Growing Up in Ireland
National Longitudinal Study of Children

TECHNICAL SERIES
NUMBER 2019 - 1

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COHORTS '98 & '08

County Variation in the Outcomes of Children and Young People

Key Findings

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County Variation in the Outcomes of Children and Young People - Key Findings

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Table of Contents

Chapter 1

INTRODUCTION

CHAPTER 1: INTRODUCTION

Growing Up in Ireland (GUI) has contributed greatly to our knowledge about the lives and outcomes of children and young people. However, little is still known about whether child outcomes vary spatially. The large sample size and the coverage of all of the key domains of children's lives mean that ***Growing Up in Ireland*** data have a unique advantage in assessing the extent to which experiences and outcomes among children and young people vary geographically, more specifically, by county. This feasibility study sets out to:

1. Examine whether county-level variances in selected child outcomes are significant in scale;
2. Explore the extent to which any such variation is related to the composition of the county (in terms of its population and otherwise) across a range of characteristics.

The study is based on analysis of data from Cohort '08 (formerly the Infant Cohort) (at ages 9 months, 3 years and 5 years) and Cohort '98 (formerly the Child Cohort) (at age 9 years and 13 years). A statistical technique known as multi-level modelling is used to assess the scale of differences between counties and whether any county-level effects on child outcomes remain, even when taking account of a range of individual, family, school and neighbourhood characteristics. This document represents a summary of a more detailed analysis of county-level differences contained in a separate technical report.[1]

There has been a good deal of research and debate internationally about the extent to which place matters in shaping child outcomes. Place can influence these outcomes through the concentration of families with fewer economic, cultural and social resources in particular locations, with consequences for levels of social cohesion and informal support, through the physical environment (including exposure to pollution), through the lack of access to particular services and supports, and through specific policies (such as educational funding levels in the US or the UK) at the local administrative area level (Elliott et al., 2006; Galster, 2011; Sampson et al., 2002). Many existing studies have focused on neighbourhoods, although there has been much controversy about how these units are defined (Sharkey and Faber, 2014). Other studies have looked at how administrative units, such as local education authorities, shape outcomes among children and young people (Lee et al., 2012).

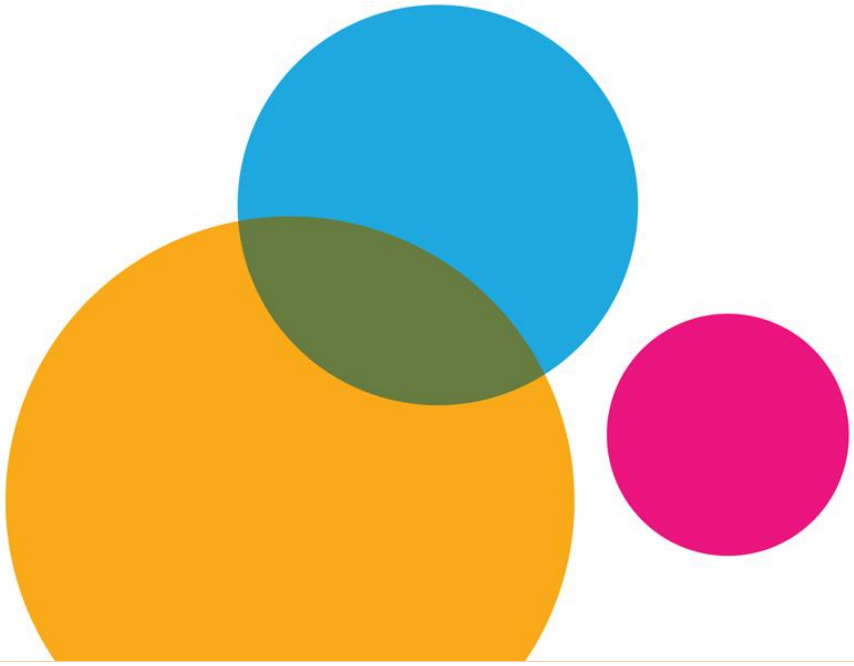
Counties may be expected to influence child outcomes through the socio-demographic composition of the population and through policy initiatives at local level. At the same time, government in Ireland is highly centralised, with county councils responsible for a relatively limited number of functions, including planning, local roads, libraries and community development funding. In addition, there are further subdivisions within three counties (Dublin, Cork and Galway) so that policy may vary within

[1] This technical report is available on request from the authors.

county boundaries. Several aspects of education provision are now organised regionally through Education and Training Boards (ETBs) which in some cases comprise a county but in other cases span two counties, though the ETB remit covers further education and training but only part of primary and second-level education. There is evidence of some variation across counties in unemployment rates, social class profile and income levels (CSO Census of Population 2016; CSO Statistical Release, February 2018), characteristics which would be expected to shape outcomes among children and young people. Educational outcomes have been found to vary by place, with retention rates to Leaving Certificate ranging from 86 per cent in Carlow to 93.8 per cent in Sligo County (DES, 2017). Rates of progression to higher education also vary by county. However, within-county differences are important with significant variation in higher education entry by Dublin postcode. Similarly, levels of deprivation vary considerably within county, even within the same town (Pobal, 2018).

