# Growing Up in Ireland 

## National Longitudinal Study of Children

DEVELOPMENT FROM BIRTH TO THREE YEARS



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## 1. INTRODUCTION

Growing Up in Ireland is the national longitudinal study of children. Its core objectives include describing the lives of children of Ireland, looking at how early experiences affect later outcomes and proving an evidencebase that can be used to inform child and family policies. It has two cohorts of children. The first is referred to as the Infant Cohort and is based on just over 11,100 children and their families. The families in this cohort were first interviewed between September 2008 and April 2009, when the Study Children were nine months old; a second interview took place between December 2010 and June 2011, when they were three years of age. It is these 9,793 children who are the subject of this report.

This report, and the Growing Up in Ireland study more generally, draws on Bronfenbrenner's model (e.g. 1979) of the individual as developing within a series of contexts that vary in the strength of their influence, as well as interacting with each other. For example, parents (within the family context) control many of the key aspects of the child's everyday life but their parenting decisions and capacity may in turn be affected by the wider economic climate.

The broad picture of the Study Children at three years of age presented in this report focuses first on the child's outcomes and well-being before considering three of the more influential contexts (parenting, childcare and financial circumstances) in which their development is taking place.

## 2. OUTCOMES

This report looks at child outcomes in key areas at age three years, and how in some instances there are links between their current well-being and circumstances at the time of the interview at nine months old. The three main aspects of child outcomes on which Growing Up in Ireland focuses are:

- Physical health and development
- Social/emotional/behavioural well-being
- Educational achievement and intellectual capacity

At three years old, there have been many changes since the first interview when the Study Children were infants: they can talk, run around, play with other children and more easily interact with the world around them. They have a greater sense of themselves as individuals and as such can express their preferences for activities, food and people. This age is a key phase in terms of the individual's development over the life-course; not only are they able to do so much more than previously but other important transitions - such as going to school - are just around the corner.

### 2.1 PHYSICAL DEVELOPMENT, GROWTH AND NUTRITION (CHAPTER 2)

## Gross motor development

Gross motor development refers to the child's ability to move his/her arms and legs, and maintain balance. These skills are essential to walking and running around, sitting up on a chair and fun activities like playing with a ball or riding a tricycle.

At the first interview at nine months old, most children had yet to start walking so parents were asked a retrospective question about this key milestone at the three-year interview. They reported that children typically took their first unsupported steps between 12 and 13 months. Figure 1 shows that multiple birth, low birth-weight, failing the gross motor measure at nine months, and sleeping position (at nine months) were associated with a later age of starting to walk.

Figure 1: Summary of the effect of indicators measured at nine months on reported age that child took first unsupported steps (in months)


By the age of three years, nearly all children could stand on one leg and throw a ball overhand, but only twothirds were as yet able to pedal a tricycle ${ }^{1}$. Factors such as low birth-weight, ill health and an absence of physical activities or games at home were associated with delays in reaching the three-year gross motor milestones.

## FINE MOTOR DEVELOPMENT

Fine motor skills reflect the child's ability to use his/her hands and fingers, typically to manipulate small objects. They are necessary for self-care tasks like eating and dressing but also facilitate learning activities by enabling the child to use crayons, paint brushes, blocks and other small toys.

Most three-year-old children were able to play with small objects such as jigsaws and to use a pencil, although only about half were using the more advanced 'pincer grip' (between thumb and forefinger). Figure 2 illustrates how having someone at home to engage the child in activities that required fine motor skills such as painting and making jigsaws appeared to foster these abilities.

Figure 2: Association between attainment of fine motor milestones at age three and number of days per week someone at home engages the child in activities of playing games/jigsaws and painting/drawing


## Growth and Diet

An appropriate diet is essential to support the child's rapid physical growth at this age. However three-yearolds can also be more vocal than very young children in expressing their own food preferences and these may not correspond to the healthiest choices. The issue of children being overweight and obese, even at a young age, is currently to the forefront of the debate on children's health issues.

