Parental hours of work and child behavioural and emotional outcomes

Abstract

This research uses cycles 1 to 4 of the National Longitudinal Survey of Children (NLSCY) to examine the relationship between parental hours of work and non-standard work schedules, the family environment children experience as measured by family functioning, parenting, and parental depression, and children's behavioural and emotional scores. Children who were four to eleven years of age between 1994 to 2001 and for whom at least two observations are available are selected to estimate the impact of hours of work and those same children whose parents were both working (was working for single-parents) are selected for the analysis of shift work. Children's scores include hyperactivity, conduct disorder, indirect aggression, and emotional disorder scores. The study exploits the longitudinal feature of the data and relies on changes in parental work schedules over time to identify within unit effects.

The results indicate that long hours of work are a strain on parental outcomes in two parent families, although they do not appear to have consistent direct impacts on child outcomes. Children in single parent families do worse on a number of measures and so do their parents, but the outcomes are not systematically related to hours of work. As for shift work, night and evening shifts in two parent families appear to worsen certain child outcomes, while maternal split and on call shifts worsen parental depression and parenting. On the other hand, parental outcomes tend to be improved for children living in single parent families when the parent works night shifts. The findings therefore suggest that hours of work and shift work can be a problem, but in two parent families rather than in single parent families. Further, the impact of shift work is not negative for all types of shift work nor is it always the same for boys and girls.

May 2005

Lynda Gagné
University of Victoria

Paper prepared for presentation at:

Third Conference of the Canadian Research Data Centre Network
Montréal, 19 and 20 May, 2005

CEA 39th Annual Meetings
Hamilton, 27 – 29 May, 2005

Disclaimer:

The research and analysis in this paper are based on data from Statistics Canada. However, the opinions expressed do not represent the views of Statistics Canada.

Draft:

This paper is a preliminary draft for discussion purposes and should not be cited.

Parental hours of work and child behavioural and emotional outcomes

Introduction

There has been a dramatic increase in the employment of women with children over the last few decades For example, in 1976, 39.2 percent of women with children under the age of 16 were employed, while in 2003, 71.7 percent were employed. The corresponding percentages for women with children under the age of six were 31.5 and 65.6. ("Women in Canada: Work chapter updates 2003", 2004). This increase in the employment of mothers has been accompanied by widespread concerns among Canadian parents and policy makers over the conflicts families experience in reconciling work with child rearing responsibilities.

Work-family conflicts can generate undue stress in families. Such stress could adversely affect the emotional and cognitive development of children. In the 2000 wave of the General Social Survey, 34 percent of working Canadians identified too many demands or hours as the most common source of workplace stress. When only workers working over 40 hours per week were considered, 47 percent identified excessive demands or hours as the most common source of workplace stress. This source of stress was the one most frequently identified as the trigger for workplace stress. Furthermore, shift workers, younger women, and workers with children 14 and under in the household were more likely to identify too many demands or hours as a workplace stressor than other workers, after controlling for various factors. (Williams, 2003)

Shift work or irregular schedules have been associated with a higher prevalence of physical and mental health problems. Tabulations from the 2000/01 Canadian Community Health Survey (CCHS) indicate that 30 percent of men and 26 percent of women work shifts. The prevalence of shift work is higher for younger workers, less educated workers, unmarried workers, and for workers in sales or service industries and blue collar workers. Workers with a lower household income are also more likely to be employed as shift workers. (Shields, 2002) Given that shift workers are relatively more deprived than non-shift workers on a number of measures, the association between shift work and physical and mental health outcomes is not necessarily causal, and could merely represent the impact of this relative deprivation, but warrants investigation.

This study uses data from the first four cycles of the National Longitudinal Survey of Children and Youth (NLSCY 94-95 to 01-02) to examine the relationship between parental hours of work and non-standard work schedules, the family environment children experience as measured by family functioning, parenting, and parental depression, and children's behavioural and emotional scores. Children who were four to eleven years of age between 1994 to 2001 and for whom at least two observations are available are selected to estimate the impact of hours of work and those same children whose parents were both working (was working for single-parents) are selected for the analysis of shift work. Children's scores include hyperactivity, conduct disorder, indirect aggression, and emotional disorder scores. The study exploits the longitudinal feature of the data and relies on changes in parental work schedules over time to identify within unit effects. Within units effects are estimated using a fixed effects estimator. While the use of a fixed effect estimator prevents us from identifying the impact of variables that are relatively constant over time, fixed effect estimators rely on changes in the explanatory

variables of interest as experienced by the child, decreasing or eliminating the possibility that estimated effects are confounded with the effect of unobserved or omitted variables that are correlated with both explanatory variables and outcomes.

The remainder of this paper consists of five sections. The background section gives a brief overview of the literature on parental hours of works and parental and child outcomes. The data description section describes the NLSCY, the longitudinal sample, and the cycle 3 cross sectional sample. The methods section describes the empirical approach. The results section presents the empirical results. The final section concludes.

Background

A considerable amount of research on the impact of parental (usually maternal) work on family outcomes has been conducted over the years. Much of the earlier research was conducted using small unrepresentative field samples. More recently, as the U.S. based NLSY79 Children and Young Adults matured, a greater focus was placed on exploiting this resource to examine questions related to child outcomes. The NLSY79 is a nationally representative sample of 12,686 young men and women who were 14-22 years old in 1979. In 1986, a survey of all children born to NLSY79 female respondents began. The NLSY79 Children and Young Adults (subsequently referred to as NLSY) includes a variety of measures for these children, including cognitive, socioemotional, and physiological assessments. ("National longitudinal surveys") While the survey contains a large number of children from all over the U.S., because the survey is based on children of NLSY79 female respondents, it is not a nationally representative survey of U.S. children. Children in that survey tend to over-represent those with parents that have a greater propensity to have children at an earlier age, usually parents from lower socioeconomic backgrounds.

Statistics Canada began a nationally representative survey of children in 1994. The National Longitudinal Survey of Children and Youth (NLSCY) has been administered every two years since. This survey also collects a variety of measures for children, including cognitive, behavioural, emotional, and health assessments. Cycle 1 of the survey included children aged 0 to 11. New cohorts of children aged 0 to 1 were added at cycles 2 and 3. At cycle 4, the sample included three longitudinal cohorts each originating from one of the previous cycles. Cycle 5 of the survey has recently been made available. Both the NLSY and the NLSCY have been used to explore the determinants of child development and well-being, although research that uses the NLSCY to explore the impact of hours of work and/or shift work on children is still quite limited.

Much of the research on parental work and child outcomes has focussed on trying to measure the impact of or associations between *maternal* work and child outcomes. Some of the research reviewed here focussed on particular demographic groups, while other research looked at all children. Some of the research looked at the impact of early maternal employment, while other research looked at current employment, or longer horizons of maternal employment. Most of the research estimated OLS equations. A few coded the dependent variables as binary and used a probit or logistic regression. One study used hierarchical multiple regression, another used path analysis, and one used

seemingly unrelated regression equations. The studies are summarized in table form in appendix I.

Some of the literature suggests that maternal employment has detrimental impacts on preschoolers cognitive and/or behavioural outcomes (Baum, 2003, 2004; Baydar & Brooks-Gunn, 1991; Berger, Hill, & Waldfogel, 2005; Blau & Grossberg, 1992; Brooks-Gunn, Han, & Waldfogel, 2002; Datcher-Loury, 1988; Desai, Chase-Landale, & Michale, 1989; Ermisch & Francesconi, 2000; Fleisher, 1977; Gregg, Washbrook, Propper, & Burgess, 2005; Han, Waldfogel, & Brooks-Gunn, 2001; Harvey, 1999; Heyns & Catsambis, 1986; Hill & O'Neill, 1994; Lefebvre & Merrigan, 1998; Lefebvre & Merrigan, 1998; Milne, Myers, Rosenthal, & Ginsburg, 1986; Parcel & Menaghan, 1994; Ruhm, 2004) (Baum, 2003; Baydar and Brooks-Gunn, 1991; Blau and Grossberg, 1992; Desai, Chase-Lansdale, and Michael, 1989; Han, Waldfogel, and Brooks-Gunn, 2001; Harvey, 1999; Hill and O'Neill, 1994; Hill and Duncan, 1987; Ruhm, 2001), although many of these studies qualify the effects as small (Baum, 2004; Gregg et al., 2005; Harvey, 1999; Lefebvre & Merrigan, 1998; Parcel & Menaghan, 1994).

While some of the research finds enduring impacts of early maternal employment[1] (Baydar & Brooks-Gunn, 1991; Belsky & Eggebeen, 1991; Berger et al., 2005; Brooks-Gunn et al., 2002; Desai et al., 1989; Ermisch & Francesconi, 2000; Gregg et al., 2005; Han et al., 2001; Harvey, 1999; Parcel & Menaghan, 1994; Ruhm, 2004), other researchers find that negative impacts of maternal employment in the first year after a child's birth are offset by positive effects in the second and subsequent years (Blau & Grossberg, 1992). Other researchers find no negative impacts on child outcomes, or qualify the negative impacts as small (Baum, 2004; Greenstein, 1993; Gregg et al., 2005; Harvey, 1999; Lefebvre & Merrigan, 1998; Leibowitz, 1977; Murnane, Maynard, & Ohls, 1981; Parcel & Menaghan, 1994). (Vandell & Ramanan, 1992) find that in low-income families, early maternal employment positively predicts children's' math achievement, and that recent maternal employment positively predicts children's reading achievement. Other researchers (Haveman, Wolfe, & Spaulding, 1991) find that mother's work is a significant determinant of high school completion. In their review, (Parcel & Menaghan, 1994) suggest that the dangers of maternal employment to children when they are young have been over generalized.

