

Appendix 8: Secondary Studies that Investigate the Importance of Duration of Low Income

Authors (year)	Country	Dataset	Outcome - general	Outcome - specific	Sample	Income measure	Result summary
Bolger et al (1995)	US	Charlottesville Longitudinal Study	Social, behavioural and emotional development.	Self-Perception Profile - global self-worth subscale. Social preference (voted by peers). Teacher ratings of child behaviour problems.	Public school students followed 1986-1990, aged 8-10 in 1986. 534 children who participated in all four annual assessments included here.	Classified as low income if receiving federally mandated free or reduced price school lunches (income below 130% of federal poverty line for free lunch; 185% for reduced price)	Children who experienced persistent family economic hardship were more likely than those who did not to have difficulties in peer relations, show conduct problems at school and report low self-esteem. Children who experienced intermittent family economic hardship fell between the other two groups.
Bor et al (1997)	Australia	Mater University Study of Pregnancy	Child behaviour at 5	A 33-item shortened version of the Child Behaviour Checklist. Externalising, internalising and total behaviour problems constructed from this.	5,296 children followed up at age 5, all born to women presenting at one of two major obstetric hospitals in Brisbane. Mothers interviewed at 18 weeks, just after birth, 6 months and 5 years.	Family income reported by mothers on a seven point scale, prenatally and at 6 months and 5 years. Low family income if below 25th percentile (living near or below what is generally considered the poverty line in Australia).	The more often families experienced low income, the higher the rate of child behaviour problems at age 5.
Duncan, Brooks-Gunn and Klebanov (1994)	US	Infant Health and Development Program	Cognitive and behavioural development	Wechsler Preschool and Primary Scale of Intelligence. CBP behavioural competence scale, based on mothers' responses about behaviour in last 6 months (internalising and externalizing factors can be distinguished)	568 black and 796 white children aged 0-3 in 1980	Annual cash incomes collected in categories, converted to continuous using mid-point. Converted to poverty rate using income-to-needs ratio. Two categories of families in poverty - poor all of the time or some but not all the time.	The effects of persistent poverty on intelligence scores were roughly twice as large as the effects of transient poverty, and for age 5 behaviour the effects were 60% to 80% higher.
Evans and Kim (2007)	US	An unnamed longitudinal study of 207 adolescents	Health	Cortisol and cardiovascular response	207 adolescents in upstate New York, aged average 9.2 at wave 1 and 13.4 at wave 2. 53% at or below federal poverty line at recruitment. Survey dates not clear.	Proportion of years each adolescent has lived in poverty since birth. Poverty is income below income-to-needs ratio of one. Income measure itself not clear. (Only two waves of data so largely	The greater the number of years spent living in poverty, the more elevated the cortisol and the more dysregulated the cardiovascular response.

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						retrospective collection).	
Guo (1998)	US	NLSY	Cognitive achievement and ability	PIAT-R, PIAT-C, PIAT-M, PPVT-R, Digit Span Assessment. Tests at age 6 and age 13.	Original sample included 12,686 youth aged 14-21 in 1979, oversampling African Americans, Hispanics and economically disadvantaged whites. From 1986 children assessed every two years.	Three measures of long-term family poverty constructed. (1) Proportion of the years preceding an assessment in which family lived below poverty line. (2) average income-to-needs in years preceding the assessment. (3) average yearly family income in years preceding assessment. (Four years before 1986; 10 years before 1992.)	For <i>ability</i> , longer exposure to poverty is not necessarily related to larger influences of poverty: poverty in childhood seems more important than in adolescence. For <i>achievement</i> , poverty in adolescence seems most important and poverty in childhood less so.
Haveman et al (1991)	US	PSID	Educational attainment	High school completion	1987 wave of PSID. Children aged 4 or younger in 1968 but still in sample in 1987: a total of 1,258 individuals.	Number of years in poverty or receiving welfare benefits from AFDC, between age 4 and age 15 ('in poverty' not defined)	More years in poverty reduces likelihood of completing high school. (Though doesn't really test this - just includes the number of years as the variable of interest).
Holmes and Kiernan (2013)	UK	MCS	Cognitive and behavioural development	Cognitive tests based on British Ability Scales. Total difficulties score derived from Strengths and Difficulties Questionnaire.	10,116 households for cognitive analysis; 8,113 for behavioural. Children born in 2000-01 and data collected at 9-11 months, three years and five years.	Banded income data collected at each wave. Income values were created by giving households the mean value of the income band threshold. Poverty defined as having equivalised household income below 60% of the UK median. Persistent poverty defined as being poor in all three waves.	Persistently poor children have more disadvantageous developmental contexts and worse developmental outcomes than children in poverty for shorter periods.