Growing Up in Ireland found that the average Irish three-year-old stands 96.2 centimetres tall and weighs 15.6 kilograms. Boys were taller and heavier on average than girls. Already a quarter of all three-year-old children were overweight or obese, and there was evidence of a social gradient emerging. Figure 3 shows how the least advantaged social class ("never worked") had the highest proportion of obese three-year-olds.

Figure 3: Percentage of three-year-old children within each BMI category, by household social class


There was also evidence of a social gradient in relation to the child's diet. Figure 4 indicates that children of less-educated Primary Caregivers were more likely to have consumed energy-dense food like hamburgers and crisps, but less likely to have eaten fresh fruit or vegetables, in the 24 hours preceding the interview.

Figure 4: Percentage of three-year-old children consuming at least one portion of various foods, by Primary Caregiver's level of educational attainment


### 2.2 HEALTH, ILLNESS AND INJURIES (CHAPTER 3)

General health
Being healthy is obviously important throughout the lifespan but experiencing ill-health early in childhood not only affects the child's current well-being but can impede his/her normal development in other areas as well. Severe ill-health can also have wider implications for the whole family in terms of providing a high-level of care and being less able to engage in economic activities.

The vast majority of the three-year-old children were reported to be in good health. Almost 98 per cent were described as very healthy or healthy but a fewer minor problems by their parents. Although there were no significant differences in children's health at time of birth, Figure 5 shows that by three years of age children from the least advantaged social class backgrounds were significantly less likely to be rated as very healthy compared with children from other class backgrounds.

Figure 5: Percentage of children rated as 'very healthy', by household social class at birth, nine months and three years of age


## Illness

Almost 16 per cent of three-year-olds were reported as having a longstanding illness, disability or other ongoing health condition. Respiratory illnesses such as asthma were the most commonly reported illness type as indicated in Table 1.

Table 1: Percentage of three-year-olds diagnosed with a longstanding illness by a doctor

| Illness Type | Total <br> $(\%)$ | Boys <br> $(\%)$ | Girls <br> (\%) |
| :--- | :---: | :---: | :---: |
| Asthma | 6 | $7^{*}$ | 4 |
| Eczema/Skin allergy | 4 | $5^{*}$ | 3 |
| Food/Digestive allergy | 1.3 | $1.6^{*}$ | 0.9 |
| Respiratory allergy | 1.0 | $1.4^{*}$ | 0.6 |
| Heart abnormalities | 0.7 | 1.0 | 1.0 |
| Bone, joint, muscle problems | 0.3 | 0.6 | 0.7 |
| Non-food allergies | 0.3 | 0.4 | 0.2 |
| Problem using arms or legs/hands or fingers |  | $0.4^{*}$ | 0.2 |
| Hyperactivity/attentional problems | 0.3 | $0.4^{*}$ |  |
| severe behavioural problems | 0.3 | 0.4 | 0.1 |
| Epilepsy or seizures | 0.3 | 0.3 | 0.3 |
| Down syndrome | 0.1 | $0.5^{*}$ | 0.3 |
| Autism spectrum disorder | 0.5 | 0.1 | 0.1 |
| Diabetes | 0.1 | 0.4 | 0.1 |
| Kidney problems | 0.1 | 0.1 | 0.5 |
| Spina Bifida/Hydrocephalus | 3 | $0.2^{*}$ | 0.1 |
| Cerebral palsy |  | $3^{*}$ | 0.0 |
| Other |  |  | 2 |

[^0]Some evidence of the wider impact of ill-health on child development was observed: children with a chronic illness were nearly twice as likely to be classified as having behavioural problems ${ }^{2}$ at three years of age as those who did not have a chronic illness, especially if they were severely hampered by it.

## Use of Healthcare

Access to suitable health care when the need arises is important for maintaining child health. In Ireland, there is some debate as to how equitable that access is, however. Some families (typically with an income below a certain threshold) are entitled to a medical card that provides for free GP visits and usually heavily-subsidised prescriptions as well.

