

Exposure to Single Parenthood in Childhood and Later Mental Health, Educational, Economic, and Criminal Behavior Outcomes

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Context: There has been a great deal of research and speculation on the impact of growing up in a single-parent household; however, it is unclear whether exposure to single parenthood is a direct cause of adverse life outcomes.

Objective: To examine the associations between the extent of exposure to single parenthood in childhood and later mental health, educational, economic, and criminal behavior outcomes, before and after controlling for potentially confounding factors.

Design: Data were gathered during the Christchurch Health and Development Study, a 25-year longitudinal study of a birth cohort of New Zealand children (635 males and 630 females).

Setting: General community sample.

Participants: The analysis was based on a sample of 971 participants with available data on exposure to single parenthood from birth to the age of 16 years. This sample represented 76.8% of the initial cohort.

Main Outcome Measures: The DSM-IV symptom criteria for major depression, anxiety disorders, and substance dependence, for those aged 21 to 25 years; sui-

cidal ideation and attempted suicide, for those aged 21 to 25 years; achieving a university degree or other tertiary education qualification, for those aged 21 to 25 years; welfare dependence and unemployment, for those aged 21 to 25 years; annual income at the age of 25 years; arrest or conviction, for those aged 21 to 25 years; and self-reported violent and property offenses, for those aged 21 to 25 years.

Results: There were significant associations between the extent of exposure to single parenthood and anxiety disorder ($P = .003$), achieving a tertiary qualification or university degree ($P < .001$ for both), welfare dependence and personal income ($P < .001$ for both), arrest or conviction ($P < .001$), and violent and property offenses ($P = .001$). After adjustment for confounding factors, the associations between exposure to single parenthood and most outcomes were explained.

Conclusion: The associations between exposure to single parenthood in childhood and outcomes in young adulthood may be explained by the social and contextual factors that are associated with exposure to single parenthood.

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DURING THE PAST 50 YEARS, there have been marked changes in the structure of families in developed Western societies. These changes have involved increasing rates of separation, divorce, and repartnering.¹⁻⁵ One of the consequences of this trend is that many children are spending some time of their childhood in single-parent families.^{1,6,7} In turn, these social trends have led to ongoing debates about the effects of single parenthood on the health, well-being, and life opportunities of children.⁸⁻¹¹ A number of studies have examined the effects of single parenthood on the outcomes of children, but differing

conclusions have been reached regarding the causal role of single parenthood. Most researchers¹²⁻¹⁶ have noted that the effects of single parenthood on childhood outcomes tend to be small and that many of the associations between single parenthood and childhood outcomes are explained by social and contextual factors associated with single parenthood. Those taking this view have tended to emphasize the view that the critical factors that determine childhood well-being are related to family functioning rather than family structure.^{12,15-17} However, an increasing number of researchers, and social and political commentators, have suggested that single parenthood is a major con-

tributor to health, educational, and behavioral problems in childhood.^{11,18-24} These theorists have argued for the need for social and economic policy that discourages increases in levels of single parenthood.^{10,22,23}

A feature of the literature on single parenthood is that, for the most part, research has focused on childhood educational, behavioral, and social outcomes, and there has been less consideration of the extent to which exposure to single parenthood in childhood is associated with long-term problems of adjustment, including mental health problems, poorer educational and economic outcomes, and involvement in criminal behavior. In addition, prior studies of the effects of exposure to single parenthood have used cross-sectional designs, which limit the conclusions that may be drawn regarding the long-term effects of exposure to single parenthood.

Against this general background, this article reports on the results of a 25-year longitudinal study of the association between exposure to single parenthood in childhood (from birth to the age of 16 years) and psychosocial functioning in young adulthood in a New Zealand birth cohort. The analysis seeks to address 2 questions: (1) To what extent was exposure to single parenthood during childhood associated with increased risks of later mental health problems, poorer educational and economic outcomes, and crime? (2) To what extent could any associations between single parenthood and later outcomes be explained by social and contextual factors (family background, family functioning, and individual characteristics) that are associated with single parenthood?

