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# *Growing Up in Ireland*

National Longitudinal Study of Children

## COHORT '08

**To School and Beyond: Review of the Literature on Selected Issues Pertaining to the *Growing Up in Ireland* Infant Cohort at 5 Years**





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The views expressed in this report are those of the authors and do not necessarily reflect the views of the funders or of either of the two institutions involved in preparing the report.



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# Chapter 1

## INTRODUCTION





## 1 INTRODUCTION

### 1.1 ABOUT GROWING UP IN IRELAND

*Growing Up in Ireland* is the National Longitudinal Study of Children in Ireland. It is funded by the Department of Children and Youth Affairs and one of its core objectives is to provide evidence to inform government policy and service provision in relation to children and young people. Hence this literature review discusses a number of core research questions that are particularly relevant to the well-being and life-stage of 5-year-olds and to which data from *Growing Up in Ireland* might reasonably be expected to contribute. Policy relevant topics arose from discussions with the Department of Children and Youth Affairs (DCYA) and the Scientific Advisory Committee.

In contrast to previous literature reviews, this review of child development at age 5 years focuses in greater detail on a selection of research questions that are of particular relevance at this age, reflect changes in contemporary context in comparison to the older *Growing Up in Ireland* Child Cohort, or represent novel avenues of research possibilities with this cohort given the new information that was collected in the age 5 sweep. For a broader longitudinal review on a more diverse range of topics, the reader is advised to consult the literature review for the Infant Cohort at 3 years (Greene, Morgan, McCrory & McNally, 2014) which continues to be of relevance to the children at age 5 years.

The objectives of this literature review are:

1. To examine policy research questions of relevance at age 5 in the Irish context which may be examined with the questions that were included in the instruments for this wave.
2. To consider prospects for longitudinal research using a developmental view of past and future waves.

The 5-year-olds who are the subject of this review are part of the *Growing Up in Ireland* Infant Cohort.<sup>1</sup> These children and their families first participated in the study's first wave aged 9 months, were revisited at age 3 years for the second wave and the third wave took place at age 5 years. Over 11,000 randomly selected infants took part in the first wave, with nearly 10,000 participating again at 3 years and 9,001 at age 5 years. This large and nationally representative sample, which has followed the same children since infancy, offers many new possibilities for examining development over time in the Irish context.

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<sup>1</sup> There is a second older cohort referred to as the 'Child Cohort' who are the subject of a separate series of reports and literature reviews.



In both previous waves so far, the child's Primary Caregiver<sup>2</sup> provided most of the information in a face-to-face interview within the home. These interviews collected a very broad range of information about the child and his or her world but these can be summarised under the broad outcome headings of: health and physical development; social/emotional and behavioural well-being; and cognitive/educational attainment. This is supplemented by a wide range of contextual information about the parents, the home and the wider community; and where relevant by an additional interview with the child's Secondary Caregiver. At age 3 years, and again at 5 years, the Study Child had their cognitive development directly assessed by the interviewer using standardised tests of vocabulary and problem-solving. At all waves the child's height and weight were measured by the interviewer.

A major addition to the range of information available for the Infant Cohort at 5 years is the inclusion of a school component. This involves the self-completion of postal questionnaires by the child's teacher and principal which will be a key source of information on the child's transition to formal schooling. Further details on the design, instrumentation and procedures for the Infant Cohort at 5 years are available in a separate report (Williams, Thornton, Murray & Quail, 2019).