Chapter 2

DATA AND METHODOLOGY



CHAPTER 2: DATA AND METHODOLOGY

The report uses data from the first five waves of the ***Growing Up in Ireland*** study, namely, 9 month, 3-year and 5-year data from the younger Cohort '08 and the 9-year and 13-year data from the older Cohort '98. This feasibility study was initially intended to focus on approximately five key outcomes for each wave of the two GUI cohorts. However, as analyses proceeded, it became clear that there was a good deal of variation in the existence of county-level variation even among different aspects of the same domain. As a result, the number of indicators used was extended. The indicators analysed were selected on the basis of two criteria:

I. The outcome was appropriate to the developmental stage of the child;

II. The indicators covered the main domains of the child's life, reflecting Bronfenbrenner's ecological approach, namely, family characteristics and processes; health and physical development; socio-emotional wellbeing; and education and cognitive development.

A full list of the outcomes analysed is presented in Appendix 1.

The analytical approach adopted in the analysis is multi-level modelling. This is a technique which allows the researcher to investigate the effects of an individual's characteristics on outcomes, whilst also taking into account the fact that the individuals are 'nested' or grouped in some way. In this case, the 'nesting' is at the county level. In other words, the technique allows us to assess the effect of being in a given county on the outcomes of a child, taking into account their individual and family characteristics. For each outcome, a nested series of models was estimated in which different sets of factors were added cumulatively:

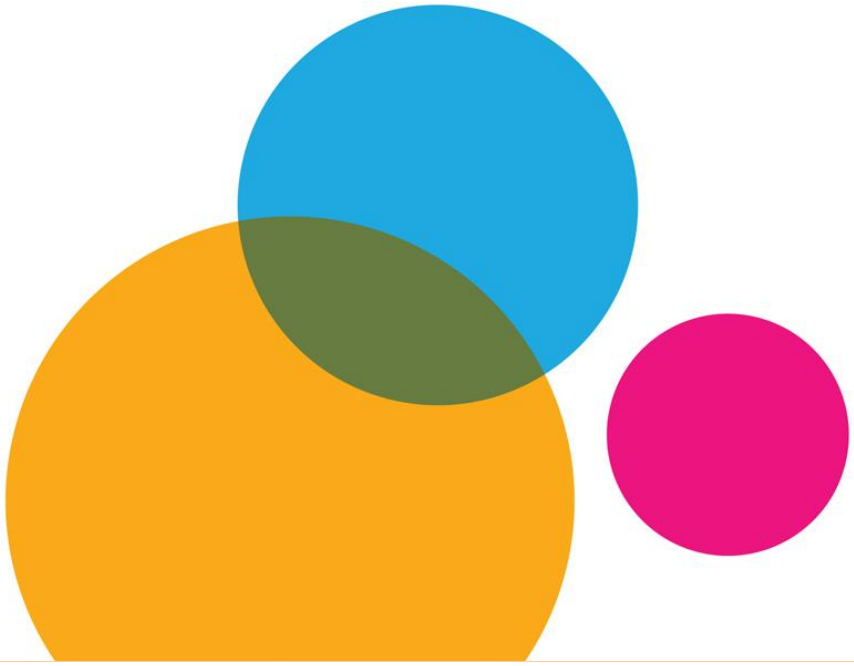
- Raw differences by county (the null model) without taking into account any other factors;
- The addition of socio-demographic characteristics to assess whether any between-county differences are related to the composition of the population;
- The addition of school characteristics (for Cohort '98) to examine whether differences relate to the kinds of schools provided;
- The addition of information on (perceptions of) neighbourhoods and access to family support locally to explore whether any county-level differences relate to the profile of neighbourhoods within them;
- The addition of a measure of the population density of the local area to examine whether county-level differences reflect the degree of urbanisation.

The factors included in the models are outlined in Appendix 1.

Appendix 2 presents a series of tables which show whether between-county differences are statistically significant across each of the five models for each outcome analysed. For continuous outcomes (for example, parental stress), the tables show the percentage of variance which lies at the county level initially and after taking account of a range of other characteristics. If county of residence accounts for less than one per cent of total variation, it can be concluded that county makes little difference to the outcome in question. For categorical outcomes, the proportion of variation at the county level cannot be calculated in the same way so only the significance levels are presented.

Chapter 3

THE FINDINGS



CHAPTER 3: THE FINDINGS

This section discusses the extent of variation between counties in relation to, in turn, family characteristics and processes, health and physical development, socio-emotional well-being, and cognitive development and school experiences.