Some studies examine whether the impact of maternal work is related to her skill level or her socio-economic status (Datcher-Loury, 1988; Fleisher, 1977; Gagné, 2002). Datcher-Loury, Fleisher, and Gagné find that mother's home time is associated with better child outcomes when mothers are relatively well educated. Fleisher finds that this exists for boys. However, (Greenstein, 1995) does not find this relationship.

There is currently very little research that specifically looks at the impact of parental work schedules on child outcomes (Presser, 2003). Presser reviews these few studies, most of which find negative impacts of non-standard hours, although some of the studies suggested positive impacts. It is unclear whether the studies included comprehensive controls. The NLSCY was used in two studies (Lefebvre & Merrigan, 1998; Strazdins, Korda, Lim, Broom, & D'Souza, 2004) of the impact of non-standard work schedules on

[1] Except for Ermisch and Francesconi (2000), "enduring" impacts here generally refers to periods of two to five years. The NLSY data had not matured enough for most studies to look at longer periods.

children. Lefebvre and Merrigan (1998b) used cycle 1 of the NLSCY, while Strazdins et al. used cycle 2. Both studies found negative impacts of non-standard schedules. Both studies relied on cross-sectional analysis and summarized shift work into one measure (non-standard) schedule. While Lefebvre and Merrigan looked at effects of non-standard schedules on cognitive and behavioural outcomes eparately, Strazdins et al. combined behavioural scores into one measure defined as any behavioural problem.

This study differs from most other studies in that it uses up to four sets of observations on each particular child to estimate the effect of work hours and shift work on behavioural outcomes in a longitudinal framework. Control variables include seven separate categories of shift work for both mothers and fathers in families where both parents or the single parent work and four separate categories of hours of work, including none, for both mother and fathers. Separate fixed effect equations are estimated for each behavioural outcome (hyperactivity, conduct disorder, indirect aggression, and emotional disorder) and for three measures of parenting or family emotional health (PMK depression, ineffective parenting, and family dysfunction).

Data

This study uses the first four cycles of the NLSCY. Cycle 1 data were gathered in 1994-95 and subsequent cycles were obtained at two year intervals with cycle 4 data being gathered in 2000-01. Children for whom all child outcomes measures were available at least twice were selected for the analysis. Given that the behavioural scores chosen were based on questions of children aged four to eleven, the sample is limited to that age group. Table 1 shows the distribution of children by cycle.

Table 1
Sample Representation by Cycle

Frequency	Cycles
2,482	3 and 4
2,367	1 and 2
1,757	1, 2, and 3
1,566	2, 3, and 4
1,191	all four cycles
616	2 and 3
235	2 and 4
232	1 and 3
180	1, 2, and 4
132	1, 3, and 4
34	1 and 4
10,792	

Note: Sample weights not used

The full sample covers 10,792 children in 8,411 families, and includes a total of 27,601 observations. The shift-work sample is smaller, with 19,685 observations on 9,110 children. While the sample sizes appear large, large sample sizes are required for fixed effect estimations to obtain statistically significant estimates. This is because estimated impacts of explanatory variables are based on those observations where working conditions (hours, shifts) changed from one observation for the unit to another. As

people tend to maintain their jobs and working conditions over time, a large sample is required to have a sufficient number of observations for units that experienced change.

Tables 2 and 3 show unweighted means and overall and within unit standard deviations for the dependent and independent variables for the full sample. As would be expected, the standard deviation for within units is usually smaller than the overall standard deviation and the differences in standard deviations for child rather than household specific variables increases when the unit of analysis is the child rather than the household.

Table 2

Child & Family Outcomes & Non-Work Explanatory Variables

	Mean	*SD Overall*	*SD Within*
Child Outcome Deciles			
Hyperactivity score	5.02	2.95	1.58
Conduct disorder score	4.30	3.30	1.93
Indirect aggression score	3.90	3.47	2.23
Emotional disorder score	4.79	3.06	1.81
Parenting/Family Outcomes Scores			
Depression score	4.38	5.26	3.15
Ineffective parenting score	8.77	3.63	1.97
Family dysfunction score	8.27	4.96	3.03
Other Controls			
Presence of non-biological parent	0.07	0.25	0.12
PMK age	35.27	5.36	1.78
Male PMK	0.07	0.25	0.15

Note: sample weights not used

The behavioural scores shown in table 2 have been transformed into deciles by cycle, child age, and child gender. This transformation was done as child development trajectories indicate that problem behaviour, except for emotional disorder, tends to improve as the child ages and differs significantly by gender. The transformation also takes cycle into consideration to insure that cycle-related differences (if any) are accounted for. The deciles provides a "peer-group" ranking for the child that is easy to interpret. While the theoretical mean for the deciles should be equal to 5.5, the actual means differ from 5.5 as the distribution does not necessarily neatly fit into groups each equal to $1/10^{th}$ of the sample. Parenting and other family outcomes are included in the analysis because they may be impacted by work hours or schedules, and/or because they have been identified as having a strong correlation with child behavioural outcomes. The latter claim is particularly true of the 'ineffective parenting score' variable, and somewhat less true of the (PMK) depression variable. Other family characteristics are treated as fixed.

Table 3 shows how the sample is distributed across the various parental work hours and shift work. The table indicates that 22% of the observations consisted of children living in two parent families with a mother who did not engage in market work. Similarly, 5% of the observations consisted of children living in two parent families with a father who did not engage in market work, and 4% of the observations consisted of children living in single parent families where the single parent did not engage in market work. Adding up the percentages for the hours of work distribution for mothers (or fathers) to the

percentages for the hours of work distribution for single parents yields 100%. The shift work percentages add up to more than 100% as a person could have identified more than one type of shift work. The variable "no shift work" includes children whose parents who do not work[2]. In other words, 33% of all children in the sample live in households where the mother works, but does not work shift work. As children are the unit of analysis, means and percentages should always be interpreted as the experience of the children, not that of the parents. A more detailed description of the dependent and independent variables is included in appendix II.

Table 3
Work Variables

	Mother			Father			Single Parent		
	Means	*SD Overall*	*SD Within*	*Means*	*SD Overall*	*SD Within*	*Means*	*SD Overall*	*SD Within*
Hours of Work									
Not at work	0.22	0.41	0.23	0.05	0.21	0.14	0.04	0.21	0.12
Works part-time	0.23	0.42	0.25	0.02	0.14	0.10	0.02	0.16	0.10
Works 30-49 hrs/wk	0.37	0.48	0.27	0.54	0.50	0.29	0.07	0.25	0.15
Works 49+ hours/wk	0.04	0.19	0.13	0.25	0.43	0.25	0.01	0.08	0.06
Shift Work - Full Sample*									
No shift work**	0.55	0.50	0.28	0.14	0.35	0.16	0.09	0.29	0.16
Works evenings	0.04	0.20	0.14	0.03	0.18	0.13	0.01	0.08	0.06
Works nights	0.01	0.11	0.07	0.02	0.13	0.08	0.00	0.05	0.04
Works rotating shifts	0.06	0.24	0.15	0.10	0.30	0.17	0.01	0.10	0.07
Works split shifts	0.01	0.08	0.06	0.01	0.08	0.06	0.00	0.04	0.03
Works on call	0.01	0.12	0.09	0.02	0.12	0.09	0.00	0.05	0.04
Works irregular shifts	0.07	0.25	0.18	0.09	0.29	0.19	0.01	0.10	0.07
Works week-ends	0.25	0.43	0.26	0.38	0.49	0.28	0.04	0.20	0.13

* Shift work categories are not mutually exclusive: someone who works nights could be on call, etc.

** Includes not at work

Note: sample weights not used

Methods

Estimates presented in this paper are derived from the fixed effects model. This model can be used with longitudinal data to exploit the availability of repeated measurement for the unit of analysis and addresses issues of omitted variables bias by assuming that unobserved heterogeneity can be modeled as a fixed effect over repeated measurements on the unit of analysis. Equation (1) describes the fixed effect model.

$$(1) \qquad y_{jt} = \boldsymbol{X}_{jt}\beta + \theta_j + \zeta_{jt}$$

The subscript t refers to a particular time period or cycle. Equation (1) includes the unobserved fixed effect θ_j which is constant over the repeated measurements and may reflect either child-specific or family-specific effects. The error term ζ_{jt} represents the time-varying unobserved factor or error term, which is assumed to have a expected value of zero at each period, conditional on $\boldsymbol{X}_{jt}$ and θ_j. The model allows for correlation between θ_j and the (observed) explanatory variables contained in $\boldsymbol{X}_{jt}$. This feature of the fixed effects model is in contrast with that of the random effects model, which assumes there is no such correlation (Wooldridge, 2002). If the concern is that OLS coefficients may be biased because unobservable factors are correlated with regressors, then the fixed effects model is more appropriate.

[2] In the shift work results section, that variable only includes children of workers who do not work shifts as children of non-workers are excluded from the analysis.

Taking the average of equation (1) over the repeated measurements for each unit of observation yields:

(2) $y_j = \boldsymbol{X}_j\beta + \theta_j + \zeta_j$

Each term in the equation above represents the average of all terms over the repeated measurements for each unit of observation.

Subtracting equation (2) from equation (1) yields:

(3) $y_{jt} - y_j = (\boldsymbol{X}_{jt} - \boldsymbol{X}_j)\beta + (\zeta_{jt} - \zeta_j)$

The unobserved fixed effect θ_j drops from the equation, thereby removing the correlation between the error term and the regressors, and equation (3) is estimated using OLS. Note, however, that any variable in $\boldsymbol{X}$ which is fixed over time, such as the child's gender, will drop from equation (3). One of the drawbacks of the fixed effect model is that we cannot get coefficient estimates for fixed regressors. The fixed effects model is also less efficient than the random effects model.