## 1.2 SUMMARY OF CONCEPTUAL FRAMEWORK

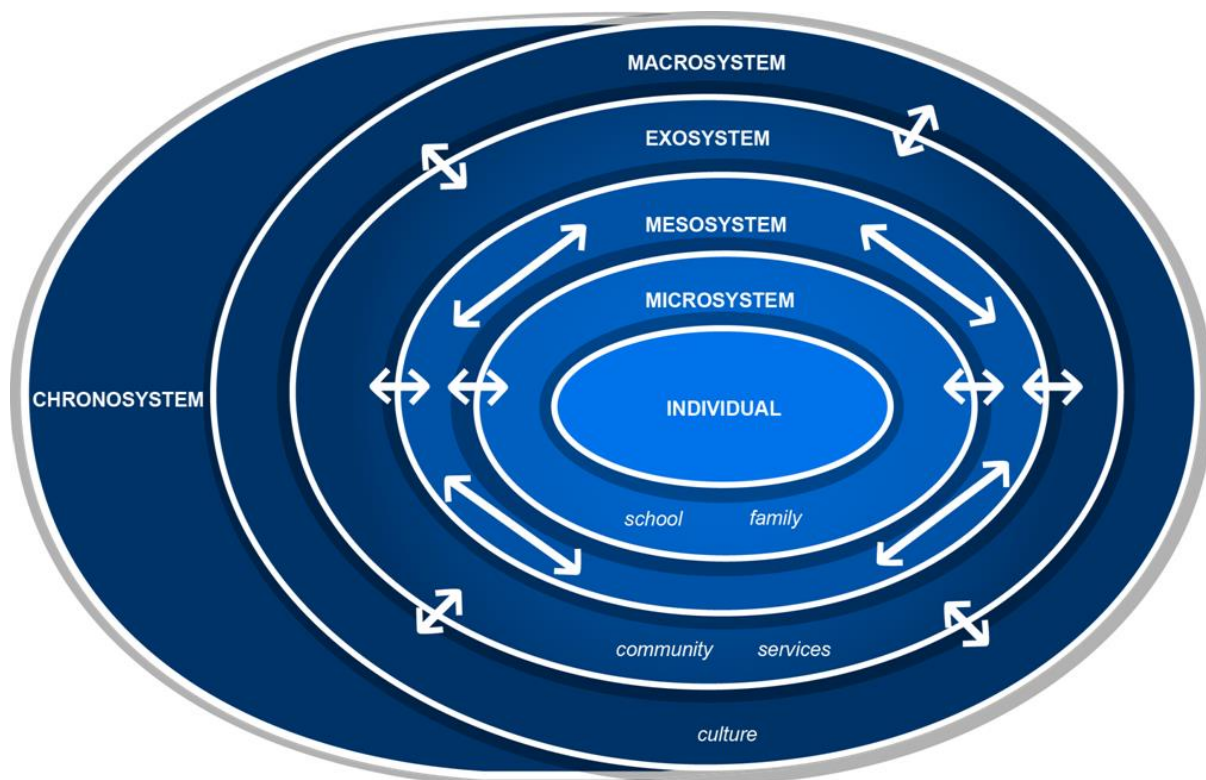
A detailed description and discussion of the conceptual framework underlying *Growing Up in Ireland* is available in a separate publication by Greene et al. (2010a). In brief, however, the conceptual framework draws heavily from Bronfenbrenner's work on the bio-ecological model (e.g. 1979, 1993; Bronfenbrenner and Morris, 2006). It offers a framework for the child's ecology as a multi-layered set of nested and interconnecting environmental systems, all of which influence the developing child, but with varying degrees of directness (Greene, 1994). The individual child is influenced not only by the face-to-face interactions with individuals in his/her most immediate environment (termed the 'microsystem'), but by the wider community and circumstances ('exosystem' and 'macrosystem') that affect the child directly or through effects on the microsystem ('mesosystem').

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<sup>2</sup> The Primary Caregiver is usually the Study Child's mother. The Secondary Caregiver, where present, is the spouse or partner of the Primary Caregiver and is usually the Study Child's father.



Figure 1.1 The bio-ecological model.



The structure of the bio-ecological framework is illustrated in Figure 1.1. At the core of the framework is the child and his/her individual characteristics. The child is seen as an active agent in the interactions that shape their development, for example through their own personality, health status, gender etc. Relationships between the child and people in their microsystem, particularly parents, are critical but Bronfenbrenner's conceptualisation recognises that such dyads are enmeshed within other relationships not only within the household (e.g. the relationship between parents), but also relationships outside the household like the school and the workplace. To Bronfenbrenner, this illustrates the intimate relationship between the microsystem, the face-to-face interactions which the child or young person experiences and the mesosystem, which encompasses the links between the different actors in the microsystem. At age 5 years a potentially important aspect of the mesosystem will be the interactions between the child's parents and his or her school: for example how engaged the parent is with what is happening at school and communication from the teacher about the child's progress (or lack thereof).