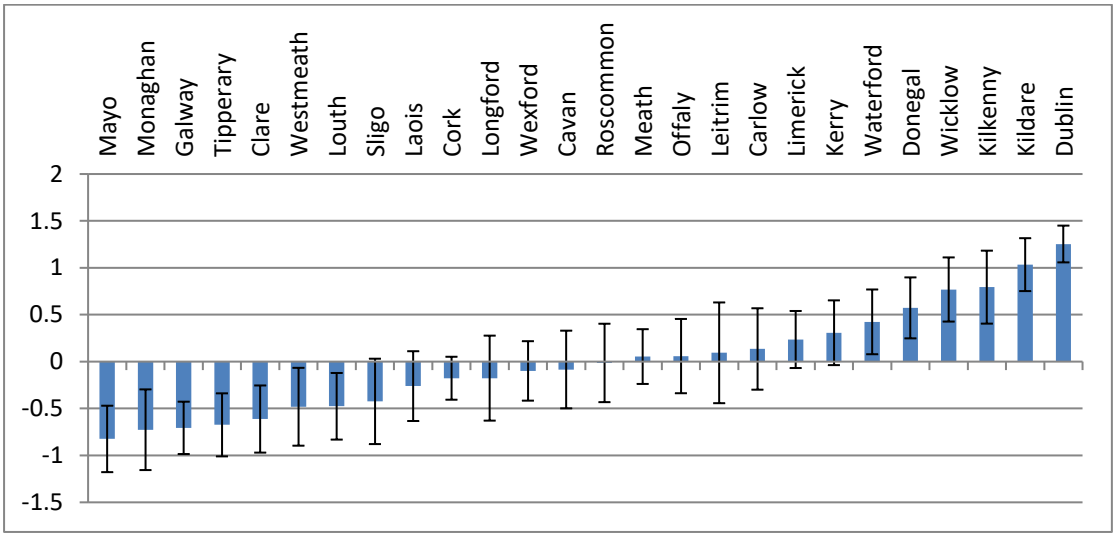
3.1 FAMILY CHARACTERISTICS AND PROCESSES

In terms of family characteristics, maternal age is found to vary significantly across counties, though county only accounts for less than one per cent of the total variance found (Model A, Table A2.1). In other words, more than 99 per cent of the variation in maternal age is found within counties. A considerable proportion of this between-county difference is accounted for by the socio-demographic profile of the families within counties (compare the coefficients in Models A and B). Maternal employment only varies systematically by county at one time-point, for the mothers of the 9 year olds, and this difference is not accounted for by the population profile, school attended, neighbourhood or population density.

Neither the quality of the couple relationship (dyadic adjustment) nor maternal depression show systematic variation across counties.[2] Parental stress varies significantly across counties, but the scale of the variation is small (0.4-0.9% of the total variation). In interpreting the scale of between-county differences, it can be useful to visualise the patterns. Figure 1 shows the county-level residuals for the null model, that is, the raw differences between counties showing parental stress among the mothers of 9-month-old infants as an example. In the multilevel model, the between-county difference is calculated as significant at the $p<.01$ level. However, the figure makes clear the degree of overlap in estimates across different counties. While Mayo is 'ranked' as having the lowest level of parental stress, its level is not in fact distinguishable from levels in 12 other counties since the error bars overlap. Dublin is 'ranked' as having the highest level of parental stress but cannot be clearly distinguished from three other counties.

[2]Maternal depression is at the borderline of significance (10 per cent level) at 9 months and 3 years but the scale of the difference is small and the significance level sensitive to the inclusion of other variables.

Figure 1: Raw differences (residuals) between counties in parental stress among mothers of 9-month-old infants, showing error bars



For Cohort '08, between-county variation in parental stress levels becomes insignificant once the level of family support locally is taken into account (compare the coefficients for Models B and D).

A number of different measures of the quality of relationship between parent and child were analysed. Some but not all of these outcomes vary significantly by county, but any differences found are small (at most 1.2 per cent of the total variation). As with parental stress, the presence of family support locally accounts for a good deal of the variation in county-level differences, at least for Cohort '08.

In sum, most of the variation in key family characteristics and processes occurs within counties, with county of residence explaining little of the difference found.

3.2 HEALTH AND PHYSICAL DEVELOPMENT

The analyses indicate very little variation between counties in key dimensions of child health and physical development. There is no difference between counties in rates of childhood overweight or obesity or in rates of child disability (Table A2.2). Maternal ratings of child health vary by county only at 9 months but not at 3 years, 5 years, 9 years or 13 years. Breastfeeding rates on hospital exit vary significantly by county but this difference is largely accounted for by the socio-demographic characteristics of mothers (compare the coefficients in Models A and B). There are some between-county differences in motor development (at 9 months and 3 years) but the scale is small (0.31-1.7%). There is some variation in physical exercise/sports participation but the results are not consistent between 9 and 13 years of age. In sum, as with family characteristics, the vast majority of variation in child health and physical development occurs within rather than between counties.