About one-third of families with three-year-olds had a medical card that entitled them to visits and prescriptions, and a further 4\% had a card that covered only the GP visit. The average rate of GP consultations was 2.6 per year. Figure 6 shows that children with a full medical card were significantly more likely to consult the GP, even controlling for children's health status. Almost two-thirds of all three-year-olds had received at least one course of antibiotics in the preceding 12-month period.

Figure 6: Average number of GP consultations, by the child's current health status and medical card provision


### 2.3 SOCIO-EMOTIONAL DEVELOPMENT (CHAPTER 4)

The primary measure of children's behaviour and socio-emotional development at three years old was the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). This parent-report measure includes four 'negative' subscales - covering peer problems, hyperactivity, poor conduct and emotionality - which can be added together to form a 'total difficulties' score, and one positive 'pro-social' subscale. Children scoring in the top 10 per cent of the total difficulties score for the sample are categorised as 'problematic'.

Using the SDQ measure, it was observed that three-year-olds in Ireland have relatively low levels of behavioural problems when compared to studies in other countries that have used the same measure. However, boys were more likely to be classified in the problematic range than girls. Children in socially disadvantaged groups and one-parent families were also at greater risk as illustrated in Figure 7.

Figure 7: Percentage of three-year-old children scoring in the problematic range on the SDQ, classified by household social class and family structure


It can be difficult to determine whether such social gradients are due to the objectively poorer behaviour of the children concerned or whether some parents can be more negative in their ratings than others. The emotional tone of the interactions between parents and children are important for socio-emotional development. Figure 8 shows that parenting styles that were low ${ }^{3}$ in warmth and consistency, or high in hostility, were associated with more behaviour problems in children - although at least some of this relationship could be reciprocal.

Figure 8: Percentage of three-year-old children scoring in the problematic range on the SDQ, by Primary Caregiver's parenting characteristics



## Infant Temperament and Three-Year Behaviour Problems

Temperament is usually described as a fairly stable set of traits in an individual, observed by how he/she characteristically responds to situations. These traits are generally thought to be present from birth or soon thereafter and interact with the individual's life experiences to form what is often termed 'personality'. Hence a child who tends to react negatively to new people and situations may find experiences such as starting preschool more difficult than more adaptable children. Additionally, naturally easy-going children may have more positive interactions with other children and adults than more irritable individuals.

In Growing Up in Ireland, there was some evidence that infant temperament at nine months was associated with parent-reported problematic behaviours at three years: infants described as more fussy-difficult were more likely to be in the problematic range of the SDQ measure at age three. A fussy-difficult, 'unadaptable' or unpredictable infant temperament at nine months was also associated with increased levels of parental stress at both nine months and three years as illustrated in Figure 9. Furthermore, increases in parental stress between interviews were associated with an increased likelihood of 'problematic' behaviour.

Figure 9: Mean scores on the parental stress scale when children were nine months and three years, by characteristics of the infant's temperament measured at nine months of age


### 2.4 COGNITION AND LANGUAGE OUTCOMES (CHAPTER 5)

Cognitive development at three years was measured using standardised tests from the British Abilities Scales (Elliott et al. 1996). The Picture Similarities test requires matching objects or figures with some characteristic in common and measures early reasoning skills. The Naming Vocabulary test uses pictures of everyday objects which the children are asked to name aloud (in English).

Among three-year-olds, girls performed measurably better on tests of cognitive ability than boys. As can be seen in Figure 10, social gradients, particularly in relation to the educational level of the Primary Caregiver, were also emerging strongly. This suggests that children from socio-economically disadvantaged groups lag behind their peers even before the start of formal schooling, and this may in turn have a negative effect on the benefit they derive from education once they start.

Figure 10: Mean ability scores of three-year-olds on the Picture Similarities and Naming Vocabulary tests, according to Primary Caregiver's education and household income quintile


While this type of longitudinal analysis (of the effect on schooling) will require data from later waves of the Study, Figure 11 shows that children who did not meet expected scores on developmental measures at nine months were at greater risk of falling behind at age three years.