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Kiernan and Mensah (2009)	UK	MCS	Cognitive and behavioural development	Bracken Basic Concept Scale at age 3. Strengths and Difficulties Questionnaire at age 3, as reported by mother.	14,777 families with a child born 2000-01, where natural mother provided information at both first and second waves.	Poverty defined as income below 60% equivalised median. Details on construction of income from banded categories not given (but see Kiernan and Mensah, 2011).	Differences in cognitive development between children who had experienced poverty only at three and those poor at both waves not significant, but between 9 months only and both years was significant. For behavioural outcome any poverty matters, whether persistent or in one wave.
Kiernan and Mensah (2011)	UK	MCS	Cognitive and social development	Foundation Stage Profile scores	5,462 children born 2000-01: those whose mothers were interviewed at the initial survey for whom there was an educational assessment at age five and for whom information on family income was reported at each of initial and follow-up surveys	Banded income data collected at each wave. Income values were created by giving households the mean value of the income band threshold. Poverty defined as having equivalised household income below 60% of the UK median. Persistent poverty defined as being poor in all three waves. Episodic as being poor in one or two waves.	Poverty matters, but persistent poverty is even more detrimental for children's attainment.
Korenman, Miller and Sjaastad (1995)	US	NLSY	Cognitive and socio-emotional development	PPVT. Seven psychometric tests and an index of behaviour problems.	Children born between 1978 and 1988. Sample varies from 1,939 to 3,826 depending on the test. Annual interviews.	Family income divided by US Census Poverty line. Long-term income measured by the 13 year income-to-needs ratio (1978-1990). Current income is based on single year income-to-needs in calendar year of outcome data.	Developmental deficits are twice as large for children experiencing poverty over a number of years compared to those only experiencing poverty in one year.

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Kozyrskyj et al (2010)	Australia	Western Australian Pregnancy Cohort (Raine) Study	Health	Asthma	2,868 children born from 1989 to 1991 to mothers enrolled at antenatal clinics in Perth, Western Australia. Followed up at ages 1,2,3,6,8,10 and 14.	Classified as low income if reported household income below AU\$27,000 (until age 6) or \$30,000 (afterwards). Four trajectories then constructed: Chronic low income, increasing income, decreasing income, not ever low income. (At age 6, just two categories were used - chronic or not)	Compared with children in chronic low income families, children in households with increasing income had a 60% lower risk of asthma. Single point measures of low income were not associated with asthma.
Lee (2009)	US	NLSY	Home environment and children's reading	PIAT test, HOME.	Out of 4,675 children, those whose reading scores were measured at 5/6, 6/7, 7/8, 9/10 and 11/12 were selected, from 1986-1992 cohorts. 2,331 children in final sample.	Dichotomous poverty status, based on federally defined poverty line. Children classified as persistently poor (3 years or more), transitional poor and no poverty. This information only covered from birth to age 5 or 6.	Reading scores significantly worse for persistently poor than transitional or never poor, and gaps grow as children get older. Home environment also significantly worse for persistently poor.
Lefebvre (2006)	Canada	ELDEQ	Health	Child's health as reported by the mother on a four point scale from excellent to poor)	2120 Quebecois newborns born in 1997-98, followed up annually between 5 months and 4 years.	Gross family income in each wave reported by mother. Banded variable available for those who don't want to answer, and authors impute income from the band, in some cases also using information on the main source of income and reported income in later waves.	Income averaged over all previous years has a stronger association with health in each wave than contemporary income.