3.3 SOCIO-EMOTIONAL WELLBEING

A range of measures of socio-emotional wellbeing were explored, reflecting the stage of the child's development and the extent to which the primary caregiver or the child/young person themselves acted as the source of information. Aspects of child temperament, with the exception of sociability, are found to vary significantly by county, but the scale of the difference is small (0.4-1.2% of total variation). In addition, personal social development at 9 months varies by county but county accounts for less than half a per cent of variation. Socio-emotional difficulties (as measured by total score in the Strengths and Difficulties questionnaire) vary significantly by county but the scale of the difference is just 0.6-2% of total variation. At 3 and 5 years, some of the between-county variation in SDQ scores is accounted for by neighbourhood characteristics (compare the coefficients in Models B and D). In terms of self-concept, freedom from anxiety varies by county at 9 and 13 years of age (0.6-0.8% of variation). Happiness varies by county (0.7% of variation) at 9 years of age but not at 13. There are small between-county differences (0.7-1%) in self-reported depressive symptoms and involvement in antisocial behaviour at 13 years of age; any such difference is only of borderline significance when the degree of urbanisation is taken into account. In sum, county of residence is found to make little difference to the socio-emotional wellbeing of children and young people.

3.4 COGNITIVE DEVELOPMENT AND EDUCATIONAL EXPERIENCES

The analyses show some between-county variation in the use of non-parental childcare at 9 months and 3 years and this variation is apparent even taking account of degree of urbanisation (and other characteristics) (Table A4.1). There is significant between-county variation in the home learning environment (that is, in the extent to which parents engage in activities like reading with their children), though these differences are small (1-1.4% of total variation). Most measures of cognitive development vary significantly by county, but the scale of difference is small (typically 0.4-2% of total variation). The largest between-county variation was found in relation to performance on the picture similarities (at 3 and 5 years) and matrices tests (at 13 years), where these differences accounted for 5 to 9 per cent and 3.8 per cent of total variation respectively. These differences were not explained by the inclusion of socio-demographic, school, neighbourhood of population density factors.[3] However, it is difficult to envisage a mechanism whereby living in a particular county could shape one's ability to

[3] The exception is Drumcondra reading test scores at age 9; almost two-thirds of the raw difference was explained by between-county differences in socio-demographic profile and the between-county difference was not significant when population density was taken into account.

discern shapes and patterns. In addition, it is worth noting that counties that had higher scores on test scores for Cohort '08 did not have higher test scores for Cohort '98.

Subjective experiences of school measured at 9 and 13 years of age do not tend to vary by county. The exception is academic self-image (Piers-Harris Intellectual Status) which varies by under one per cent of variation at age 9 and by less than half a percentage point at 13 years of age. Between-county differences in educational expectations among 13 year olds are accounted for by the socio-demographic profile of counties.

In sum, there appears to be more evidence of between-county variation in cognitive test scores than in relation to the other outcomes considered. At the same time, with the exception of the patterns for picture similarities and matrices, these differences are very small. Furthermore, counties with higher scores on one test at one time-point do not tend to have higher scores on another test and/or the same test at a different time-point.

Chapter 4

SUMMARY

CHAPTER 4: SUMMARY

The ***Growing Up in Ireland*** study is uniquely placed to provide systematic evidence on the extent to which county of residence shapes outcomes among children and young people. This Key Findings has summarised the examination of between-county variations using five waves of ***Growing Up in Ireland*** data. A total of 106 outcomes were considered. Forty-seven of these did not display significant county-level variation, while for a further 19 the initial significant variation associated with county was accounted for by the structure of the population, neighbourhood or density characteristics. For 40 outcomes, the significant county-level variation persisted, even after these individual characteristics were included in the models. The largest between-county variation was found in relation to performance on the British Abilities Scale's Picture Similarities and Matrices tests. Overall, most of the county differences which were statistically significant were small in scale, typically representing 0.5-1.0 per cent of the total variation in the outcomes in question. In other words, the vast majority of variation in child outcomes occurs within counties. In addition, the analyses indicate that the counties which performed best on some outcomes did not perform well on others. Equally, counties which performed well on outcomes in Cohort '08 were not necessarily those which performed best in Cohort '98.

The conclusion to be drawn is that in Ireland, county of residence is not a key driver of outcomes among children and young people. Nonetheless, the study findings are highly relevant for county-level planning and provision. Analyses based on GUI data presented here and elsewhere (see, for example, Williams et al., 2016) highlight the way in which the socio-economic circumstances of the family into which children are born profoundly influence their outcomes across all domains in terms of physical health, socio-emotional wellbeing, cognitive development and educational experiences. Policy to target disadvantage will therefore make a difference within as well as across counties. In addition, it should be noted that the larger spatial unit of the county may be masking a good degree of variation, which may become apparent if smaller units (such as local neighbourhoods) were analysed (Openshaw and Taylor, 1979). More detailed analyses (not presented here) indicate that perceptions of neighbourhood quality and access to family support locally significantly influence a range of outcomes, including parental stress and socio-emotional wellbeing. There is considerable potential to use GUI data to further unpack the extent to which local area characteristics shape child outcomes.