Outside the mesosystem in Bronfenbrenner's model sits the exosystem. In Bronfenbrenner's schema this comprises the structures, institutions and settings that have the potential to influence the child's life, even if not in direct contact with him or her. Examples include play spaces available in the neighbourhood, air pollution from industry and the health and education services. The outer layer of Bronfenbrenner's schema is the macrosystem, which consists of the cultural norms, attitudes and prevailing circumstances that shape the wider society. For example, a major national event such as



the recent economic recession could affect an individual child through multiple routes: a reduction in the income available to parents and their subsequent ability to purchase goods or services for the child; a disruption to parent-child relationships because of stress in the family; a restriction to resources available in the child's school; or a more negative societal attitude towards children of immigrants. From a policy perspective the Bronfenbrenner model highlights the many ways changes in policy can affect children indirectly as well as directly and the importance of considering the wider repercussions of changes that may eventually extend to children. For example, in 2010 the Government introduced a new universal scheme to provide a year's worth<sup>3</sup> of pre-school education free to all children between the ages of 3 and 4 years where previously only a small number of 'free places' were made available and most parents had to pay the full cost.

An event such as a national recession could also be considered as a part of Bronfenbrenner's concept of the 'chronosystem' or 'time and timing'. The children of the Infant Cohort were born just as the recession was starting to take effect and hence their development from infancy into early childhood will be inextricably linked with the dramatic change in the economic climate. In contrast the children of the Child Cohort spent their early childhood in a 'boom' and the recession affected their middle childhood and early adolescence. The recession is an example of the influence of time in terms of 'period effects' but time also matters with regard to 'timing' in critical periods of development, or the mis-timing of events such as the early death of a parent.

### 1.2.1 APPLICATION OF THE BIO-ECOLOGICAL MODEL AT 5 YEARS.

Family relationships within the micro-system will remain central to the child's world at 5 years but they may have to cope with changes, such as the birth of a new sibling or disruptions to the parental relationship. Probably the biggest microsystem change that virtually all children will experience around this time is the transition to formal schooling. Going to school brings many new things, experiences and people into the child's world: new classroom and playground, new classmates, a new caregiver-figure in the form of a teacher and a raft of interactions that will be both positive and negative.

At the core of this changing ecological network will be the individual child and his or her characteristics will strongly influence the other transitions happening around and to them. Compared to their 3-year-old selves, they should be more emotionally and cognitively able to cope with these changes—but their ability to get on with their new classmates and adapt to the new surroundings and intellectual demands will influence whether they thrive or struggle in the school environment.

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<sup>3</sup> The scheme was expanded in 2016 but this extension would not apply to the GUI Infant Cohort.



### 1.3 BEING 5 YEARS OLD

At around 5 years of age, children’s motor, language, social and cognitive skills are maturing; these enable them to become more independent and better engage with people outside their immediate family, particularly their peers. An appropriate level of maturity in these areas is crucial to making a successful transition into regular schooling. A summary of the key milestones that are achieved around 5 years of age is presented in the following paragraphs (American Academy of Pediatrics, 2009).

#### *Gross motor skills.*

5-year-olds can be very active and energetic. Compared to age 3 years, they should be more co-ordinated in their motion and able to undertake more complex movements in physical play like hopping, somersaults, climbing, dancing, cycling and perhaps skipping or swimming. The transition to more out-of-home activities and increased ability, and energy, means that this is also an important age for parents to teach their child about safety, such as around traffic.

#### *Fine motor skills.*

Improvements in fine motor skills mean that 5-year-olds should be able to perform several basic self-care activities more or less independently: dressing and undressing, going to the toilet, washing hands, feeding themselves with spoons or forks and brushing their teeth. Better co-ordination of hands and fingers is also important for the learning environment: at this stage children should be able to use a pencil or crayon to copy basic shapes, draw ‘stick figures’ and print some letters.

#### *Language.*

By 5 years old, children will speak, and understand, more complex sentences including making better use of past and future tenses. They can tell ‘stories’ and recall parts of stories they have heard. 5-year-olds will typically be able to tell someone their full name and possibly their address as well. They should be able to communicate their basic needs to others—such as needing to go to the toilet or wanting a drink. These maturing language skills are important for starting school and spending more time with people outside their immediate family.

#### *Cognitive development.*

As the brain develops, and children are better able to pay attention to learning opportunities, rapid progress in cognitive abilities is often evident. Five-year-olds should be able to name some colours, learn to count to ten or more, and have a better understanding of things in the everyday world around them (parents may be surprised at how well their children can operate devices such as phones and computers). An important aspect of cognitive development that occurs, or has occurred, around this time is the ability to imagine things that are not physically there—or to use objects in different ways: for example in pretend play by using a box as a car or role-playing as a favourite character.