The models have been estimated using a parsimonious specification. The main reason behind this is that many usual regressors are (relatively) fixed and thus would either drop from the fixed effects equation of result in highly variable coefficients for regressors with little variation. For equations that estimate child outcomes, the vector $\boldsymbol{X}$ includes controls for a depression score for the respondent parent, a family dysfunction score, an ineffective parenting score, and an indicator for the presence of a non-biological parent. The family dysfunction score is also interacted with single parent status as that measure is likely to differ in its significance between single parents and parents with partners[3]. For equations that estimate the PMK[4] depression score, the ineffective parenting score, and the family dysfunction score, the vector $\boldsymbol{X}$ includes controls for the PMK's age and a dummy variable equal to 1 if the PMK is male. All models include controls for province of residence and rural/urban categories, although the coefficients for these control variables are not reported in the results section. Separate models have been estimated for boys and girls are boys and girls follow different development trajectories.

The estimation method does not take into consideration sample weights. For that reason, estimates cannot be used to infer to the overall population, but instead reflect the available observations equally. In order for sample weights to be applied to the analysis in a meaningful manner in the fixed effect model, the sample would have to contain an observation for each child at each cycle. As is shown in table 1, the sample is not balanced, and an attempt at creating a balanced sample would delete children in such a way that the sample weights provided by Statistics Canada would no longer be valid for the analysis.

[3] The measure asks questions regarding trust and related constructs which may be more likely to apply to one's partner than to one's children or to oneself.

[4] The PMK is the 'person most knowledgeable' about the child, either biological or adoptive parent or guardian.

Results

Tables 4 to 7 present the fixed effects equations results (all four tables follow the discussion). Table 4 shows the impact of hours of work on child outcomes. Table 5 shows the impact of hours of work on parental outcomes. Table 6 shows the impact of shift work on child outcomes. Table 7 shows the impact of shift work on parental outcomes.

Hours of work

Table 4 shows the fixed effect equation results for hours of and child outcomes. For each child outcome, a separate equation is estimated for boys and girls. Given that dependent variables represent deciles, coefficient estimates multiplied by ten can be interpreted as the impact of the explanatory variable on the percentile ranking of the child. Higher coefficients represent a worsening of outcomes. The reference child for the equations is a child who lives in a two parent family where both parents work 30-49 hours per week[5].

Starting with columns 1 and 2, indications are that (changes in) parental hours of work for this sample of children have little or no impact on the child's hyperactivity. The only statistically significant impacts are lower hyperactivity rankings for boys with a mother who doesn't work, or with a father working part-time. In the former case, the coefficient is quite small in magnitude at one and a half percentile in difference. In the latter case, the effect is larger at almost five percentiles in difference.

Columns 3 and 4 for conduct disorder indicate that in two parent families, the impact of hours of work is also quite limited. Some coefficients are statistically significant, but most are quite small. The largest impact is a three percentile difference for a girl whose father is not at work. Significant and much larger coefficients are found in single parent families. However, because this is a fixed effect model, relying on changes in the explanatory variables for the same child, the single parent variables may be picking up the effect of changes in family structure *as well as* the effect of changes in hours. Nevertheless, coefficients estimates for girls in single parent families suggest that girls are less likely to exhibit conduct disorder problems, the more their parent works. The pattern is similar for boys but boys are worse off relative to girls when in single parent families on this outcome measure.

Columns 5 and 6 for indirect aggression indicate similar results than for conduct disorder. The impact of changes in hours on children in two parent families are small and most are insignificant. Surprisingly, girls with mothers working 49 or more hours per week show improvements over girls with mothers working 30-49 hours. Girls with mothers who do not work outside the home also show small improvements. For boys, having a father who does not work outside the home is also associated with a lower indirect aggression score. The largest impacts are concentrated in single parent families, but again may merely reflect the impact of a change in family structure. Here, scores tend to be worse for girls the more hours the mother works, but not for boys, in contrast with the findings for the conduct disorder measure.

[5] The reference child also lives in a large urban centre in Ontario.

Columns 7 and 8 for emotional disorder also show limited or no impact of hours of work on children in two parent families. Girls in single parent families do much worse than girls in dual parent families, but for all measures of hours of work. Boys do worse on this measure in single parent families, but only if their mother is working 49 or more hours per week.

Overall table 4 indicates that parental hours of work do not appear to have a consistent negative or positive impact on child outcomes. Children who have lost a parent do worse than other children, but no consistent pattern of behaviour appears that can be related to hours of work.

On the other hand, table 4 indicates that PMK depression is a good predictor of child misbehaviour and that ineffective parenting is a particularly strong predictor of child misbehaviour. However, given the wording of the questions (see appendix II) that form the basis of the ineffective parenting measure, one may conclude that the measure is endogenous [6]. In this research the measure is treated as exogenous based on the premise that the parents act as a stabilizing force or as role models for their children. The family dysfunction measure appears to have no impact on child behaviour, while the presence of a non-biological parent, which would generally control for divorce and remarriage, is also a predictor of child misbehaviour.

Table 5 shows the results of the fixed effects regressions that estimate the impact of hours of work on parental outcomes. Columns 1 and 2 show the results for the PMK depression score. The mean PMK depression score is 4.38 with a within standard deviation of 3.15 (see table 2). The results indicate that boys who live in two parent families with a mother who does not work or with a mother who works long hours live with PMKs who are more depressed than those in two parent families with both parents working 30-49 hours per week. Girls in two parent families who live with a father who does not work live with more depressed PMKs. Although not significant, the size of the coefficient for maternal long hours with girls indicates that maternal long hours may be an issue for girls as well as for boys. Girls in two parent families with a mother working part-time live with PMKs who are less depressed. The largest differences are for children in single parent families. While the coefficient estimates do not suggest any consistent patterns related to hours of work, children in single parent families live with a parent who is much more depressed than the PMK in a dual parent family. The differences range from around one half of a standard deviation to 92% of a standard deviation.

Columns 3 and 4 of table 5 show the results for the impact of hours of work on ineffective parenting. The mean for the ineffective parenting score is 8.77 with a within standard deviation of 1.97. The results indicate that girls in two parent families with mothers and fathers working long hours live with a PMK who exhibits more ineffective parenting. The difference is approximately one third of a standard deviation for mothers, and one tenth for fathers. For boys, the pattern is unclear. Boys in two parent families tend to live with a PMK with more ineffective parenting if the mother works full-time (but not long hours). In single parent families, less effective parenting appears to be an issue when the child is a girl, but not when the child is a boy.

[6] For a model that treats parenting measure as endogenous, see (Burton, Phipps, & Curtis, 2002).

Columns 3 and 4 show the results for the impact of hours of work on family dysfunction. The mean for the family dysfunction score is 8.27 with a within standard deviation of 3.03. The results indicate that girls in two parent families where the mother works part-time experience less family dysfunction than other girls in two parent families. The results also indicate that girls in single parent families tend to experience less family dysfunction, particularly if their mother is working 30-49 hours per week. Boys whose single parent does not work experience more family dysfunction. On the other hand, boys whose single parent works long hours experience by far the least amount of family dysfunction. The difference is approximately on half of a standard deviation.

Overall table 5 suggests that the impact of long hours of work for mothers in two parent families may result in children facing increased parental PMK depression and reduced effective parenting. Further, while children in single parents face much greater parental depression and reduced effective parenting than children in two parent families, the degree of depression or effective parenting does not appear to be related to the parent's hours of work.

Shift Work

Table 6 presents the results of fixed effects equations that relate shift work to child outcomes. Columns 1 and 2 present the results for hyperactivity. The results indicate that girls in dual parent families have marginally better scores when the mother works week-ends, and have worse scores when the father works evening shifts. For boys in two parent families, a mother who works night shifts results in worse scores, and a father who works rotating shifts results in marginally worse scores. Boys in single parent families score a lot worse when their parent works night, rotating, or split shifts. The latter coefficient is large but not statistically significant. This is an indication that the sample size for this subgroup is quite small/and or that few changes in or out of this category have occurred.

Columns 3 and 4 present the results for conduct disorder. The results indicate that girls in two parent families fare worse on this measure when their father works evening shift. However, the negative signs for several of the father's shift work categories suggest that a father's shift work is not an issue more generally for girls. Girls in single parent families do far worse when their parent works night shift and particular so compared to girls in the single parent family whose parents do not work shifts. For boys, shift work does not appear to be an issue for this measure, except for boys in single parent families whose parent works week-ends.

Columns 5 and 6 present the results for indirect aggression. The results suggest that evening maternal work or split shifts and paternal night shifts may be an issue for girls in two parent families. On the other hand, the coefficient on paternal split shift is negative and large although not quite statistically significant. For girls in single parent families, the largest positive coefficient is for split shift, but it does not differ substantially from the daytime weekday coefficient and is not statistically significant. In fact, given the positive coefficient on daytime weekday and three negative coefficients for evenings, nights and rotating shifts, the pattern for shift work for girls in single parent families is rather inconclusive. Boys in two parent families do worse when their mother works night

shifts, and the same appears to be true for boys in single parent families when their parent works night shifts, although that coefficient is not statistically significant.