Appendix 1

OUTCOME AND INDEPENDENT VARIABLES

APPENDIX 1: OUTCOME AND INDEPENDENT VARIABLES

The outcome measures examined are as follows:

A1.1 FAMILY CHARACTERISTICS AND PROCESSES

- Maternal age at the time of the survey (9 months)
- Maternal employment – whether the mother was in paid employment, full-time or part-time, at the time of the survey (9 months - 5 years)
- Maternal depression – the Centre for Epidemiological Studies Depression Scale (CESD-8) which was developed as a screening instrument to assess depression in the general population (9 months – 13 years)
- Parental stress, using the total score for the Parental Stress Scale developed by Berry and Jones (9 months – 5 years, 13 years)
- Quality of the relationship between parents, measured using the short form of the Dyadic Adjustment Scale (9 months – 5 years)
- Satisfaction with support from wider family, distinguishing between mothers who say 'I get enough help' from family and friends living outside the household and all others (9 months)
- Attachment between the primary care-giver and child, measured using the Quality of Attachment subscale from Condon and Corkindale's Maternal Postnatal Attachment Scale (9 months)
- Attachment between the secondary care-giver and child (9 months)
- Warmth towards child, as reported by the primary care-giver, using the warmth subscale of the LSAC Parenting Style measure (3 and 5 years)
- Conflict with child – as reported by the primary care-giver, using the conflicts subscale of the Pianta Child-Parent Relationship Scale (3, 5 and 9 years)
- Positive relationship with child - as reported by the primary care-giver, using the positive subscale of the Pianta Child-Parent Relationship Scale (9 years)
- Demandingness of the mother, as reported by the young person, based on a subscale of the Parenting Style Inventory (13 years)
- Responsiveness of the mother, as reported by the young person, based on a subscale of the Parenting Style Inventory (13 years)

- Psychological autonomy-granting of the mother, as reported by the young person, based on a subscale of the Parenting Style Inventory (13 years)

A1.2 HEALTH AND PHYSICAL DEVELOPMENT

- Low birth weight, that is, being less than 2.5 kg – primary care-giver's report (9 months)
- Breastfeeding on hospital exit – primary care-giver's report (9 months)
- Perceived health status of child – primary care-giver's report, distinguishing between those described as 'very healthy' and all others (9 months – 13 years)
- Child having a disability – primary care-giver's report (9 months, 3 years)
- Development: gross motor skills, based on an adapted version of the Ages and Stages Questionnaire, examining whether the infant had reached the 6 month and 12 month milestones (9 months)
- Development: fine motor skills, based on an adapted version of the Ages and Stages Questionnaire, examining whether the infant had reached the 6 month and 12 month milestones (9 months)
- Development: fine motor skills (whether the child has used a pincer grip) (3 years)
- Child overweight or obese, using the age-appropriate International Taskforce on Obesity cut-offs (3-13 years)
- Frequency of physical exercise, as reported by the child – 4 point scale (9 years)
- Frequency of hard physical exercise, as reported by the young person – 4 point scale (13 years)
- Frequency of light physical exercise, as reported by the young person – 5 point scale (13 years)
- Participation in sports, young person's report of number of sports or activities – 5 point scale(13 years)

A1.3 PSYCHOLOGICAL WELLBEING AND EMOTIONAL DEVELOPMENT

- Temperament: fussy, based on the six month version of the Bates et al.'s Infant Characteristics Questionnaire, where higher scores indicate a more 'difficult' temperament (9 months)

- Temperament: unadaptable, based on the six month version of the Bates et al.'s Infant Characteristics Questionnaire (9 months)
- Temperament: dull, based on the six month version of the Bates et al.'s Infant Characteristics Questionnaire (9 months)
- Temperament: unpredictable, based on the six month version of the Bates et al.'s Infant Characteristics Questionnaire (9 months)
- Temperament: persistence, measured using an abbreviated version of Short Temperament Scale for Toddlers (3 and 5 years)
- Temperament: sociability, measured using an abbreviated version of Short Temperament Scale for Toddlers (3 and 5 years)
- Temperament: reactivity, measured using an abbreviated version of Short Temperament Scale for Toddlers (3 and 5 years)
- Development: personal-social, based on an adapted version of the Ages and Stages Questionnaire, examining whether the infant had reached the 6 month and 12 month milestones (9 months)
- Strength and Difficulties Questionnaire total score, a measure of psychological adjustment across behavioural and psychosocial domains (3 years – 13 years)
- Freedom from anxiety, self-reported subscale from the Piers-Harris Children's Self-Concept Scale, 2nd edition (9 and 13 years)
- Happiness, self-reported subscale from the Piers-Harris Children's Self-Concept Scale, 2nd edition (9 and 13 years)
- Depression, self-reported responses to the Short Mood and Feelings Questionnaire (13 years)
- Involvement in anti-social behaviour, self-reported responses to 15 items derived from the Edinburgh Study of Youth Transitions (13 years)