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McLeod and Shanahan (1993)	US	NLSY	Parenting and children's mental health	Internalizing and externalizing symptoms, based on mothers' ratings of six areas of problem behaviour.	1986 survey of the children of the NLSY. Children who were between 4 and 8 at the time of that interview and living with their mother. Final sample 1,733 children of 1,344 mothers.	% of years of life during which child in poverty, plus a dummy for current poverty status. Poverty status using estimates for each family type based on US Department of Health and Human Services methods (because official government poverty levels hadn't been determined at that time). Then using annual family income in previous year.	Persistent poverty affects internalising symptoms beyond the effect of current poverty, but only current poverty predicts externalizing symptoms. Mother's weak emotional responsiveness and frequent use of physical punishment explains the effect of current poverty on mental health, but not the effect of persistent poverty.
McLeod and Shanahan (1996)	US	CNLSY	Antisocial behaviour	Children's mental health as reported on a scale by mothers (modification of Achenbach Behaviour Problems Checklist. Focus on depression and antisocial behaviour.	Children between 4 and 5 in 1986 and living with their mothers. 907 eligible children.	Annual income reported by mothers and compared to official poverty levels for that year (official poverty levels didn't exist in 1986 but were worked out by the data collection team using similar methodology). If no income data, receipt of AFDC was used to proxy poverty. Models included contemporary poverty and percentage of child's life family had been poor.	Rates of increase in antisocial behaviour were substantially higher for children with histories of persistent poverty during those years than for transiently poor or non-poor children.
Miller and Davis (1997)	US	NLSY	Home environment	HOME: based on interviewer observations of mother-child interactions and safety and appearance of the home, plus maternal reports of child interactions with adult family members, discipline methods and materials and activities available to the child.	Approximately 1,900 children aged from 6 to 9 in 1992, children of the original NLSY mothers.	Family income in a given year divided by income to needs ratio, averaged over all years of observation. Then did the same for being poor only in the first half of life prior to observation and in the second half. (E.g. for a 7 year old, born in 1985, early income would be for 1984-87 and later income for 1988-1991).	Recent poverty was associated with deficits nearly as largely as long-term poverty.

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Najman et al (2009)	Australia	Mater University Study of Pregnancy	Cognitive development	Ravens Standard Progressive Matrices and Wide Range Achievement Test at age 14.	Prospective longitudinal study of individuals born at a major public hospital in Brisbane between 1981 and 1983. Data collected at 18 weeks pregnancy, 3-5 days, 5 years and 14 years. This sample approx. 3,000 participants who provided cognitive development scores at age 14.	Total gross income as reported by mother during pregnancy and at 6 months, 5 years and 14 years old, in seven discrete income categories. Mothers with income closest to the bottom 20% of incomes were considered to be low income (poor).	The frequency with which poverty is experienced predicts the extent of reduced cognitive scores.
Najman et al (2010)	Australia	Mater University Study of Pregnancy	Aggressive or delinquent behaviour; health behaviour.	Child aggressive/delinquent behaviour from responses to Youth Self-Report at 14 and Young Adult Self-Report at 21. Smoking and alcohol use at age 21 via self-report.	Prospective longitudinal study of individuals born at a major public hospital in Brisbane between 1981 and 1984 (though Najman et al 2009 reports 1981-83). Data collected at 18 weeks pregnancy, 3-5 days, 5 years, 14 years and 21 years. This sample is 3,103: those who provided information on aggression/delinquency at 14 and 21 and smoking and alcohol consumption at 21, and had data on poverty between first clinic visit and age 14.	Total gross income as reported by mother during pregnancy and at 6 months, 5 years and 14 years old, in seven categories. Family income classified as low-income if below the 25 centile.	Strongest associations were for recurrent experiences of family poverty. The group that experienced repeated poverty (3-4 times) were more than twice as likely to be aggressive/delinquent at both 14 and 21 and to drink more than one glass of alcohol a day at 21.