METHODS

PARTICIPANTS

The data were gathered during the Christchurch Health and Development Study. In this study, a birth cohort of 1265 children (635 males and 630 females) born in the Christchurch urban region in mid-1977 was studied at birth and at the ages of 4 months, 1 year, and annually to the age of 16 years, and again at the ages of 18, 21, and 25 years.^{25,26} The study has collected information from a variety of sources, including parental interviews, teacher reports, self-reports, psychometric assessments, medical data, and other record data. The cohort was recruited by contacting all mothers giving birth in all Christchurch maternity hospitals during a 4-month period in mid-1977. A total of 1310 children were born in Christchurch during this period, of whom the mothers of 1265 (96.6%) agreed to participate in the study. All data were collected by trained interviewers, via face-to-face or telephone interviews (in cases in which respondents were overseas). All study information was collected based on signed and informed consent from study participants.

EXPOSURE TO SINGLE PARENTHOOD FROM BIRTH TO THE AGE OF 16 YEARS

At each assessment to the age of 16 years, the parents of cohort members were queried as to the present composition of their family and were asked whether any changes to that family because of cohabitation, marriage, divorce, separation, or the death of a parent or stepparent had taken place during the assessment period. For the present study, cohort members were classified as having been exposed to single parenthood during

a particular year if their parent reported a period of single parenthood during that year. Reports of single parenthood were then summed across the period from birth to the age of 16 years to calculate an estimate of the number of years exposed to single parenthood.

MENTAL HEALTH OUTCOMES FOR THOSE AGED 21 TO 25 YEARS

At the age of 25 years, components of the Composite International Diagnostic Interview²⁷ were used to assess *DSM-IV* symptom criteria for major depression (MD), anxiety disorders (including generalized anxiety disorder, specific phobia, social phobia, agoraphobia, and panic disorders), and substance dependence (including alcohol, cannabis, and other illicit drugs). For the present analysis, participants were classified as having MD if they met *DSM-IV* diagnostic criteria for an MD episode at any time from the age of 21 to 25 years. Similarly, participants were classified as having anxiety disorder if they met criteria for any anxiety disorder during the same time. Also, participants were classified as having substance dependence if they met *DSM-IV* criteria for alcohol, cannabis, or other illicit substance dependence during the same time. Based on this questioning, 21.6% of the cohort met diagnostic criteria for MD, 18.2% for anxiety disorder, and 11.6% for substance dependence from the age of 21 to 25 years. These prevalence estimates for MD and anxiety disorder seem to be consistent with those from a similar birth cohort being studied in the Dunedin Multidisciplinary Health and Development Study. In that study, estimates of the 12-month point prevalence of MD in young adulthood were in the region of 17%, while anxiety disorder ranged between 18% and 24% and alcohol or cannabis dependence was in the region of 10%.²⁸⁻³⁰

Suicidal behavior from the age of 21 to 25 years was assessed by asking sample members whether they had ever thought about killing themselves or had attempted suicide during the assessment period and the frequency of such thoughts or attempts. Those individuals who reported having any suicidal thoughts or who reported having attempted suicide at least once in the assessment interval were classified as having suicidal ideation (12.5% of the sample at the age of 21-25 years) or having attempted suicide (2.1% of the sample at the age of 21-25 years).

EDUCATIONAL OUTCOMES FOR THOSE AGED 21 TO 25 YEARS

Cohort members were questioned concerning their history of enrollment in tertiary education and training and any educational and vocational qualifications obtained since the age of 21 years. This information was used to classify participants on 2 dichotomous measures of educational achievement from the age of 21 to 25 years: completion of a university degree (bachelor's level or greater) and attainment of any tertiary educational and vocational qualification.

ECONOMIC OUTCOMES FOR THOSE AGED 21 TO 25 YEARS

Sample members were questioned about their receipt of social welfare benefits from the age of 21 to 25 years. The percentage of cohort members who reported receiving an unemployment benefit, domestic purposes benefit (available to single parents with dependent children), or a sickness or disability benefit at any point from the age of 21 to 25 years served as the outcome measure (34.4% of the sample).

In addition, participants were also questioned as to the extent of any periods of unemployment from the age of 21 to 25

years. Participants who reported at least 1 month of unemployment from the age of 21 to 25 years were classified as having been unemployed (27.1% of the sample).

Also, at the age of 25 years, sample members were asked to estimate their personal gross income from all sources during the previous 12 months. This estimate served as the measure of personal income at the age of 25 years (mean, NZ\$31 391; SD, NZ\$20 177).