A1.4 EDUCATION AND COGNITIVE DEVELOPMENT

- Use of non-parental childcare (9 months, 3 years)
- Use of centre-based childcare (3 years)
- Development: communication, based on an adapted version of the Ages and Stages Questionnaire, examining whether the infant had reached the 6 month and 12 month milestones (9 months)

- Development: problem-solving, based on an adapted version of the Ages and Stages Questionnaire, examining whether the infant had reached the 6 month and 12 month milestones (9 months)
- Naming vocabulary, a core scale from the British Abilities Scales Early Years Battery (3 and 5 years)
- Picture similarity, a core scale from the British Abilities Scales Early Years Battery (3 and 5 years)
- Age started school (5 years)
- Home learning environment, measured by the frequency with which the primary care-giver engages in nine activities with the child (including reading, playing etc.) (5 years)
- Intellectual and School Status, self-reported subscale measuring academic self-image from the Piers-Harris Children's Self-Concept Scale, 2nd edition (9 and 13 years)
- Homework non-completion, teacher report that the child comes to school with homework not completed regularly or occasionally (9 years)
- Low homework engagement: young person report that they usually spend one hour or less on homework on a weekday evening (13 years)
- Liking school, as reported by the child/young person – 3 point scale at 9 and 5 point scale at 13 (9 and 13 years)
- Liking Reading as reported by the child/young person – 3 point scale (9 years)
- Liking Maths as reported by the child/young person – 3 point scale (9 years)
- Absenteeism from school, number of days the child was absent from school in the last year as reported by the primary care-giver – 5 point scale (9 and 13 years)
- Drumcondra reading test score, based on school-based completion of a standardised test related to the national curriculum, transformed to have a mean of 100 and a standard deviation of 15 (9 years)
- Drumcondra mathematics test score based on school-based completion of a standardised test related to the national curriculum, transformed to have a mean of 100 and a standard deviation of 15 (9 years)

- Drumcondra verbal reasoning test score – home completion of an abbreviated version of the test designed to measure cognitive skills (13 years)
- Drumcondra numeric ability test score – home completion of an abbreviated version of the test designed to measure cognitive skills (13 years)
- British Ability Scale (BAS) matrices test – home completion of a 33 item subtest from the School Age Battery (13 years)
- School-based misbehaviour and related sanctions, young person's report on the frequency they had engaged in misbehaviour and received punishment (such as detention), based on a measure previously used in the Post-Primary Longitudinal Study (13 years)
- Educational expectations – highest qualification expected by the young person, with four categories ranging from Junior Certificate to degree (13 years).

In the models, the social profile of the population was measured in terms of child gender, mother's education, social class of the household (using the CSO scale), equivalised household income grouped into quintiles, family structure (lone parent or couple), and whether one of the parents is an immigrant. For Cohort '98, whether the child/young person had a special educational need (SEN) was included as a further control, using a measure developed by Banks and McCoy (2011) which takes account of both parent and teacher reports.

Because of the different structures of primary and second-level schools, different measures were used for the two levels. At primary level, the characteristics included were school size, DEIS status (4 categories), gender mix, and whether the school was fee-paying. At 9 years of age, account is also taken of teacher gender and years of teacher experience. At second-level, the characteristics included were school size and DEIS status (binary). At 13 years of age, the analyses also differentiate between those in first and second year of second-level education. For Cohort '98, a control was also included to indicate whether the young person was receiving support for their SEN.

There has been a good deal of debate on how best to measure neighbourhood characteristics (see above). Much research has focused on neighbourhood disadvantage, an approach adopted by Quail (2015) to analyse socio-emotional outcomes among 9 year olds. This approach is not used here as SAPS information on the local district electoral division is available for Cohort '98 only. Access to services locally has also been a dominant theme in neighbourhood research and there is potential to link geo-coded service provision to GUI data, an approach used by Keane et al. (2015) to look at the effects of proximity to supermarkets and convenience stores on child obesity levels. The approach adopted here is to use mothers'

perceptions of the local area in terms of safety and facilities, an approach which mirrors the 'social contagion' perspective used in much international research on neighbourhood effects (Sampson et al., 2012). For Cohort '08, the measures used related to the perceived orderliness of the neighbourhood (absence of rubbish, poor condition homes, vandalism and people being drunk), not feeling it was a safe neighbourhood, not having good parks or play spaces and it not being safe for children to play outside during day. A variable was also included on whether the primary care-giver had family living locally. For Cohort '98, the measures used relate to the perceived orderliness of the neighbourhood, not feeling this was a safe area for the 13 year olds, not feeling it was safe for them to walk alone at night and not having facilities for teenagers in the area. As information on perceptions of the neighbourhood was not measured across all waves, for follow-up waves a dummy variable was included on whether the family had moved house since the last wave of the survey.