Figure 11: Mean ability scores on each cognitive test for children at three years who had passed or failed to meet the ASQ target scores in the domains of communication and problem-solving as infants (at nine months)


Speech and Language Development
An appropriate pace of speech and language development is important for enabling both social interactions and learning. Significant impairments may cause distress to the child, particularly as they become more aware that they are not the same as other children in this respect or get frustrated at their reduced ability to communicate with others.

By age three years, nearly one-in-five Primary Caregivers had concerns about their child's speech and language development. Figure 12 shows that boys were more likely to have problems than girls on most types of impairment. Just under a third of children with a speech and language issue had received some treatment for it.

Figure 12: Percentage of three-year-old children reported as having a speech or language problem, by gender of Study Child


## 3. CONTEXTS

In addition to outcomes this report describes features of three central aspects of the developing child's everyday context. These are

- Parenting and the home
- Childcare
- Financial circumstances

With reference to Bronfenbrenner's bioecological model ${ }^{4}$ (e.g. 1979; 2006), parenting and the home, and childcare would be situated in the 'microsystem' which immediately surrounds the individual child. Financial circumstances may be best located in the 'mesosystem'; being an example of the national economic climate interacting with the family 'microsystem'. It is important to bear in mind that this is a dynamic model which views the individual child as an active rather than passive player, who exerts an influence over context as well as vice-verse. For example, a child's personality (outgoing or shy) could influence whether a parent chooses a pre-school or relative as their main form of non-parental childcare or a sick child who requires a high level of care might reduce the parents' availability to enter paid employment.

### 3.1 PARENTING AND THE HOME ENVIRONMENT (CHAPTER 6)

## Family structure

Growing up in a one-parent rather than a two-parent family is frequently associated with a greater risk of less than optimal outcomes. While this is by no means an inevitable consequence, practically speaking having one parent rather than two reduces the family's earning capacity and means that there are fewer adults to undertake all the parenting tasks. Additionally, coping alone can lead to greater levels of stress in the parent although there may be extensive support from other family members such as grandparents. Changes in family structure such as a parent leaving, or a new birth into the family, are also potential sources of stress for parents and children alike.

Eighty-five per cent of three-year-olds were in two-parent families. Almost all children (in one- and two-parent families) lived with their biological parent(s). Despite overall stability in the percentage of children living in oneand two-parent families, about equal proportions (approximately 2.5 per cent of children) made a transition from one- to two-parent and from two- to one-parent families between the ages of nine months and three years. Figure 13 summarises the main type of changes to family structure between interviews by family type when the child was nine months old: it shows that the arrival of a new baby was the most frequently experienced change to the family structure.

Figure 13: Summary of gross change in family composition between nine months and three years, classified by family type at Wave 1


## Non-resident parents

Where the child was living with only one of their biological parents, the resident parent was asked some questions about the other parent living elsewhere. The extent to which the non-resident parent maintains contact with the child and provides financial support has the potential to significantly impact on his or her development, although future waves of data will be required to examine the longer term effects, if any.

For the three-year-olds, there was considerable variation in levels of contact with non-resident parents, payment of maintenance and the relationship between resident and non-resident parent, with some very positive pictures emerging but an almost equal number of negative ones. Figure 14 shows almost equal proportions of children at opposite ends of the spectrum when it comes to frequency of contact with their non-resident
parent, with nearly a quarter having daily contact but a similar number having none at all. There can be many reasons for variations in contact including choice, physical distance, income, as well as the current and previous relationship between the biological parents.

Figure 14: Frequency of three-year-olds' contact with a non-resident parent


## Parenting Style and Discipline

The three-year-olds' parents are likely to be the single biggest influence on their development, and so both the emotional tone and consistency of the parents' interactions with their children assume great importance. In general, a parenting style that is high in warmth, low in hostility but shows consistency in applying rules for behaviour is considered optimal.