CRIMINAL BEHAVIOR OUTCOMES FOR THOSE AGED 21 TO 25 YEARS

Sample members were questioned concerning their involvement in criminal offending from the age of 24 to 25 years using the Self-report Delinquency scale,³¹ supplemented by additional survey items to assess the number of reported offenses for each year from the age of 21 to 22 to the age of 24 to 25 years. These data were used to derive 2 measures of self-reported crime: (1) the total number of property offenses reported from the age of 21 to 25 years, including vandalism, fire setting, breaking and entering, shoplifting and other theft, possession of stolen goods, and related offenses; and (2) the total number of violent offenses reported from the age of 21 to 25 years, including assault, fighting, use of a weapon, use of force, threatening behavior, and related offenses. These measures were summed to calculate a measure of the total number of property and violent offenses committed from the age of 21 to 25 years.

In addition, sample members were questioned about contacts with the police and judicial system from the age of 21 to 25 years. Individuals who reported being arrested or convicted of a criminal (nontraffic) offense during that time were classified as having a history of official judicial contact.

COVARIATE FACTORS

The following covariate factors were chosen from the database of the study based on their association with the exposure to single parenthood from birth to the age of 16 years or based on their association with the outcome measures. These covariate factors included the following.

Maternal age was recorded at birth. Maternal and paternal educational levels were recorded at birth using a 3-point scale reflecting the parent's highest level of educational attainment. A measure of family material living standards from birth to the age of 10 years was obtained using a global assessment made via interviewer rating. Ratings were made on a 5-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 to give a measure of typical family living standards during this period. Family socioeconomic status at birth was assessed using a 6-point scale developed for New Zealand by Elley and Irving.³² A measure of family problems was calculated using a count measure of 38 different measures of family disadvantage from birth to the age of 15 years, including measures of disadvantaged parental background, poor prenatal health practices and perinatal outcomes, and disadvantageous child-rearing practices.¹⁷

At the ages of 18 and 21 years, sample members were questioned about their experience of sexual abuse during childhood (aged < 16 years).³³ Questioning spanned an array of abusive experiences, from episodes involving noncontact abuse (eg, indecent exposure) to episodes involving attempted or completed intercourse. Sample members who reported an abusive episode were then questioned further about the nature and context of the abuse. Using this information, a 4-level scale was devised reflecting the most extreme form of sexual abuse re-

ported by the young person at either age. This classification was as follows: no sexual abuse (85.9% of the sample); noncontact abuse only (2.7%); contact sexual abuse not involving attempted or completed intercourse (5.1%); and attempted or completed oral, anal, or vaginal intercourse (6.3%).

Also at the ages of 18 and 21 years, sample members were asked to describe the extent to which their parents used physical punishment during childhood (aged < 16 years).³⁴ Separate questioning was conducted for mothers and fathers. This information was used to create a 4-level scale reflecting the most severe form of physical punishment reported for either parent: parents never used physical punishment (6.4% of the sample), parents rarely used physical punishment (11.2%), at least 1 parent used physical punishment regularly (78.0%), or at least 1 parent used physical punishment too often or too severely or treated the respondent in a harsh or an abusive manner (4.5%) (percentages do not total 100 because of rounding).

When sample members were aged 11 years, their parents were questioned about parental use of illicit drugs, including cannabis. Based on the responses to this questioning, 27.5% of the sample was classified as having parents who used cannabis or other illicit drugs. Also, at the age of 15 years, the young person's parents were asked if they had a record for criminal offending. Based on the responses to this questioning, 12.7% of the sample was classified as having a parental history of offending.

IQ was assessed at the ages of 8 and 9 years (and averaged across these ages) using the Wechsler Intelligence Scale for Children-Revised.³⁵

STATISTICAL ANALYSIS

The analysis was conducted in 2 stages. In the first stage, the bivariate associations between the estimated exposure to single parenthood from birth to the age of 16 years (classified into 4 levels: 0, 1-3, 4-7, and ≥ 8 years) and later outcomes were tested for significance using the Mantel-Haenszel χ^2 test of linearity for dichotomous outcomes (mental health, education, unemployment, welfare dependence, and arrest or conviction) and 1-way analysis of variance for continuous outcomes (annual income or property or violent offending). In the second stage, a series of regression models was developed to compare the associations between the extent of exposure to single parenthood and later outcomes before and after adjustment for covariates. For dichotomous outcomes, logistic regression models were fitted; for annual income, linear regression models were used; and for property or violent offending, negative binomial models were used. In all cases, the regression models were fitted using the 4-level classification of extent of exposure to single parenthood previously described. In addition, to test for sex differences in the association between exposure to single parenthood and outcomes, the regression models were extended to include sex \times exposure to single parenthood interactions.