Columns 7 and 8 present the results for emotional disorder. Girls do not generally seem to be affected by shift work on that measure. Although the coefficient for paternal evening work is positive and statistically significant, it is not very large. Further, girls with a father working split shifts seem to do better. Girls in single families do worse on that measure in general, but that does not appear to be related to shift work. In fact, for some shift work categories (evening, rotating, irregular), girls in single parent families do better than when their parent works daytime weekdays. This is consistent with the findings for emotional disorder for girls in the hours of work models. Girls appear to be disturbed by the marital disruption, but not so much by the parent's work behaviour. For boys, few effects are also found for the emotional disorder measure. Boys in two parent families do relatively better when their mother works split shifts and worse when their father works on call. In single parent families, boys do a lot worse when their mother works rotating shifts.

Overall table 6 suggests that parental evenings and night shifts may exacerbate certain problem behaviours in children in two parent families and that night and week-end shifts may result in worse behaviour for children in single parent families. Split shifts for fathers in two parent families tend to be associated with better scores for boys.

Table 7 presents the results for the impacts of shift work on parental outcomes. Columns 1 and 2 present the results for parental depression. As found for hours of work, being in a single parent family is a strong predictor of increased distress, although there appears to be little or no relationship between the PMK depression in single parent families and their work. Distress appears to be smallest when the parent works nights, followed by irregular, on call, and rotating shifts. The situation is at its worst when the single parent works split or regular shifts, followed evenings and week-ends. In two parent families, PMKs for girls do somewhat worse when the father works week-ends. For boys in two parent families, split shifts are an issues for mothers, although PMKs do better when the father works a rotating shift.

Columns 3 and 4 present the results for ineffective parenting. In two parent families, parenting is worse when the mother is on call, and also appears to be worse when the mother works split shifts, although the coefficients are not individually significant. On the other hand, parenting is better for boys when the father works split shifts. Results for children in single parent families indicate that girls receive much better parenting when the parent is on call. Boys in single parent families get worse parenting when the parent works irregular shifts and likely also split shifts.

Columns 5 and 6 present the results for family dysfunction. The results indicate that shift work does not adversely impact this measure in two parent families, and may in fact improve it, particularly in families with girls whose father works split shift. In single parent families, the measure improves largely if the parent is working nights. While this measure appears to be somewhat positively impacted by shift work, family functioning has little impact on children, so that the indirect impact will not translate into better child outcomes.

Overall table 7 suggests that maternal split and on call shifts result in worse depression and parenting outcomes in two parent families and that girls in single parent families where the parent works night shifts face vastly better PMK depression outcomes for girls. Similarly, both girls and boys in single parent families face improved family functioning when the parent works night shifts.

More generally, the results indicate that long hours of work are a strain on parental outcomes in two parent families, although they do not appear to have consistent direct impacts on child outcomes. Children in single parent families do worse on a number of measures and so do their parents, but the outcomes are not systematically related to hours of work. As for shift work, night and evening shifts in two parent families appear to worsen certain child outcomes, while maternal split and on call shifts worsen parental depression and parenting. On the other hand, parental outcomes tend to be improved for children living in single parent families when the parent works night shifts.

The findings therefore suggest that hours of work and shift work can be a problem, but in two parent families rather than in single parent families. Further, the impact of shift work is not negative for all types of shift work nor is it always the same for boys and girls. The negative outcomes seen in single parent families can generally be attributed to marital disruption or to a shortage of parental resources rather than to hours of work or shift work. The opportunity to work or to do shift work may be positive for single parents. More work hours means that the single parent family is less likely to live in poverty. Shift work, particularly night shifts, may represent an opportunity to spend more time with children and to economize on child care costs if a relative is available to care for the children overnight.

While this research examines what happened to child and parental outcomes as parental working conditions change, the research has a number of limitations. Because the sample is not a representative sample of the Canadian population, the impacts found apply to this sample and cannot be generalized to the overall population. Further while fixed effects control for omitted variables bias, they do not control for simultaneity. For example, if the parent changes his or her hours of work in response to the child's behaviour, the fixed effect model will not correct for that. Finally, if the change in parental working conditions is systematically associated with other events that affects child or parental outcomes in a similar systematic manner, the coefficients could be biased. As an example, one could imagine increasing hours of work being a positive event for a father and his family. If the parental outcomes included as controls in the child outcomes equation do not fully capture these positive impacts, the impact of father's hours of work on child outcomes could be biased.

Table 4

Fixed Effects Regression Results - Hours of Work/Child Outcomes

	Hyperactivity				Conduct Disorder				Indirect Aggression				Emotional Disorder			
	Girls		*Boys*		*Girls*		*Boys*		*Girls*		*Boys*		*Girls*		*Boys*	
	Coeff	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*
Maternal labour supply																
Not at work	-0.02	-0.27	-0.15	-1.83	0.05	0.49	0.17	1.69	-0.32	-2.66	-0.14	-1.13	-0.02	-0.21	-0.08	-0.79
Works part-time	-0.10	-1.28	-0.05	-0.65	0.21	2.23	0.11	1.29	0.05	0.43	-0.04	-0.36	0.03	0.38	-0.11	-1.23
Works 30-49 hrs/wk																
Works 49+ hours/wk	0.00	0.03	-0.14	-1.11	0.25	1.41	0.20	1.31	-0.40	-2.04	0.29	1.53	0.10	0.63	-0.32	-2.12
Paternal labour supply																
Not at work	0.08	0.62	-0.05	-0.40	0.32	1.94	0.01	0.09	0.17	0.90	-0.36	-2.00	-0.07	-0.45	-0.02	-0.15
Works part-time	0.13	0.72	-0.46	-2.79	0.18	0.78	0.02	0.09	-0.08	-0.32	0.11	0.46	0.01	0.07	-0.16	-0.83
Works 30-49 hrs/wk																
Works 49+ hours/wk	0.03	0.47	0.02	0.30	-0.15	-1.67	0.02	0.24	-0.13	-1.31	0.07	0.73	-0.12	-1.48	0.02	0.25
Single parent labour supply																
Not at work	-0.07	-0.33	-0.03	-0.12	0.55	1.91	0.76	2.86	0.10	0.33	0.44	1.34	0.99	3.80	0.24	0.94
Works part-time	-0.30	-1.27	0.16	0.68	0.33	1.11	0.63	2.30	0.63	1.94	0.43	1.25	1.28	4.79	0.40	1.49
Works 30-49 hrs/wk	-0.28	-1.41	-0.02	-0.12	0.03	0.12	0.47	2.04	0.35	1.25	0.48	1.66	0.82	3.63	0.21	0.93
Works 49+ hours/wk	-0.16	-0.47	0.13	0.41	-0.28	-0.67	0.42	1.10	0.77	1.67	-0.10	-0.20	0.81	2.13	0.79	2.10
PMK depression score	0.02	3.68	0.03	4.92	0.03	3.90	0.03	4.97	0.01	1.81	0.03	4.33	0.04	5.96	0.06	9.47
Ineffective parenting score	0.20	21.83	0.19	23.52	0.24	21.50	0.23	23.96	0.18	14.68	0.17	14.05	0.18	18.21	0.19	19.46
Family dysfunction score	-0.01	-1.20	0.01	1.16	0.00	0.53	0.00	-0.56	0.01	1.32	0.01	1.01	0.01	0.94	0.00	0.38
Family dysf. x single parent	0.01	0.86	0.01	0.76	-0.01	-0.70	-0.01	-0.51	0.00	0.13	0.00	0.23	-0.03	-2.06	0.03	1.60
Presence of non-biological parent	0.23	1.45	0.42	2.77	0.09	0.47	0.32	1.77	0.84	3.81	0.85	3.77	0.40	2.22	0.84	4.71
Constant	4.01	12.47	3.58	11.73	1.84	4.62	1.78	4.86	2.28	5.13	2.52	5.53	3.35	9.19	2.97	8.29
R squared within	*0.06*		*0.07*		*0.06*		*0.07*		*0.03*		*0.03*		*0.05*		*0.07*	
N	*13741*		*13860*		*13741*		*13860*		*13741*		*13860*		*13741*		*13860*	
n	*5,371*		*5,421*		*5,371*		*5,421*		*5,371*		*5,421*		*5,371*		*5,421*	

Table 5

Fixed Effects Regression Results - Hours of Work/Parental Outcomes

	PMK Depression				Ineffective Parenting				Family Dysfunction			
	Girls		*Boys*		*Girls*		*Boys*		*Girls*		*Boys*	
	Coeff	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*
Maternal labour supply												
Not at work	0.26	1.50	0.60	3.37	-0.05	-0.44	0.18	1.64	-0.30	-1.77	-0.12	-0.68
Works part-time	-0.32	-2.12	0.15	0.98	0.03	0.28	0.17	1.73	-0.35	-2.39	-0.08	-0.53
Works 30-49 hrs/wk												
Works 49+ hours/wk	0.43	1.52	0.51	1.85	0.68	3.91	0.16	0.90	0.12	0.45	0.00	0.00
Paternal labour supply												
Not at work	0.57	2.15	0.32	1.25	0.13	0.79	0.01	0.04	0.09	0.34	0.40	1.59
Works part-time	0.23	0.64	0.31	0.90	0.11	0.48	0.17	0.76	-0.04	-0.12	0.11	0.33
Works 30-49 hrs/wk												
Works 49+ hours/wk	0.07	0.52	-0.17	-1.22	0.16	1.78	0.12	1.31	0.03	0.25	0.05	0.39
Single parent labour supply												
Not at work	2.27	7.01	2.80	8.31	0.44	2.21	-0.15	-0.72	0.34	1.10	0.68	2.07
Works part-time	1.58	4.42	2.89	7.60	0.33	1.47	0.11	0.47	-0.49	-1.42	-0.27	-0.74
Works 30-49 hrs/wk	2.03	7.99	2.22	8.13	0.27	1.73	0.25	1.44	-0.52	-2.10	-0.43	-1.63
Works 49+ hours/wk	2.80	4.75	0.00	0.00	0.57	1.56	0.00	0.00	0.46	0.81	-1.54	-2.54
PMK age	-0.10	-5.08	-0.04	-2.15	-0.11	-8.22	-0.11	-8.63	0.10	5.19	0.14	7.11
Male PMK	-0.61	-2.47	-1.17	-5.04	-0.48	-3.14	-0.65	-4.41	0.03	0.12	0.29	1.31
Constant	7.73	8.00	4.71	4.80	12.33	20.48	12.44	20.06	4.67	5.00	2.17	2.29
R squared within	*0.02*		*0.02*		*0.02*		*0.02*		*0.01*		*0.01*	
N	*13741*		*13860*		*13741*		*13860*		*13741*		*13860*	
n	*5,371*		*5,421*		*5,371*		*5,421*		*5,371*		*5,421*	