Growing Up in Ireland found that the majority of parents of three-year-olds were high in warmth and consistency and low in hostility in dealing with their child, and generally enjoyed a positive relationship with him or her. However, competing demands on parental resources can diminish the ability to apply best practice when it comes to parenting: parents under stress were more likely to be lower in warmth and consistency and higher in hostility compared to their less-stressed peers.

Parents may be more likely to use discipline strategies such as smacking with pre-school children as they find it harder to have a reasoned discussion with children as to why particular behaviours, especially those that pose a danger to the child, are wrong. Although the use of aggressive and punitive techniques such as smacking or shouting on a regular basis was rare, a proportion of parents resorted to these types of discipline at least occasionally (around 45 per cent used smacking rarely or now and again). Figure 15 shows the percentage of Primary Caregivers using each discipline technique always or regularly.

Figure 15: Percentage of three-year-olds whose Primary Caregiver used each discipline strategy either 'always' or 'regularly'*


* Percentages less than 1 are given to one decimal place; all others are rounded to whole figures.


### 3.2 CHILDCARE AND GRANDPARENTS (CHAPTER 7)

There are many factors that can influence a parent's decision to use non-parental childcare, or which type/provider to choose. Many may view it primarily as a necessity to allow them to take up paid employment outside the home or some may make a more pro-active choice in the belief that the child will benefit from having the opportunity to mix with other children - especially in preparation for starting school. The use, choice and quality of non-parental childcare has the potential to affect the child's development in all areas: socio-emotional, cognitive, health and physical development. However, these effects are in turn mediated through, and moderated by, other important factors such as quality of care, the age of the child and his/her family circumstances.

Half of the children in Growing Up in Ireland at age three were in some form of regular non-parental childcare. Figure 16 shows that over a quarter of three-year-olds were cared for in a childcare centre, 11 per cent by a relative and the remaining 12 per cent by a non-relative in a home-based setting. Centres were more popular now that the children were older than was the case during infancy.

Figure 16: Main types of childcare used by parents at nine months and three years of age


Parents who were working and those with higher educational qualifications and from more advantaged social class backgrounds were more likely to be availing of non-parental childcare for their three-year-old. Parents were typically satisfied with the facilities and care provided.

The average time spent in childcare was 23 hours per week, at an average cost of $€ 4.50$ per hour but with much variability. Children cared for by non-relative childminders spent the most time on average in childcare, and it tended to be the most expensive. More than 60 per cent of relatives who provided care were not paid for doing so.

## Planning for School

Given that most children in Ireland start school between four and five years of age, most parents will be starting to give some thought to where the child will go to school and how best to prepare them for this important milestone.

The three-year-olds in Growing Up in Ireland will be among the first children to avail of a new Government initiative to give free access to pre-school to all children (the Free Pre-School Year scheme); and nearly all parents were planning to avail of the scheme when they were interviewed shortly before becoming eligible for it.

In terms of starting formal schooling, two in five children were already registered or enrolled with a primary school. Figure 17 illustrates a strong socio-economic patterning to this trend; parents from more affluent and educated backgrounds were more likely to have registered their child with a primary school.

Figure 17: Percentage of three-year-old children registered with a primary school, by the Primary Caregiver's highest level of educational attainment


## Support from Grandparents

Grandparents can be an important source of financial, practical and emotional support to parents - particularly lone parents. Given its compact geography - and tradition of maintaining family links - it is possible that Irish parents are better placed to avail of this support than some of their international peers.

Many parents receive support from their own parents (i.e. the child's grandparents) when a new baby arrives. The vast majority of parents in Growing Up in Ireland reported that regular contact continues as the child gets older. Grandparents provided a significant amount of childcare as well as financial and babysitting support for their grandchildren at both time-points as shown in Figure 18.

Figure 18: Percentage of grandparents who provided each type of support at least once every 3 months or more regularly, at nine months and three years of age


### 3.3 ECONOMIC AND FINANCIAL CIRCUMSTANCES (CHAPTER 8)

## Maternal Employment

Whether or not the child's mother takes up employment outside the home can be a major decision for the family. Competing considerations such as income, arranging childcare, availability of suitable employment and personal choice must be weighed up, and what suits one family may not suit others.