For the unadjusted associations between exposure to single parenthood and each outcome variable, Pearson product moment correlation coefficients were calculated. For the statistically significant adjusted associations between exposure to single parenthood and outcomes, estimates of the population attributable risk were computed for each outcome variable. The population attributable risk describes the percentage reduction in the rate of the outcomes that would follow from elimination of single parenthood in the cohort.

To examine the sensitivity of the findings to alternative means of conceptualizing family instability, the analyses previously reported were repeated using a measure of number of changes of parents up to the age of 15 years as the exposure variable, in

Table 1. Associations Between Exposure to Single Parenthood (From Birth to the Age of 16 Years) and Outcomes in Young Adulthood (Aged 21-25 Years)

Outcome	No. of Years With a Single Parent by the Age of 16 y ^a				P Value ^b	r Value ^c
	0 (n = 629)	1-3 (n = 134)	4-7 (n = 107)	≥ 8 (n = 101)		
Mental health						
Depression	21.0	22.4	25.2	21.8	> .50	0.02
Anxiety disorder	15.6	21.6	23.4	25.7	< .01	0.10
Suicidal ideation	10.7	16.4	18.7	11.9	> .10	0.05
Suicide attempt	1.8	3.7	3.7	1.0	> .60	0.01
Substance dependence	9.7	17.7	17.8	8.9	> .10	0.04
Educational						
Gaining a university degree	29.5	11.2	9.4	6.9	< .001	-0.22
Gaining a tertiary qualification	66.9	50.0	40.2	44.6	< .001	-0.20
Economic						
Welfare dependence	29.6	35.1	47.7	53.5	< .001	0.18
Unemployed	26.6	28.4	29.9	31.0	> .20	0.03
Personal income by the age of 25 y, ×10 ³ NZ\$ ^d	33.3 (20.7)	31.0 (20.6)	27.2 (19.3)	25.3 (18.0)	< .001	-0.14
Criminal behavior						
Arrested or convicted	7.3	14.2	19.6	15.8	< .001	0.13
No. of property or violent offenses ^d	0.41 (3.22)	1.06 (5.12)	1.83 (7.24)	1.20 (4.99)	< .01	0.10

^aData are given as percentage of each group at the age of 21 to 25 years unless otherwise indicated.

^bUsing the Mantel-Haenszel χ^2 test for dichotomous measures and the 1-way analysis of variance for means.

^cPearson product moment correlation between outcome and categorical measure of exposure to single parenthood.

^dData are given as mean (SD).

place of the exposure to single parenthood variable. The measure of changes of parents is a count measure of the number of changes of parents experienced by the child up to the age of 15 years. Changes of parents included all changes resulting from parental separation or divorce, reconciliation, remarriage, death of a parent, fostering, and other changes of custodial parents.

SAMPLE SIZE AND SAMPLE BIAS

The present analyses are based on the sample of 971 study participants for whom complete data were available on the extent of exposure to single parenthood from birth to the age of 16 years. This sample represented 76.8% of the initial cohort of 1265 participants enrolled in the study. In addition, there was further sample attrition as a result of missing data on some of the covariates. In particular, data were missing for approximately 20% of the sample on the measure of IQ (Wechsler Intelligence Scale for Children-Revised) as a result of historical budgetary constraints.

The following approaches were used to address possible selection bias resulting from sample attrition and missing data. First, missing data estimation methods were used to estimate ability scores for those children with missing values on the IQ measure (Wechsler Intelligence Scale for Children-Revised). Missing value estimation was conducted using the estimation procedure of Stata, release 8.0,³⁶ under the assumption that the data were missing at random. Second, to address issues of selection bias, the data weighting methods described by Carlin et al³⁷ were applied using a 2-stage process. In the first stage, the obtained samples with complete data in each analysis were compared with the remaining sample members on a series of sociodemographic measures collected at birth. This analysis suggested that there were small, but statistically significant ($P = .007$), tendencies for the obtained samples to underrepresent individuals from socially disadvantaged backgrounds, characterized by low parental education, low socioeconomic status, and single parenthood. In the second stage, the sample was stratified based on these characteristics to estimate the probability

of inclusion in the sample for each analysis and was reanalyzed with the data for individuals weighted by the inverse of the probability of sample inclusion. These analyses produced essentially the same pattern of results to those reported herein, suggesting that the conclusions of this study were unlikely to have been influenced by selection bias.