Table 6

Fixed Effects Regression Results - Shift Work/Child Outcomes

	Hyperactivity				Conduct Disorder				Indirect Aggression				Emotional Disorder			
	Girls		*Boys*		*Girls*		*Boys*		*Girls*		*Boys*		*Girls*		*Boys*	
	Coeff	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*
Maternal shift work																
Evenings	0.04	0.30	0.22	1.66	0.11	0.64	0.11	0.69	0.45	2.25	0.01	0.04	-0.08	-0.50	0.12	0.76
Nights	-0.06	-0.21	0.49	2.00	0.53	1.61	0.10	0.33	0.09	0.26	0.83	2.22	-0.22	-0.75	0.21	0.72
Rotating	0.01	0.05	-0.09	-0.69	0.17	0.95	-0.09	-0.58	0.12	0.60	0.03	0.15	0.05	0.29	-0.08	-0.54
Split	0.35	1.07	-0.07	-0.23	0.25	0.63	-0.22	-0.62	0.60	1.34	-0.38	-0.88	0.01	0.02	-0.66	-1.92
On call	0.03	0.13	0.25	1.22	0.09	0.30	-0.27	-1.08	-0.40	-1.28	-0.31	-0.99	-0.24	-0.93	0.14	0.57
Irregular	-0.09	-0.82	0.08	0.71	0.03	0.21	-0.02	-0.18	-0.12	-0.74	-0.07	-0.45	0.06	0.44	-0.18	-1.41
Week-ends	-0.19	-2.23	-0.02	-0.20	-0.12	-1.10	-0.01	-0.14	0.02	0.14	-0.13	-1.07	-0.05	-0.49	0.05	0.50
Paternal shift work																
Evenings	0.41	2.48	0.06	0.35	0.40	1.95	0.06	0.29	0.26	1.12	-0.08	-0.34	0.36	1.92	0.07	0.36
Nights	0.20	0.76	0.39	1.62	-0.43	-1.31	-0.38	-1.31	0.71	1.93	0.10	0.29	-0.21	-0.71	0.03	0.10
Rotating	0.11	0.83	0.22	1.80	0.11	0.67	-0.24	-1.63	-0.05	-0.28	-0.07	-0.36	0.13	0.87	0.04	0.26
Split	0.14	0.41	0.26	0.88	-0.46	-1.07	0.55	1.55	-0.77	-1.62	0.04	0.09	-0.68	-1.74	-0.13	-0.38
On call	0.08	0.35	0.24	1.11	-0.30	-1.03	0.37	1.37	0.25	0.78	-0.05	-0.16	-0.39	-1.50	0.61	2.34
Irregular	0.06	0.52	0.17	1.54	-0.31	-2.21	0.15	1.11	0.05	0.32	0.01	0.07	-0.08	-0.63	-0.01	-0.05
Week-ends	0.03	0.42	0.02	0.25	0.06	0.56	0.08	0.88	0.12	1.03	0.12	1.03	0.01	0.13	0.04	0.49
Single parent shift work																
Daytime weekday	-0.09	-0.38	0.02	0.08	-0.52	-1.75	0.09	0.32	0.36	1.09	-0.03	-0.10	0.87	3.20	0.21	0.79
Evenings	0.21	0.57	0.30	0.85	-0.22	-0.50	-0.40	-0.92	-0.44	-0.88	0.69	1.28	-0.13	-0.32	0.54	1.27
Nights	0.47	0.81	1.26	2.34	1.26	1.74	0.31	0.48	-0.47	-0.58	0.94	1.15	0.96	1.45	0.21	0.33
Rotating	-0.39	-1.14	0.67	2.28	-0.34	-0.79	-0.04	-0.12	-0.35	-0.74	0.58	1.30	-0.34	-0.89	1.21	3.46
Split	0.23	0.31	0.81	1.24	0.08	0.09	0.20	0.26	0.21	0.21	0.21	0.22	0.72	0.87	0.60	0.77
On call	0.62	1.29	-0.34	-0.62	0.41	0.69	-0.52	-0.78	0.59	0.88	0.25	0.30	0.72	1.31	-0.13	-0.20
Irregular	-0.36	-1.25	0.00	0.02	-0.40	-1.12	-0.44	-1.24	0.13	0.33	0.05	0.11	0.06	0.17	0.23	0.66
Week-ends	-0.25	-1.03	-0.15	-0.64	0.15	0.50	0.76	2.64	0.56	1.68	0.53	1.48	0.73	2.66	0.17	0.59
Depression score	0.03	3.83	0.02	2.90	0.03	2.85	0.03	3.56	0.00	0.08	0.02	2.44	0.03	3.83	0.05	6.79
Ineffective parenting score	0.19	16.98	0.19	17.99	0.24	16.67	0.22	17.46	0.18	11.44	0.17	10.62	0.19	14.71	0.18	14.34
Family dysfunction score	-0.01	-1.03	0.01	0.99	0.00	0.35	0.00	-0.39	0.01	0.53	0.01	0.56	0.01	1.26	0.01	0.86
Family dysf. x single parent	0.01	0.57	0.02	0.94	0.02	0.80	0.00	-0.16	0.01	0.30	0.02	0.83	0.00	-0.19	0.02	1.04
Presence of non-biological parent	0.44	2.22	0.38	2.04	0.18	0.72	0.36	1.62	0.30	1.09	1.02	3.66	0.36	1.58	0.82	3.72
Constant	4.36	9.59	3.87	8.88	1.88	3.30	2.33	4.38	1.76	2.78	2.87	4.34	3.92	7.57	3.16	6.09
R squared within	*0.06*		*0.07*		*0.06*		*0.07*		*0.03*		*0.03*		*0.06*		*0.06*	
N	*9,829*		*9,856*		*9,829*		*9,856*		*9,829*		*9,856*		*9,829*		*9,856*	
n	*4,548*		*4,562*		*4,548*		*4,562*		*4,548*		*4,562*		*4,548*		*4,562*	

Table 7

Fixed Effects Regression Results - Shift Work/Parental Outcomes

	PMK Depression				Ineffective Parenting				Family Dysfunction			
	Girls		*Boys*		*Girls*		*Boys*		*Girls*		*Boys*	
	Coeff	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*	*Coeff*	*t*
Maternal shift work												
Evenings	-0.11	-0.39	-0.01	-0.03	0.06	0.32	-0.09	-0.53	-0.30	-1.11	0.31	1.13
Nights	0.22	0.45	0.47	0.93	-0.20	-0.62	-0.10	-0.30	-0.48	-0.96	-0.59	-1.16
Rotating	-0.33	-1.23	0.10	0.39	-0.01	-0.08	0.15	0.91	-0.56	-2.06	-0.18	-0.70
Split	0.34	0.56	1.00	1.68	0.52	1.32	0.44	1.15	0.26	0.42	0.21	0.35
On call	0.12	0.28	0.27	0.62	0.64	2.31	0.86	3.09	-0.47	-1.10	-0.17	-0.39
Irregular	0.13	0.58	-0.20	-0.90	0.30	2.10	0.02	0.17	-0.23	-1.03	-0.04	-0.19
Week-ends	0.23	1.41	0.20	1.16	0.02	0.22	-0.09	-0.78	-0.21	-1.28	0.08	0.47
Paternal shift work												
Evenings	-0.21	-0.69	0.15	0.45	0.13	0.64	0.03	0.14	-0.44	-1.39	-0.08	-0.23
Nights	-0.35	-0.71	0.02	0.03	-0.16	-0.50	-0.46	-1.43	-0.20	-0.39	-0.11	-0.22
Rotating	-0.09	-0.39	-0.55	-2.19	0.15	0.94	0.15	0.90	-0.33	-1.36	-0.35	-1.40
Split	0.44	0.68	0.36	0.60	0.63	1.51	-0.86	-2.21	-1.30	-1.99	-0.96	-1.59
On call	-0.02	-0.04	0.35	0.76	0.25	0.89	0.29	0.99	-0.15	-0.33	-0.50	-1.11
Irregular	0.22	1.06	-0.40	-1.77	-0.06	-0.48	-0.02	-0.11	0.28	1.33	0.04	0.16
Week-ends	0.40	2.65	0.22	1.42	0.08	0.82	0.08	0.78	0.13	0.85	-0.07	-0.48
Single parent shift work												
Daytime weekday	2.07	6.45	2.06	6.23	0.24	1.13	-0.15	-0.71	-0.69	-2.10	-0.31	-0.94
Evenings	1.74	2.65	1.34	1.83	-0.33	-0.77	0.35	0.75	-0.90	-1.34	0.39	0.53
Nights	-2.14	-1.98	0.55	0.50	0.07	0.10	-0.59	-0.82	-2.07	-1.88	-2.06	-1.86
Rotating	0.80	1.27	1.08	1.78	-0.22	-0.55	-0.07	-0.18	0.07	0.12	0.06	0.11
Split	2.45	1.82	2.40	1.79	-0.95	-1.07	0.80	0.93	-1.43	-1.04	-1.35	-1.02
On call	0.89	0.99	0.17	0.15	-1.41	-2.42	-0.57	-0.79	-0.07	-0.08	-0.25	-0.22
Irregular	0.66	1.25	-0.27	-0.44	-0.41	-1.19	0.75	1.94	-0.76	-1.42	-0.17	-0.29
Week-ends	1.71	4.70	1.22	3.03	0.54	2.28	-0.11	-0.44	-0.24	-0.66	0.06	0.16
PMK age	-0.16	-6.42	-0.08	-3.35	-0.10	-6.13	-0.12	-7.40	0.13	5.05	0.16	6.41
Male PMK	-0.67	-2.36	-0.89	-3.30	-0.64	-3.43	-0.31	-1.77	0.17	0.57	0.52	1.93
Constant	9.31	7.65	6.28	5.04	12.48	15.67	13.92	17.40	3.86	3.11	3.51	2.83
R squared within	*0.03*		*0.02*		*0.02*		*0.02*		*0.02*		*0.01*	
N	*9,829*		*9,856*		*9,829*		*9,856*		*9,829*		*9,856*	
n	*4,548*		*4,562*		*4,548*		*4,562*		*4,548*		*4,562*	

