New Zealand context and the legal requirements that regulate access to abortion in New Zealand.

Second, the statistical precision of the comparisons between those who had had an abortion before age 21 and those who had had a pregnancy but not an abortion are limited because they were based on relatively small numbers of women. The study of larger groups might reveal further advantages associated with abortion.

A third limitation concerns the measures of personal and family income. In this study, family income was calculated for individuals living with a spouse or intimate partner by summing the individual's personal income and the spouse's or partner's income. For all other individuals, the measures of personal and family income were equivalent. A number of participants lived with parents or other family members, and may therefore have had greater financial resources than these measures of income might have indicated.

Finally, although we have taken into account a range of covariates, the possibility that the results are further confounded by nonobserved factors (including ones related to the process of obtaining an abortion) should not be overlooked. The validity of any causal conclusions

drawn regarding the relationship between abortion and educational outcomes may be affected by the existence of confounding or selection factors that have been omitted from the analyses.

Debates about the advantages and liabilities of abortion have been dominated by the rhetoric and political ideologies of those holding prolife and prochoice positions. Those holding prolife positions have tended to depict abortion as having few advantages and many disadvantages,²⁸ whereas those holding prochoice positions have promoted the opposite view.²⁹ Our findings from this study and related work lead to conclusions that fall between these extremes. In a previous article, we showed that exposure to abortion was associated with a moderate increase in risks of subsequent mental health problems even when due allowance was made for confounding factors.³⁰ The present analysis suggests that abortion may mitigate some of the educational disadvantages that have been linked to early pregnancy, but that similar benefits are not evident for economic or partnership outcomes. The discrepancies between these findings and the rhetoric of both prolife and prochoice arguments strongly underline the need for further research into the risks and benefits associated with abortion as a means of addressing the issues raised by unwanted or mistimed pregnancies. In general, there is a clear need for further study of the social, educational and related outcomes of the decision to terminate a pregnancy so that women may be properly informed of the potential consequences of this decision for their life course.

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