RESULTS

ASSOCIATIONS BETWEEN EXPERIENCING SINGLE PARENTHOOD IN CHILDHOOD AND OUTCOMES IN YOUNG ADULTHOOD

Table 1 shows the cohort classified into 4 groups reflecting the extent of exposure to single parenthood before the age of 16 years (see the "Statistical Analysis" subsection in the "Methods" section). These groups range from those with no exposure to those who spent 8 or more years in a single-parent family. For each group, Table 1 reports on outcomes on a series of measures assessed during young adulthood, including mental health, education, economic, and criminal behavior. Table 1 shows the following.

1. Mental health outcomes. Increasing duration of exposure to single parenthood before the age of 16 years was significantly associated with higher rates of anxiety disorder from the age of 21 to 25 years. However, duration of exposure to single parenthood was not significantly associated with depression, suicidal ideation, suicide attempt, or substance dependence.

2. Educational outcomes. Increasing duration of exposure to single parenthood before the age of 16 years was also significantly associated with poorer educational outcomes from the age of 21 to 25 years, includ-

Table 2. Associations Between Exposure to Single Parenthood (From Birth to the Age of 16 Years) and Outcomes (Aged 21-25 Years) Before and After Adjustment for Covariates

Outcome	Unadjusted Data		Adjusted Data		Significant Covariates ^a
	B Value, Unstandardized Regression Coefficient (SE)	P Value	B Value, Unstandardized Regression Coefficient(SE)	P Value	
Mental health					
Anxiety disorder	0.23 (0.07)	< .01	0.17 (0.08)	< .05	7 and 8
Educational					
Gaining a university degree	-0.70 (0.11)	< .001	-0.16 (0.13)	> .10	2, 3, 5, 6, and 11
Gaining a tertiary qualification	-0.39 (0.06)	< .001	-0.13 (0.08)	> .10	3, 6, and 11
Economic					
Welfare dependence	0.35 (0.06)	< .001	0.16 (0.07)	< .05	4, 7, and 9
Personal income	-2.70 (0.63)	< .001	-0.38 (0.77)	> .60	1, 3, 4, 6, 7, and 11
Criminal behavior					
Arrested or convicted	0.36 (0.09)	< .001	0.08 (0.11)	> .50	6 and 10
Property or violent offenses	0.53 (0.16)	< .01	0.25 (0.16)	> .10	6 and 9

^aCovariates are as follows: 1, maternal age; 2, maternal education; 3, paternal education; 4, family living standards from birth to the age of 10 years; 5, socioeconomic status at birth; 6, family problems; 7, childhood sexual abuse; 8, childhood physical abuse; 9, parental illicit drug use; 10, parental offending; and 11, IQ.

ing lower rates of degree attainment and failure to gain any tertiary qualification.

3. Economic outcomes. Increasing duration of exposure to single parenthood before the age of 16 years was also significantly associated with economic outcomes at the age of 21 to 25 years, including being welfare dependent, and with personal income at the age of 25 years. However, duration of exposure to single parenthood was not significantly associated with being unemployed from the age of 21 to 25 years.

4. Criminal behavior outcomes. Increasing duration of exposure to single parenthood before the age of 16 years was significantly associated with criminal behavior outcomes from the age of 21 to 25 years, including arrest or conviction and the number of self-reported property and violent criminal offenses.

The associations between single parenthood and the outcome measures proved to be relatively weak. This fact is illustrated by the correlation coefficients shown in Table 1. The correlations ranged (in absolute value) from 0.01 to 0.22 (median, 0.10).

ADJUSTMENT FOR CONFOUNDING FACTORS

A possible limitation of the results in Table 1 is that the apparent associations between exposure to single parenthood and later outcomes could be due to third or confounding factors that were related to single parenthood and later outcomes. To address this issue, the significant associations in Table 1 were adjusted for a series of confounding factors using logistic, negative binomial, and least squares regression (see the "Statistical Analysis" subsection in the "Methods" section). These confounding factors included maternal age, maternal and paternal education, family living standards from birth to the age of 10 years, socioeconomic status at birth, number of family problems, exposure to childhood sexual abuse, exposure to childhood physical abuse, parental illicit drug use, parental offending, and IQ. **Table 2** compares the parameter estimates of the effect of exposure to single