The primary care-giver was asked to indicate the population density of the area in which they lived, with responses ranging from open countryside to cities.

Appendix 2

MODEL RESULTS

APPENDIX 2: MODEL RESULTS

TABLE A2.1 MODEL RESULTS FOR FAMILY CHARACTERISTICS AND PROCESSES

	A County only	B Population Composition	C Composition + School	D Composition (+ School) + Neighbourhood	E Composition (+ School) + Neighbourhood + Density
9 MONTHS					
Maternal age	0.95**	0.52*		0.54*	0.63*
Maternal employment (binary)	NA	NA±		NA±	NA±
Maternal depression	0.26±	0.31±		0.13	0.20
Parental stress (PCG)	0.91**	1.02**		0.56*	0.56*
Dyadic adjustment	0.23				
Attachment (PCG)	1.06**	1.00**		0.90**	0.90**
Attachment (SCG)	0.00±	0.00±		0.00	0.00
Family support (binary)	NA*	NA*		NA	NA
3 YEARS					
Maternal employment (binary)	NA	NA±		NA±	NA
Maternal depression	0.40±	0.50*		0.31±	0.23
Parental stress (PCG)	0.46*	0.42*		0.12	0.00
Dyadic adjustment (PCG)	0.00				
Warmth towards child (PCG)	0.49*	0.47*		0.44*	0.44*
Conflict with child (PCG)	0.32±	0.33±		0.20	0.19
5 YEARS					
Maternal employment (binary)	NA	NA*		NA±	NA
Maternal depression	0.11				
Parental stress (PCG)	0.51*	0.43±		0.15	0.13
Dyadic adjustment (PCG)	0.05				
Warmth towards child (PCG)	1.23*	1.23*		0.63*	0.63*
Conflict with child (PCG)	0.72*	0.80*		0.31±	0.21
9 YEARS					
Maternal employment (binary)	NA***	NA**	NA**	NA**	NA**
Maternal depression	0.21	0.22	0.15	0.07	0.05
Dyadic adjustment (PCG)	0.00				
Pianta parent-child: positive	1.23***	1.29**	1.38**	1.27**	1.28**
Pianta parent-child: dependence	0.96*	0.86*	0.90*	0.85*	0.82*
Pianta parent-child: conflict	1.17**	1.06**	0.97*	0.79*	0.80*
13 YEARS					
Maternal depression	NA				
Parental stress (PCG)	0.81*	0.83*	0.89*	0.74*	0.57±
Demandingness of mother	0.00				
Responsiveness of mother	0.20				
Autonomy from mother	0.22	0.19	0.17	0.17	0.17

Note: *** p<.001; ** p<.01; * p<.05; ± p<.10.

TABLE A2.2 MODEL RESULTS FOR HEALTH AND PHYSICAL DEVELOPMENT

	A County only	B Population Composition	C Composition + School	D Composition (+ School) + Neighbourhood	E Composition (+ School) + Neighbourhood + Density
HEALTH AND PHYSICAL DEVELOPMENT					
9 MONTHS					
Low birth weight (binary)	NA				
Breastfeeding on hospital exit	NA**	NA±		NA	NA
Infant very healthy currently (binary)	NA*	NA*		NA*	NA*
Disability (physical or developmental) (binary)	NA±	NA±		NA	NA
Development: gross motor (6m)	0.31±	0.21		0.22	0.18
Development: gross motor (12m)	0.42*	0.44*		0.44*	0.44*
Development: fine motor (6m)	0.78*	0.74*		0.73*	0.71*
Development: fine motor (12m)	1.68**	1.69**		1.69**	1.69**
3 YEARS					
Disability (physical or developmental) (binary)	NA				
Child's BMI	0.37±	0.33±		0.29±	0.17±
Child very healthy currently (binary)	NA±	NA*		NA±	NA±
Pincer grip (binary)	NA**	NA**		NA**	NA**
5 YEARS					
Disability (physical or developmental) (binary)	NA				
Child very healthy currently (binary)	NA±	NA±		NA±	NA±
Child overweight or obese (binary)	NA				
Child obese (binary)	NA				
9 YEARS					
Child very healthy currently (binary)	NA				
Child overweight or obese (binary)	NA				
Child obese (binary)	NA				
Exercise (multinomial)	NA*	NA*	NA*	NA*	NA*
13 YEARS					
Child very healthy currently (binary)	NA				
Child overweight or obese (binary)	NA				
Child obese (binary)	NA				
Exercise – hard (multinomial)	NA				
Exercise – light (binary)	NA				
Participation in sports (multinomial)	NA*	NA	NA	NA	NA

Note: *** p<.001; ** p<.01; * p<.05; ± p<.10.