As shown in Figure 19, just over half (54 per cent) of the mothers of three-year-olds worked outside the home, with a further 37 per cent being mainly engaged in home duties / looking after the family.

Figure 19: Labour force status of three-year-old's Primary Caregiver, by family type


Mothers who worked outside the home did so, on average, for 29 hours per week. Substantial minorities of parents who worked outside the home appeared to experience work-life imbalances. Unsurprisingly, the extent of these pressures was related to the number of hours worked as indicated in Figure 20 (for mothers).

Figure 20: Measures of work-life balance for the three-year-old's Primary Caregiver according to number of hours worked outside the home


## Income

The family's level of income has a strong influence on the context within which its members live: on quality and location of accommodation, childcare choices, diet, activities and lifestyle generally. Feeling that there is insufficient income to meet the family's needs can be a huge source of stress for parents.

Given the recession that Ireland has experienced since 2008, many more families are experiencing a marked drop in income and financial stress than in previous years. Figure 21 shows a big increase in the percentage of families who were experiencing difficulties in making ends meet between the interviews at nine months and those at three years, reflecting the seriousness of the recession.

Figure 21: Families according to their perception of difficulties in making ends meet when the Study Child was nine months (Wave 1) and three years (Wave 2)


## 4. POLICY IMPLICATIONS

Given that this is the first descriptive report from the Infant Cohort at Wave 2 (aged three years), suggestions for policy implications will be general rather than specific. However, with some longitudinal analysis now possible, future reports using these data will have much more scope to look at outcomes over time and particularly to control for mediating and moderating factors in the associations identified here.

Despite the descriptive nature of this report - some important issues were raised that concern the well-being of three-year-olds both currently and for their future outcomes. These are summarised briefly below, further discussion can be found in the main report.
A. Evidence of the early emergence of an overweight and obesity problem: The finding that a quarter of three-year-olds are already overweight or obese is a major concern. Although more acute in the most socioeconomically disadvantaged group, it is a problem across all levels of society and further work is needed to identify the pathways that are leading to what is now being termed an 'epidemic' in some circles.
B. The appearance of a social gradient in relation to a variety of health outcomes among young children: Many observers may be disheartened to see that socio-economic disadvantages appearing in the cohort at this young age - identifying the mechanisms that appear to have been triggered between this and the earlier interview is likely to be a research priority.
C. A potential role for early interventions in relation to cognitive and language development: Some children can be identified as lagging behind their expected capacity in these areas, before they start formal schooling. It could be worth considering whether interventions or supports at this age may be more effective than waiting for wider screening within the school system.
D. The strong association between infant temperament and levels of parental stress and the importance this is likely to have for the parent-child relationship in the future: Some parents may need support in coping with circumstances and relationships that impede their ability to be at their most effective as parents. They may need help and encouragement to acknowledge that some of these difficulties can arise due to the infant or child's own temperament and suggestions for how best to deal with them.
E. The key role that non-parental childcare plays in the everyday life of many young children and how this can be optimised in terms of accessibility and the promotion of child well-being: With children more likely to be availing of childcare, particularly centre-based care as part of the Free Pre-School Year, the relevant bodies are likely to give the boosting and maintenance of quality within such settings high priority.

## 5. FUNDING

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## 6. FURTHER INFORMATION

This booklet is a summary of the main report on the initial findings from the Infant Cohort at Wave 2 which is entitled Development from Birth to Three Years and is available online from the Growing Up in Ireland website (www.growingup.ie). All previous Growing Up in Ireland publications, including questionnaires, are also available from this website.

Full references for works cited in this text are available in the main report.
The Growing Up in Ireland data are available for use by national and international researchers via the Irish Social Sciences Data Archive. Applications may be made via www.ucd.ie/issda.


[^0]:    * = significant difference at 0.05 level or below

    Percentages less than $2 \%$ are displayed to one decimal place, all others are rounded to whole numbers.