parenthood on later outcomes before and after adjustment for confounding factors and lists significant ($P < .05$) confounding factors for each outcome. Table 2 shows that, when due allowance was made for social and contextual factors associated with single parenthood, the duration of exposure to single parenthood during childhood was largely unrelated to later outcomes. There were only 2 possible exceptions to this trend; after adjustment, significant associations ($P < .05$) remained between exposure to single parenthood and later anxiety disorder and welfare dependence. At the same time, given the many comparisons made in Table 2, these associations could be due to chance variation as a result of multiple tests of significance. To address this issue, a Bonferroni-adjusted³⁸ P value ($P < .007$) was used to correct for multiple ($n = 7$) tests of significance. In this instance, the adjusted associations between exposure to single parenthood and later anxiety disorder and between single parenthood and welfare dependence were not statistically significant ($P > .007$) using the Bonferroni correction.

To place the results of the covariate adjustment into perspective, the covariate-adjusted parameters for anxiety disorder and welfare dependence were used to calculate population attributable risks. The population attributable risk for anxiety disorder was 9.6% (95% confidence interval, 0%-17.1%); and for welfare dependence, 6.5% (95% confidence interval, 0%-14.2%).

SUPPLEMENTARY ANALYSES

To account for the effects of possible interactions between sex and exposure to single parenthood on later outcomes, the models previously described were extended to include exposure to single parenthood \times sex interaction terms. These analyses revealed no evidence of significant interactions between exposure to single parenthood and sex for any of the outcomes (P value ranged from .25-.68), suggesting that the associations between exposure to single parenthood during childhood and outcomes in young adulthood did not differ for males and females.

In addition, further analyses were conducted using more discrete measures of welfare dependency in place of the overall measure of welfare dependency, consisting of dichotomous measures of specific classes of welfare benefits, including unemployment, domestic purposes (single parenthood) benefit, and sickness or disability benefit. The results of these analyses were consistent with those using the broader measure of welfare dependency.

Furthermore, the analyses involving dichotomous mental health outcomes previously described were repeated using symptom count measures of depression and anxiety and a count measure of number of suicide attempts. These analyses revealed the same pattern of results as the dichotomous measures.

Finally, to account for alternative means of conceptualizing family instability, the analyses previously reported were repeated substituting a measure of changes of parents up to the age of 15 years for the exposure to single parenthood measure. For all dependent measures barring suicidal ideation and unemployment, a statistically significant ($P < .05$) bivariate association was found between number of family changes and each of the outcome measures. Controlling for potentially confounding factors previously described reduced each of these associations to statistical nonsignificance ($P > .05$), suggesting that, when due allowance was made for social and contextual factors associated with changes of parents, the number of parental changes during childhood was largely unrelated to later outcomes.

COMMENT

Herein, we have used data gathered over a 25-year longitudinal study to examine the linkages between exposure to single parenthood during childhood and psychosocial adjustment in young adulthood (aged 21-25 years). The principal focus of this analysis was on ascertaining the extent to which exposure to single parenthood during childhood had long-term deleterious effects on personal adjustment and life course outcomes. The findings of this analysis and their implications are outlined.

In agreement with much previous research into the effects of single parenthood on children, increasing exposure to a single-parent family in childhood was associated with increasing risks of later anxiety, poorer educational and economic outcomes, and criminal offending. However, these associations were rather weak, with correlation coefficients ranging from 0.01 to 0.22 (median, 0.10). These results imply that, typically, variation in exposure to single parenthood accounted for about 1% of the variation in outcomes in adulthood. These statistics reflected the facts that (1) most of those exposed to single parenthood did not develop later difficulties and (2) many of those developing later difficulties were not exposed to single parenthood.

Further analysis suggested that most of the linkages between single parenthood and later adjustment were likely to be spurious and to reflect the effects of confounding factors associated with exposure to single parenthood. In particular, exposure to single parenthood was

associated with a series of correlated disadvantages, including lower maternal age, lower levels of parental education, poorer socioeconomic status, more family problems, exposure to childhood sexual and physical abuse, parental illicit drug use and criminal offending, and lower IQ. When these disadvantages were taken into account, exposure to single parenthood was largely unrelated to adjustment in young adulthood. These findings clearly suggest that the associations between single parenthood and later adverse outcomes largely reflected the social context within which single parenthood occurred, rather than the direct effect of single parenthood on individual functioning. These results were supported by sensitivity analyses that used a measure of changes of parents in place of the measure of exposure to single parenthood and generated a similar pattern of results.