TABLE A2.3 MODEL RESULTS FOR SOCIO-EMOTIONAL WELLBEING

	A County only	B Population Composition	C Composition + School	D Composition (+ School) + Neighbourhood	E Composition (+ School) + Neighbourhood + Density
SOCIO-EMOTIONAL WELLBEING					
9 MONTHS					
Temperament: fussy	0.45*	0.50*		0.38*	0.32±
Temperament: unadaptable	0.87**	1.00**		0.90**	0.86**
Temperament: dull	1.06**	1.00**		0.97**	1.02**
Development: personal-social (6m)	0.14				
Development: personal-social (12m)	0.47*	0.47*		0.47*	0.47*
3 YEARS					
Temperament: persistence	1.20**	1.21**		1.06**	1.07**
Temperament: sociability	0.16				
Temperament: reactivity	0.45*	0.45*		0.72*	0.70*
SDQ total score (PCG)	0.63*	0.63*		0.41±	0.39±
5 YEARS					
Temperament: persistence	0.95*	1.06*		0.89*	0.80*
Temperament: sociability	0.25				
Temperament: reactivity	0.47*	0.61*		0.49*	0.49*
SDQ total score (PCG)	0.73*	0.82*		0.50*	0.42*
9 YEARS					
SDQ total score (PCG)	1.96*	1.74**	1.91**	1.94**	1.93**
Piers-Harris Freedom from Anxiety	0.64*	0.53*	0.53*	0.54*	0.56±
Piers-Harris Happiness	0.68*	0.58*	0.62*	0.62*	0.50*
13 YEARS					
SDQ total score (PCG)	1.41**	1.13*	1.23*	1.14*	1.03*
Piers-Harris Freedom from Anxiety	0.78*	0.73*	0.72*	0.69*	0.40
Piers-Harris Happiness	0.32				
Depression	0.70*	0.76*	0.73*	0.71*	0.52±
Antisocial behaviour	0.96*	0.98*	0.93*	0.89*	0.59±

Note: *** p<.001; ** p<.01; * p<.05; ± p<.10.

TABLE A2.4 MODEL RESULTS FOR COGNITIVE DEVELOPMENT AND EDUCATIONAL EXPERIENCES

	A County only	B Population Composition	C Composition + School	D Composition (+ School) + Neighbourhood	E Composition (+ School) + Neighbourhood + Density
COGNITIVE DEVELOPMENT AND EDUCATIONAL EXPERIENCES					
9 MONTHS					
Non-parental childcare (binary)	NA*	NA**		NA*	NA*
Development: communication (6m)	0.44*	0.43*		0.38*	0.39*
Development: communication (12m)	0.56*	0.56*		0.56±	0.00
Development: problem-solving (6m)	1.22**	1.22**		1.19**	1.13**
Development: problem-solving (12m)	0.83*	0.83*		0.83*	0.83*
3 YEARS					
Non-parental care (binary)	NA**	NA**		NA**	NA**
Centre-based childcare (binary)	NA**	NA**		NA**	NA**
Naming vocabulary test score	1.86**	1.98**		2.06**	2.04**
Picture similarity test score	8.17***	8.94***		9.05***	9.31***
5 YEARS					
Naming vocabulary test score	2.04**	2.40**		2.16**	2.25**
Picture similarity test score	5.12***	5.51***		5.34***	5.22***
Age started school	0.32				
Home learning environment	1.38**	1.22**		1.10***	1.05***
9 YEARS					
Liking school (multinomial)	NA				
Liking Maths (multinomial)	NA±	NA	NA	NA	NA
Liking Reading (multinomial)	NA				
Homework non-completion (binary)	NA*	NA	NA	NA	NA
Piers-Harris Intellectual Status	0.90*	0.90*	0.90*	0.90*	0.70*
Absenteeism (multinomial)	NA±	NA±	NA±	NA±	NA
Reading test score	1.40**	0.55*	0.62*	0.59*	0.15
Maths test score	2.60**	2.28**	2.18**	2.09**	1.88**
13 YEARS					
Liking school (binary)	NA±	NA±	NA±	NA±	NA±
Homework (binary – 1 hour or less)	NA±	NA±	NA±	NA±	NA±
Absenteeism (multinomial)	NA±	NA	NA	NA±	NA±
School misbehaviour and related punishment	NA				
Piers-Harris Intellectual Status	0.50*	0.34	0.28	0.28	0.25
Educational expectations	NA*	NA	NA	NA	NA
Verbal reasoning test score	1.30*	0.48±	0.61±	0.49±	0.49±
Numeric reasoning test score	1.20**	1.90*	1.30*	1.30*	1.30*
Matrices test score	3.50**	3.80**	3.80**	3.80**	3.80**

Note: *** p<.001; ** p<.01; * p<.05; ± p<.10.

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