Conclusion

This research uses cycles 1 to 4 of the National Longitudinal Survey of Children (NLSCY) to examine the relationship between parental hours of work and non-standard work schedules, the family environment children experience as measured by family functioning, parenting, and parental depression, and children's behavioural and emotional scores. Children who were four to eleven years of age between 1994 to 2001 and for whom at least two observations are available are selected to estimate the impact of hours of work and those same children whose parents were both working (was working for single-parents) are selected for the analysis of shift work.

The results indicate that long hours of work are a strain on parental outcomes in two parent families, although they do not appear to have consistent direct impacts on child outcomes. Children in single parent families do worse on a number of measures and so do their parents, but the outcomes are not systematically related to hours of work. As for shift work, night and evening shifts in two parent families appear to worsen certain child outcomes, while maternal split and on call shifts worsen parental depression and parenting. On the other hand, parental outcomes tend to be improved for children living in single parent families when the parent works night shifts. The findings therefore suggest that hours of work and shift work can be a problem, but in two parent families rather than in single parent families. Further, the impact of shift work is not negative for all types of shift work nor is it always the same for boys and girls.

Findings suggest that parents and children may suffer from long hours of work and from shift work. However, since the findings do not systematically generalize, employers and policy makers would do well to find out from parents the type of assistance that would best enable them to reconcile work and family issues. It is likely that a menu of measures will be required. The results indicate that long hours of work are a strain on parental outcomes in two parent families, although they do not appear to have consistent direct impacts on child outcomes. Children in single parent families do worse on a number of measures and so do their parents, but the outcomes are not systematically related to hours of work. As for shift work, night and evening shifts in two parent families appear to worsen certain child outcomes, while maternal split and on call shifts worsen parental depression and parenting. On the other hand, parental outcomes tend to be improved for children living in single parent families when the parent works night shifts. The findings therefore suggest that hours of work and shift work can be a problem, but in two parent families rather than in single parent families. Further, the impact of shift work is not negative for all types of shift work nor is it always the same for boys and girls.

Bibliography

National longitudinal surveys. Retrieved April 9, 2005, from http://www.bls.gov/nls/home.htm

Women in Canada: Work chapter updates 2003. (2004).Catalogue no. 89F0133XIE: Statistics Canada.

Baum, C. L. (2003). Does early maternal employment harm child development? An analysis of the potential benefits of leave taking. *Journal of Labor Economics, 21*(2), 409-448.

Baum, C. L. (2004). The long-term effects of early and recent maternal employment on a child's academic achievement. *Journal of Family Issues, 25*(1), 29-60.

Baydar, N., & Brooks-Gunn, J. (1991). Effects of maternal employment and child-care arrangements on preschoolers cognitive and behavioural outcomes: Evidence from the children of the National Longitudinal Survey of Youth. *Development Psychology, 27*(6), 932-945.

Belsky, J., & Eggebeen, D. (1991). Early and extensive maternal employment and young children's socioeconomic development: Children of the National Longitudinal Survey of Youth. *Journal of Marriage and Family, 53*(4), 1083-1098.

Berger, L. M., Hill, J., & Waldfogel, J. (2005). Maternity leave, early maternal employment and child health and development in the US. *Economic Journal, 115*(501), F29-F47.

Blau, F. D., & Grossberg, A. J. (1992). Maternal labour supply and children's cognitive development. *Review of Economics and Statistics, 74*(3), 474-481.

Brooks-Gunn, J., Han, W.-J., & Waldfogel, J. (2002). Maternal employment and child cognitive outcomes in the first three years of life: The NICHD study of early child care. *Child Development, 73*(4), 1052-1072.

Burton, P., Phipps, S., & Curtis, L. (2002). All in the family: A simultaneous model of parenting style and child conduct. *American Economic Review, 92*(2), 368-372.

Datcher-Loury, L. (1988). Effects of mother's time on children's schooling. *The Review of Economics and Statistics, 70*(3), 367-373.

Desai, S., Chase-Landale, L., P., & Michale, R. T. (1989). Mother or market? Effects of maternal employment on the intellectual ability of 4-year old children. *Demography, 26*(4), 545-561.

Ermisch, J., & Francesconi, M. (2000). The effect of parents' employment on children's education attainment. In I. D. N. 215 (Ed.), *IZA DP No. 215*.Bonn.

Fleisher, B. M. (1977). Mother's home time and the production of child quality. *Demography, 14*(2), 197-212.

Gagné, L. (2002). *Parental work, child-care use and young children's cognitive outcomes*. RDC Working Paper.

Greenstein, T. N. (1993). Maternal employment and child behavioral outcomes. *Journal of Family Issues, 14*(3), 323-354.

Greenstein, T. N. (1995). Are the "most advantaged" children truly disadvantaged by early maternal employment? *Journal of Family Issues, 16*(2), 149-169.

Gregg, P., Washbrook, E., Propper, C., & Burgess, S. (2005). The effects of a mother's return to work decision on child development in the UK. *The Economic Journal, 115*, F48-F80.

Han, W.-J., Waldfogel, J., & Brooks-Gunn, J. (2001). The effects of early maternal employment on later cognitive and behavioral outcomes. *Journal of Marriage and Family, 63*(2), 336-354.

Harvey, E. (1999). Short-term and long-term effects of early parental employment on children of the National Longitudinal Survey of Youth. *Development Psychology, 35*(2), 445-459.

Haveman, R., Wolfe, B., & Spaulding, J. (1991). Childhood events and circumstances influencing high school completion. *Demography, 28*(1), 133.157.

Heyns, B., & Catsambis, S. (1986). Mother's employment and children's achievement: A critique. *Sociology of Education, 59*(3), 140-151.

Hill, A., & O'Neill, J. (1994). Family endowments and the achievement of young children with special reference to the underclass. *Journal of Human Resources, 14*(4), 1064-1100.

Lefebvre, P., & Merrigan, P. (1998). *Family background, family income, maternal work and child development* (No. W-98-12E). Ottawa, ON: Human Resources Development Canada.

Lefebvre, P., & Merrigan, P. (1998). *Work schedules, job characteristics, parenting practices and children's outcomes*. CREFE Working Paper No. 77.

Leibowitz, A. (1977). Parental inputs and children's achievement. *Journal of Human Resources, 12*(2), 242-251.

Milne, A. M., Myers, D. E., Rosenthal, A. S., & Ginsburg, A. (1986). Single parents, working mothers, and the educational achievement of school children. *Sociology of Education, 59*(3), 125-139.

Murnane, R. J., Maynard, R. A., & Ohls, J. C. (1981). Home resources and children's achievement. *The Review of Economics and Statistics, 63*(3), 369-377.

Parcel, T. L., & Menaghan, E. G. (1994). Early parental work, family social capital, and early childhood outcomes. *American Journal of Sociology, 99*(4), 972-1009.

Presser, H. B. (2003). *Working in a 24/7 economy: Challenges for American families*. New York: Russel Sage Foundation.

Ruhm, C. J. (2004). Parental employment and child cognitive development. *Journal of Human Resources, 39*(1), 155-192.

Shields, M. (2002). Shift work and health. *Health Reports (Catalogue no. 82-003: Statistics Canada), 13*(4), 11-33.

Strazdins, L., Korda, R. J., Lim, L. L.-Y., Broom, D. H., & D'Souza, R. M. (2004). Around-the-clock: Parent work schedules and children's well-being in a 24-h economy. *Social Science and Medicine, 59*, 1517-1527.

Vandell, D. L., & Ramanan, J. (1992). Effects of early and recent maternal employment on children from low-income families. *Child Development, 63*(4), 938-949.

Williams, C. (2003). Sources of workplace stress. *Perspectives on Labour and Income (Catalogue no. 75-001-XIE: Statistics Canada), 4*(3), 5-12.

Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge, Massachusetts: MIT Press.