As noted previously, there have been ongoing social and political debates that have focused on the need to reduce rates of single parenthood to increase the life opportunities of children.^{10,11} In general, the results of this 25-year longitudinal study do not support this focus. The weight of the evidence suggests that, for this cohort, single parenthood was largely a marker for an underlying series of social, educational, and familial disadvantages and that when these disadvantages were taken into account, single parenthood was not a predictor of outcomes. All of this evidence points in the direction of policies that focus on the functioning of families rather than on a count of the number of parents in the home. Despite strong claims in the literature^{10,23} that identify exposure to single parenthood as a major cause of life course difficulties, these findings make it clear that changing patterns of single parenthood are likely to be a weak policy lever, with large changes in family structure required to achieve relatively small gains in terms of reducing risks of later adverse outcomes.

These conclusions need to be considered in light of possible limitations of the study. These limitations include the fact that the study was based on a specific cohort studied in a specific social context, the possibility that the extent of exposure to single parenthood may be underascertained, and the possible undercontrol of associations. In addition, it could be proposed that a number of the social and contextual factors associated with single parenthood in the present study may in fact be the consequences of single parenthood. If this were the case, the analysis reported herein could potentially overcontrol the linkages between exposure to single parenthood and later outcomes.

Despite these limitations, the findings of this study suggest that although exposure to single parenthood during childhood was somewhat prognostic of adjustment in young adulthood, these associations largely reflected the family and social context within which single parenthood tended to occur, rather than the direct effects of family structure on life course outcomes.