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NICHD (2005)	US	NICHD SECC	Cognitive and language development	24 months Mental Development Index (Bayley Scales). 36 months Bracken Scale of Social Concepts. School Readiness subscale of Bracken. Mothers, caregivers and teachers' reports of behaviour problems.	1,364 families recruited through hospital visits shortly after the birth of a child in 1991 in 10 US locations and followed up at 1 month. Subsequently followed up at 6, 15, 24, 36 and 54 months.	Family income from mothers report used, adjusted by income-to-needs ratio. Five time points between 6 and 36 months. Families split into never poor, poor early, late or both.	Persistently poor families had the lowest levels of performance of the four groups on tests of language and school readiness and their scores were significantly different from those in families experiencing shorter-term poverty. Mothers and teachers rated children in chronically poor and late-poor families as having more externalizing and internalizing behaviour problems than children in other groups.
Pagani et al (1999)	Canada	Montreal Longitudinal-Experimental Study	Academic placement and self-reported delinquency at age 16.	At age 16 boys completed a questionnaire about anti-social behaviour during last 12 months. Data on grade placement (whether in correct grade for age) obtained through official school records.	497 boys attending kindergarten in 1984 in French speaking schools in low SES areas of Montreal. Interviewed at 6 years old and followed up annually from age 10 to 16.	Annual information on income gained from parents annually from 10 years old, in categories. Income-to-needs ratio calculated using poverty threshold from Statistics Canada. This information used to classify families as never poor, always poor, poor earlier, poor later and transitory poor (two or more changes in poverty status in opposite directions).	Persistent financial hardship predicts not being in the correct grade for age. But unstable financial hardship was most strongly associated with delinquency. NB sample limited to boys living in low-income neighbourhoods.
Schmeer (2012)	US	Fragile Families	Health	Maternal rated child health status	Children born to Hispanic mothers in large US cities 1998-2000. 1084 children. Interviewed after birth and when children were 1, 3 and 5 years old.	Poverty defined as income below the national poverty line. Number of waves in which household is poor is summed.	Living more years in poverty is associated with declining health status among young Hispanic children.

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Taylor, Dearing and McCartney (2004)	US	NICHD SECC	Home environment, cognitive and social development.	HOME (see above); At 24 and 36 months Mental Development Index from Bayley Scales of Infant Development and Bracken Scale of Basic Concepts and Reynell Developmental Language Scales. At 54 months Woodcock-Johnson Psycho-Educational Battery. Mothers, caregivers' and teachers' reports of behaviour problems using Child Behaviour Checklist.	1,364 families recruited through hospital visits shortly after the birth of a child in 1991 in 10 US locations and followed up at 1 month. Subsequently followed up at 6, 15, 24, 36 and 54 months.	5 observations of family income between 6 months and 3 years. Look at total family income, total income adjusted by income-to-needs ratio, and look at contemporaneous income and income averaged over the period.	Income effects are smaller when current income measures are used.
Wagmiller et al (2006)	US	PSID	Educational attainment	High school graduation	947 children between 0-3 on January 1 1968. Followed annually over 12 years from 1968. Children with more than six missing income measures were not included.	Poverty in any given year means having total annual family income below the official US poverty threshold for a family of that size (inflated by 25% because reported incomes in PSID appear high). Latent Class Analysis used to classify families as long-term poor, moving out of poverty, moving into poverty and non-poor.	Persistent poverty is more detrimental to chances of high school graduation than early childhood poverty or deteriorating incomes.