Appendix 1

Selected Literature on the Effect of Maternal Employment on Child Outcomes

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Baum	2003	NLSY 1996 Low-income white oversample excluded Born between 1988 and 1993	2022	3 - 4 for PPVT 5 or older for PIAT-M and PIAT-R	PPVT PIAT-M PIAT-R	Quarters 1, 2, 3, and 4 Years 1, 2, and 3 *Hours worked*	"standard" not stated	OLS IV
Work in the first year of a child's life has a detrimental effect.								
Baum	2004	NLSY 1996	1198	15 - 18; in high school reported GPAs	GPA	All years (0-present) Early childhood years (0-6) Preadolescent years (7-12) Adolescent years (13 - present) *Portion of hours* *Portion of weeks* *At least 6 months* *Portion worked full-time*	Comprehensive Maternal income included in some equations	OLS
Employment from adolescent years significantly decreases high school grades. However, early childhood maternal employment does not have a significant effect. The effects are not large.								
Baydar Brooks-Gunn	1991	NLSY 1986	572	3 - 4 White children	PPVT-R BPI	Employed during 1st year of life Entered LF in 2nd year of life Entered LF in 3rd year of life Mixed pattern of LFP Any work in 1st 3 years	Limited Interactions with child gender and poverty status	OLS
Employment in the 1st year had detrimental effects on the cognitive and behavioral development of children regardless of gender or poverty status.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Belsky Eggebeen	1991	NLSY 1986	1248	4 - 6	Adjustment	Full-time maternal employment initiated in first or second year	Moderate Family poverty status included Other emotional score included as explanatory variable	OLS
Children with early and extensive maternal employment experience are significantly more noncompliant.								
Berger	2005	NLSY 1987-2000 Births 1988-1996	1907	3 - 4 Mother worked at some point within three months prior to birth	PPVT-R BPI other	Return to work within 12 weeks of birth	Moderate	OLS Matching
Early return has a negative impact on BPI but not on PPVT-R.								
Blau Grossberg	1992	NLSY 1986	874	3 - 4	PPVT	Proportion of weeks worked by mother in 1st year Proportion of weeks worked by mother in 2nd and later years Same equation	Comprehensive Spouse's and other income Mother's income in some specifications	OLS IV
Work has a negative effects for first year, but positve effects for second and subsequent years.								
Brooks-Gunn Han Waldfogel	2002	NICHD	900	1 - 3 years Born in 1991	Bayley MDI at 15 and 24 months Bracken School Readiness Scale at 36 months	Employed by… 1st, 3rd, 6th, 9th, 12th month Separate equations	Comprehensive	OLS
Employed by 9th month and working more than 30 hours per week has a negative impact on Bracken School Readiness. The negative effect is stronger for boys, for children of less sensitive mothers, and for children in two-parent families.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Datcher-Loury	1988	PSID	958	20 - 26 in 1982	Years of schooling	Estimated mother care hours	Moderate Maternal work hours also included	OLS IV
Greater child care time of highly educated but not of less well-educated mothers significantly raises children's years of schooling.								
Desai Chase-Lansdale Michael	1989	NLSY 1986	503	4	PPVT	Continuously employed since birth Intermitently employed since birth Never employed Worked in 1st year Began work in 2nd year Continued work in 2nd year Interactions with income	Comprehensive Separate equations for boys and girls	OLS
Employment during the first year for boys in high income families has a statistically significant adverse effect on the PPVT score at 4 years old.								
Ermisch Francesconi	2000	BHPS 1991 - 1997	1026	18 or older Born between 1970 and 1981	A-level or above achieved (=1) not achieved (=0)	Maternal employment: full-time or part-time or any Paternal employment: any Employment is by child age group: 0-5; 6-10; 11-15	Comprehensive	Logit
There is a negative and significant effect on the child's educational attainment as a young adult of the mother's full-time employment when the child was aged 0-5. The effect of the father's and of mother's part-time employment is also negative but smaller and less well determined.								
Fleisher	1977	NLS 1966, 1967, 1971	578	Men aged 19-29 in 1971 Women aged 30-44 in 1967	IQ Highest grade of schooling complete Wage	Number of years during which the child was 14 years of age or less, that the mother worked less than six months	Moderate	Recursive OLS
Mother's home time is the most effective in producing (male) child quality for mothers who have attained relatively high levels of schooling.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Gagne	2002	NLSCY 1994, 1996, 1996	13235	3 - 5	PPVT-R	Maternal employment: full-time or part-time Paternal employment: full-time or part-time	Comprehensive Family income included	OLS FE
OLS estimates indicate that children of mothers with above (below) average parenting skills and education have slightly worse (better) PPVT scores when their mothers work full-time outside the home rather than stay at home, but that for the average child, maternal labour supply has little effect.								
Greenstein	1993	NLSY 1986 & 1988	1657	4 - 6 in 1986 or 1988	BPI	Average hours worked during infancy; 2nd year; 3rd year Continuously employed Intermittently employed Same equation	Comprehensive	OLS
The findings do not support the contention that maternal employment is associated with negative behavioural outcomes for young children.								
Greenstein	1995	NLSY 1986, 1988, & 1990	2040	4 - 6 in 1986, 1988, or 1990	PPVT-R	Continuously employed full-time Continuously employed part-time Intermittently employed Average weekly hours employed (first four years of life, except first quarter) Interaction with early income Same equation	Comprehesnive	OLS
The most advantaged children are not disporportionately disadvantaged by early maternal employment. *(The complexity of the equation makes it hard to interpret.)*								
Gregg Washbrook Propper Burgess	2005	ALSPAC	6964	4 - 7 in 1991 and 1992	School assessment: at entry (4 - 5) key stage 1 (6 - 7) ALSPAC literacy (7)	0 - 18 months PT 0 - 18 months FT 19 - 34 months	Comprehensive	OLS
Only full-time work before the age of 18 months seems to have adverse consequences for children's cognitive development and the effects are quantitatively small and often insignificant.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Han Waldfogel Brooks-Gunn	2001	NLSY 1986 - 1990	462 244 138	3 - 4 in 1986	PPVT-R PIAT-M PIAT-R BPI	Employed during 1st year Employed during 2nd & 3rd year Employed continuously after age 3 Currently working Quarter in 1st year employment began FT (<21hrs/wk) or P/T in 1st year	Moderate	OLS
Maternal employment in the 1st year of a child's life has a significant negative impact on White children's cognitive outcomes which persists to ages 7-8 for some children. *Maternal employment in the 1st year of a child's life has a negative impact on White children's behavioural outcomes as assessed at age 7 or 8*								
Harvey	1999	NLSY 1986, 88, 90, 92, 94	 4924 4486 3711 2095	3 - 12 at any of the assessment dates 3 - 4 5 - 6 7 - 9 10 - 12	PPVT-R PIAT BPI Compliance Self-esteem	Employed during 1st three years Age in weeks when returned Average hours/wk if worked Number of quarters nor working for workers Average hours/wk if worked from the time started working	Moderate/comprehensive Family income included Job satisfaction included	OLS
Early parental employment has minimal effects on children's later functioning. Working more hours is associated with slightly lower cognitive development through age 9 and slightly lower academic achievement before age 7 but has no significant relation to children's behaviour problems, compliance, or self-esteem. *Early parental employment appeared to be somewhat more beneficial fo single mothers and lower income families.*								
Haveman Wolfe Spaulding	1991	PSID 1987	1258	4 years or younger in 1968 Still in survey in 1987	High school completion	Number of years the mother worked	Comprehensive No other income controls, but poverty and receipt of AFDC controls.	Probit
Mother's work is a significant determinant of high school completion.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Heyns Catsambis	1986	HSB 1980	3796	High school sophomores and seniors	Reading Math	During pre-school During elementary school During high school Full and part-time	Comprehensive Occupational prestige Attitudes toward work and childrearing Socioeconomic status	OLS pairwise deletion
Excluding observations with missing data tends to overstate the negative impacts of maternal work as those at the lower end of the socioeconomic ladder are more likely to benefit from maternal employment. *The negative impacts of work in the early years are stronger than those in later years.* *Including measures of the structural, attitudinal, and socioeconomic determinants of mother's employment substantially diminished the measured negative effect of mother's employment on students' reading and mathematics achievement.*								
Hill O'Neill	1994	NLSY 1986, 1988	1861 families	3 plus average is 5.5	PPVT-R averaged over all children in a given family	Proportion of hours worked since birth to year of test, maximum of 2000 per year	Comprehensive Family income	OLS Dummies for missing
Mother's hours at work bear significant negative effects on her child's achievement. The effect is only partially offset by higher income.								
Levebre Merrigan	1998	NLSCY 1994	2840 12342	4 - 5 4 - 11	PPVT-R Hyperactivity Emotional disorder Conduct disorder Indirect aggression Pro-social behavior	Worked more than 26 weeks Number of weeks worked Weeks worked full-time Weeks worked part-time	Comprehensive Family income	
The number of weeks worked in the previous year does not have an impact on child behavior but has a weak negative impact on the PPVT score.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Lefebvre Merrigan	1998b	NLSCY 1994	2875 12342	4 - 5 4 - 11	PPVT-R Hyperactivity Emotional disorder Conduct disorder Indirect aggression Pro-social behavior Teachers' subjective ranking of performance in math, reading, written work, and overall Ineffective parenting Punitive parentibg Consistency Positive interaction (parenting)	Full or part-time Irregular schedules Occupational complexity	Comprehensive Family income	OLS Ordered probit
Children of single mothers score better on the PPVT-R test when their mothers work. *Children of full-time working mothers have lower scores on behavioral outcomes than children of part-time working mother and children on non-working mothers.*								
Leibowitz	1977	Sesame Street 1969-1970	805 families	3 - 5	PPVT	Full or part-time (not employed)	Moderate Measures of family wealth	OLS
There is no evidence that full- or part-time work by mothers has a negative impact on children's verbal development.								
MacEwen Barling	1991	Employees of a local hospital with school aged child	178	School aged	Revised Behavior Problem Checklist (RBPC)	Interrole conflict Satisfaction with role of employed mother Personal strain Parenting behavior	Mother's age and education	Path analysis
Negative experiences of holding simultaneous roles of mother and employee can indirectly affect children's behavior via a number of intermediary links such as personal strain and parenting behavior.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Menaghan Parcel	1991	NLSY 1986	795 employed mothers	3 - 6	Home environment scales	Occupational complexity Hourly wage rates Length of work week	Comprehensive Spouse's earnings	OLS
The home environments young mothers create for their young children are a function of maternal and child background, maternal working conditions, and current family characteristics. Maternal characteristics (age, education, ethnicity, and initial self-esteem and locus of control - are the most important predictors.								
Milkie Mattingly Nomaguchi Bianchi Robinson	2004	National Survey of Parents General Social Survey (U.S.)	1159 parents 821 parents	< 18 < 18	Parental feelings about adequacy of time spent with children Quantity of time Quantity of focused time Too little time with children	Full or part-time (not employed)	Moderate Moderate	Tabulations SURE Logistic regression
Almost half of American parents feel that they spend too little time with their children. Fathers are most likely to feel time deficits. The more hours of paid work the more likely parents are to feel time strain with children. Parents feels more time strain with pre-school children, although they spend more time with these children than with elemnetary school children.								
Milne Myers Rosenthal Ginsburg	1986	Sustaining Effects Study of Title I 1976 - 1977 High School and Beyond 1980	12429 2720	Grades 1 through 6 High school sophomores and seniors	Reading and math scores	Mother works Mother works part-time; mother works full-time (not employed)	Comprehensive Family income	
Mother's employment has a negative effect on achievement for white students from two-parent families for both reading and math and for both elementary school and high school students.								
Murnane Maynard Ohls	1981	Gary Negative Income Tax Experiment	1091	Grades 3 through 6 1973 and 1974	Vocabulary	Mother works full time Mother works part time Father works full time Father works part time	Moderate Family income Various "inputs"	OLS
There is no consistent evidence to support the hypothesis that children whose mothers work outside the home either part-time or full-time achieve less than children whose mothers do not work outside the home.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Parcel Menaghan	1994	NLSY 1986	768 mothers	3 - 6	PPVT-R BPI	Hourly wages Occupational complexity Usual work hours	Comprehensive	OLS
Early maternal employment has minimally negative effects on child outcomes. Mothers who do not work during the child's first three years may, if their occupational prospects are poor, facilitate verbal fluency in their children but the effect is reversed for mothers whose later occupations are high in complexity. Overtime hours for mothers and fathers appear to inhibit the development of verbal facility.								
Parcel Menaghan	1990	NLSY 1986	697 children	3 - 6 Children of employed mothers	PPVT-R	Hourly wages Usual work hours Occupational complexity	Comprehensive Spouse's earnings	OLS
Children of mothers working in excess of 41 hours per week score lower than children of other mothers. Children of mothers working 21 - 34 hours per week score the highest. Occupational complexity is significant when maternal background characterisitcs are excluded but not when maternal characteristics are included. Maternal hourly pay is associated with higher scores in models with a full set of explanatory variables. Child care variables (type of care, caregiver/child ratio) do not have significant impacts.								
Presser	2000	National Survey of Families and Household	3476 married couples	N/A	Separation Divorce	Measures of shift work	Comprehensive	Logistic regression
Among men with children, married less than 5 years at the first wave, working fixed nights made separation or divorce some six times more likely relative to working days. Among women with children, married more than 5 years at the first wave, working fixed nights increased the odss of separation or divorce three times.								
Ruhm	2004	NLSY 1986 - 1996	3042	3 - 4 5 - 6	PPVT-R PIAT-M PIAT-R	Average weekly hours/20 in each year 1 & years 2 & 3	Comprehensive	OLS
Maternal employment during the first years of the child's life has a small deleterious effect on estimated verbal ability of three- and four-year-olds and a larger negative impact on reading and mathematics achievement of five- and six-year-olds.								