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REFERENCES

1. Bumpass LL, ed. *Social Change and the American Family*. New York: New York Academy of Sciences; 2004.
2. Headey B, Scott D, de Vaus D. Domestic violence in Australia: are women and men equally violent? *Aust Soc Monitor*. 1999;2(3):57-62.
3. Kerr MA, Black MM, Krishnakumar A. Failure-to-thrive, maltreatment and the behavior and development of 6-year-old children from low-income, urban families: a cumulative risk model. *Child Abuse Negl*. 2000;24(5):587-598.
4. Coontz S, ed. *Historical Perspectives on Family Diversity*. New York, NY: Oxford University Press Inc; 2000.
5. Widom CS, Raphael KG, DuMont KA. The case for prospective longitudinal studies in child maltreatment research: commentary on Dube, Williamson, Thompson, Felitti, and Anda (2004). *Child Abuse Negl*. 2004;28(7):715-722.
6. Cherlin AJ. American marriage in the early twenty-first century. *Future Child*. 2005; 15(2):33-55.
7. Haskey J. Estimated numbers of one-parent families and their prevalence in Great Britain in 1991. *Popul Trends*. 1994;(78):5-19.
8. Hetherington EM. *Coping With Divorce, Single Parenting, and Remarriage: A Risk and Resiliency Perspective*. Hillsdale, NJ: Lawrence A Erlbaum Associates; 1999.
9. Serbin LA, Karp J. The intergenerational transfer of psychosocial risk: mediators of vulnerability and resilience. *Annu Rev Psychol*. 2004;55:333-363.
10. Morgan P. *Family Matters: Family Breakdown and Its Consequences*. Wellington: New Zealand Business Roundtable; 2004.
11. Amato PR, Keith B. Parental divorce and the well-being of children: a meta-analysis. *Psychol Bull*. 1991;110(1):26-46.
12. Lipman EL, Boyle MH, Dooley MD, Offord DR. Child well-being in single-mother families. *J Am Acad Child Adolesc Psychiatry*. 2002;41(1):75-82.
13. Guttman J, Rosenberg M. Emotional intimacy and children's adjustment: a comparison between single-parent divorced and intact families. *Educ Psychol*. 2003; 23(4):457-472.
14. Jorm AF, Korten AE, Rodgers B, Jacomb PA, Christensen H. Sexual orientation and mental health: results from a community survey of young and middle-aged adults. *Br J Psychiatry*. 2002;180:423-427.
15. Martinez CR, Forgatch MS. Adjusting to change: linking family structure transitions with parenting and boys' adjustment. *J Fam Psychol*. 2002;16(2):107-117.
16. O'Connor TG, Dunn J, Jenkins JM, Pickering K, Rasbash J. Family settings and children's adjustment: differential adjustment within and across families. *Br J Psychiatry*. 2001;179:110-115.
17. Fergusson DM, Horwood LJ, Lynskey MT. The childhoods of multiple problem adolescents: a 15-year longitudinal study. *J Child Psychol Psychiatry*. 1994; 35(6):1123-1140.
18. Roberts I. Sole parenthood and the risk of child pedestrian injury. *J Paediatr Child Health*. 1994;30(6):530-532.
19. Sharland M, Atkinson P, Maguire H, Begg N. Lone parent families are an independent risk factor for lower rates of childhood immunisation in London. *Commun Dis Rep CDR Rev*. 1997;7(11):R169-R172.
20. Gallagher M. *Can Government Strengthen Marriage? Evidence From the Social Sciences*. New York, NY: Institute for American Values; 2004.
21. McLanahan SS, Booth K. Mother-only families: problems, prospects, and politics. *J Marriage Fam*. 1989;51(3):557-580.
22. McLanahan SS, Sandefur G. *Growing Up With a Single Parent: What Hurts, What Helps*. Cambridge, MA: Harvard University Press; 1994.
23. Farrington DP, Gallagher B, Morley L, St Ledger RJ, West DJ. Unemployment, school leaving, and crime. *Br J Crime*. 1986;26(4):335-356.
24. Weitoft GR, Hjern A, Haglund B, Rosen M. Mortality, severe morbidity, and injury in children living with single parents in Sweden: a population-based study. *Lancet*. 2003;361(9354):289-295.
25. Fergusson DM, Horwood LJ. The Christchurch Health and Development Study: review of findings on child and adolescent mental health. *Aust N Z J Psychiatry*. 2001;35(3):287-296.
26. Fergusson DM, Horwood LJ, Shannon FT, Lawton JM. The Christchurch Child Development Study: a review of epidemiological findings. *Paediatr Perinat Epidemiol*. 1989;3(3):302-325.
27. World Health Organization. *Composite International Diagnostic Interview (CIDI)*. Geneva, Switzerland: World Health Organization; 1993.
28. Jaffee SR, Moffitt TE, Caspi A, Fombonne E, Poulton R, Martin J. Differences in early childhood risk factors for juvenile-onset and adult-onset depression. *Arch Gen Psychiatry*. 2002;59(3):215-222.
29. Fergusson DM, Poulton R, Horwood LJ, Milne B, Swain-Campbell N. *Comorbidity and Coincidence in the Christchurch and Dunedin Longitudinal Studies: Report Prepared for the New Zealand Ministry of Social Development, and Ministry of Education and the Treasury*. Wellington: New Zealand Government; 2004.
30. Arseneault L, Moffitt T, Caspi A, Taylor P, Silva P. Mental disorders and violence in a total birth cohort. *Arch Gen Psychiatry*. 2000;57(10):979-986.
31. Elliott DS, Huizinga D. Improving self-reported measures of delinquency. In: Klein MW, ed. *Cross-national Research in Self-reported Crime and Delinquency*. Norwell, MA: Kluwer Academic Publishers; 1989:155-186.
32. Elley WB, Irving JC. Revised socio-economic index for New Zealand. *N Z J Educ Stud*. 1976;11(1):25-36.
33. Fergusson DM, Lynskey MT, Horwood LJ. Childhood sexual abuse and psychiatric disorder in young adulthood, I: prevalence of sexual abuse and factors associated with sexual abuse. *J Am Acad Child Adolesc Psychiatry*. 1996;35(10): 1355-1364.
34. Fergusson DM, Lynskey MT. Physical punishment/maltreatment during childhood and adjustment in young adulthood. *Child Abuse Negl*. 1997;21(7):617-630.
35. Wechsler D. *Manual for the Wechsler Intelligence Scale for Children—Revised*. San Antonio, TX: Psychological Corp; 1974.
36. *Stata Statistical Software: Release 8.0* [computer program]. College Station, TX: Stata Corp; 2003.
37. Carlin JB, Wolfe R, Coffey C, Patton GC. Tutorial in biostatistics: analysis of binary outcomes in longitudinal studies using weighted estimating equations and discrete-time survival methods: prevalence and incidence of smoking in an adolescent cohort. *Stat Med*. 1999;18(19):2655-2679.
38. Grove WM, Andreasen NC. Simultaneous tests of many hypotheses in exploratory research. *J Nerv Ment Dis*. 1982;170(1):3-8.