Author/ *Findings*	Year	Data	N	Children's Ages	DVs	Work Variables	Controls	Method
Strazdins Korda Lim Broom D'Souza	2004	NLSCY 1996	6361	2 - 11	Hyperactivity Indirect aggression Conduct disorder Property offenses Emotional disorder Instance of at least one of disorder	Mother works non-standard schedulue Father works non-standard schedulue	Moderate SES	Logistic regression
Children are more likely to exhibit at least one difficulty (worse 5% for measure) when their parents work non-standard schedules.								
Vandell Ramanan	1992	NLSY 1986	189	Second grade	BPI PPVT PIAT-R PIAT-M WISC-R	Sum of average weekly hours for previous 3 years	Moderate	HMR
Hierarchical multiple regressions showed that children's math achievement was positively predicted by early maternal employment and that children's reading achievement was positively predicted by recent maternal employment.								

Appendix II[7]

Hyperactivity – Inattention (Cronbach Alpha[i] = 0.838)

- Can't sit still, is restless or hyperactive
- Is distractible, has trouble sticking to any activity
- Fidgets
- Can't concentrate, can't pay attention for long
- Is impulsive, acts without thinking
- Has difficulty awaiting turn in games or groups
- Cannot settle to anything for more than a few moments
- Is inattentive

Conduct Disorder - Physical Aggression (Cronbach alpha = 0.770)

- Gets into many fights
- When another child accidently hurt him, assumes that the other child meant to do it, and then reacts with anger and fighting
- Physically attacks people
- Threatens people
- Is cruel, bullies or is mean to others
- Kicks, bites, hits other children"

Indirect Aggression (Cronbach Alpha = 0.781)

- When mad at someone, becomes friends with another as revenge
- When mad at someone, tries to get others to dislike that person
- When mad at someone, says bad things behind the other's back
- When mad at someone, says to others: let's not be with him
- When mad at someone, tells the other one's secrets to a third person

Emotional Disorder – Anxiety (Cronbach Alpha = 0.794)

- Seems to be unhappy, sad or depressed
- Is not as happy as other children
- Is too fearful or anxious
- Is worried
- Cries a lot
- Appears miserable, unhappy, tearful, or distressed
- Is nervous, high strung or tense
- Has trouble enjoying herself

Scores were transformed into deciles by cycle, and child gender and age.

Parental Hours of Work

Parental hours of work are based on the reported weekly average hours of work in the last 12 months. Working between 1 and 29 hours of work is classified as part-time. The other two categories include 30-49 hours and 49+ hours. The x9 cut-off point is required by how the average weekly hours of work variable is coded in the data.

[7] Portions of this appendix are excerpts from an unpublished manuscript from the same author.

Parental Shift Work

Parents are asked whether they work particular types of shift work. All of the types of shifts that parents were asked about are included as dummy variables except for "other" for which there are only a few observations. The shift work categories are not mutually exclusive as people can work both night shifts and week-ends, for example.

(PMK) Ineffective Parenting

The PMK responded to a series of questions about his or her parenting behaviour. The parenting scale that was used was an adaptation of Strayhorn and Weidman's Parenting Practices Scale. A factor analysis was conducted and four constructs emerged for children 2 to 11 years of age: positive interaction, (hostile) ineffective parenting, consistency, and punitive (aversive) parenting. A scale was calculated for each of the construct. Using unweighted cycle 3 data, the scales for these constructs are found to be significantly correlated at the 5 percent level with each other and with child behavioural and emotional scores. Ineffective parenting is positive correlated with punitive parenting (.50) and negatively correlated with consistent parenting (-.28) and positive interaction (-.18). Of all of the parenting scales, ineffective parenting has the highest correlation with child behaviour and emotive scores (hyperactivity (.42), conduct disorder (.45), indirect aggression (.27), and emotional disorder (.34)). Of the four parenting scales, ineffective parenting is the only one used because of the high degree of correlation between the scales. The ineffective parenting scale ranged from 0 to 25, with a standard deviation of around 3.5 in cycle 3, and is comprised of the following questions (questions have been abbreviated; Cronbach alpha = 0.706):

Of all the times that you

- talk to her about her behaviour, what proportion is praise? (-)
- talk to her about her behaviour, what proportion is disapproval?

How often do you

- get annoyed with ... for saying something she is not supposed to?
- get angry when you punish her?
- think that the kind of punishment you give her depends on your mood?
- feel you are having problems managing her in general?
- have to discipline her repeatedly for the same thing?

PMK Depression Score and Family Dysfunction

For the sake of brevity, the questions for these two variables are not included here. Both scores range from 0 to 36 and are made up of responses to 12 questions.

Presence of Non-Biological Parent

This variable is coded as one if one of the parents is not the biological parent. This is most likely to occur in two parent families. The variable will pick up the impact of certain marital disruptions on children. It will not pick up the impact of changing from a two parent to a one parent family, however.

Birth Order

This variable is the difference between the mother's age and the child's age. In a cross section model, it would pick up the impact of parental maturity on children. In a child

fixed effects model, this variable would disappear (except if the mother changed from one cycle to another) and it is thus not included. In household fixed effects models, this variable will pick up the impact of birth order on the outcome variable.

PMK Age and Male PMK

This variable is included in the depression, parenting, and family functioning models. These measures are based on PMK responses. The PMK could be a mother or a father, but more generally is a mother. Prior analyses had indicated that these variables vary with age and sex.

[i] The Cronbach alphas were calculated at cycle 1.