### *Socio-emotional development.*

5-year-olds are typically sociable and able to spend prolonged periods of time with people other than their parents. Grandparents may be an important source of support and available to engage the child in fun and educational activities. As the child starts school, their new teacher may become an important attachment figure and he or she may get to know other new adults associated with school such as other staff and the parents of their friends. Five-year-olds are likely to get more out of interactions with other children than they did at younger ages - being better able to share, take turns and control their temper - and can actively seek to please their friends or want to be like them. An appropriate level of social skills and emotional maturity are essential for the transition to school. Concerns may arise when children show extremes of timidity, aggression, passivity, or disinterest in others; or are unable to separate from parents at the school-gates without becoming very upset.

## **1.4 MAJOR CONTEXTUAL THEMES FOR THE INFANT COHORT AT 5 YEARS**

This review focuses on issues that are both highly relevant for the children of the Infant Cohort at 5 years and represent areas where more data have been collected in this wave. While a range of topics will be covered, two new themes cross over multiple chapters. The first major new theme is shared by children of successive generations but is a major new feature in the lives of these 5-year-olds, and that is starting primary school—whether it involves the transition from pre-school to ‘big school’ or from home to school. More detailed information on the context for school-start in Ireland is provided in Section 3.3.1.3 (socio-emotional readiness) but is also relevant to Section 4.1 (cognitive readiness and preparing for school). The second relates to a revolution in digital and electronic media, which is in contrast not just to earlier waves of this cohort but also to the first wave of the Child Cohort (at 9 years). A more detailed background to screen time for young children in recent years is presented at the start of Section 2.2 (screen time and risk of overweight or obesity)—note that this background section (at 2.2) is also relevant to Section 3.2 (screen time and socio-emotional well-being).

## **1.5 STRUCTURE OF THIS REPORT**

As already noted, this is a literature review focused on a selection of research questions that are particularly relevant to the age 5 years data collection. It is recommended that this review be read in conjunction with the other literature reviews from the Infant Cohort (at 9 months and 3 years) as these earlier reports deal with additional topics that will continue to be of major importance through early childhood—examples include parenting, ill health and maternal lifestyle during pregnancy (Greene et al. 2010b; Greene et al., 2014).

Chapter 2 of this report discusses research topics on the child’s physical health and development: childhood injuries; screen-time and risk of overweight and obesity; and child’s play and exercise. The following chapter discusses three topics relating to the child’s social, emotional and behavioural outcomes at 5 years of age: the impact of adverse events; screen-time; and socio-emotional school-readiness. Chapter 4 reviews topics relating to cognitive development and education; starting school; preparation for school; parent and child engagement with the school once started; and the acquisition



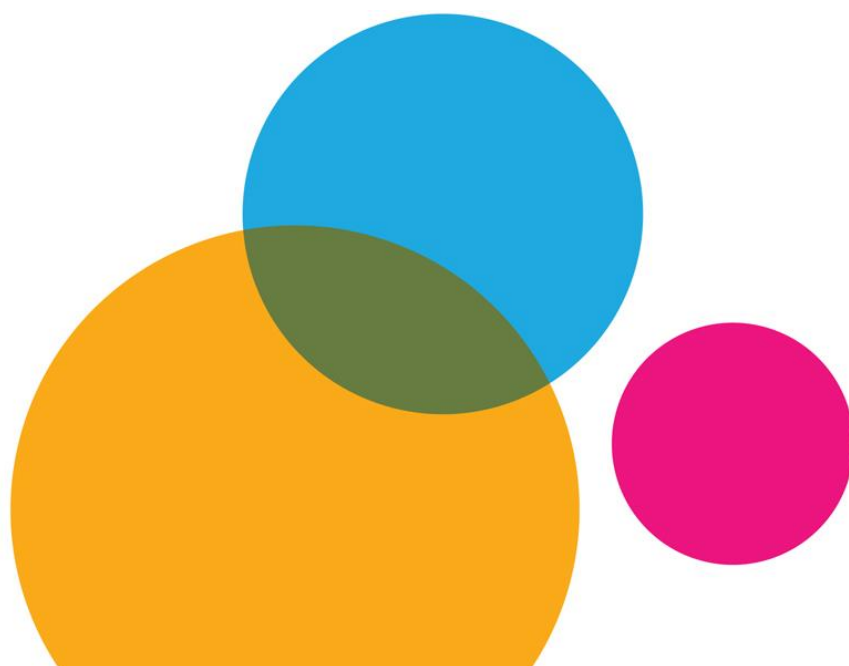
of literary skills among 5-year-olds. Chapter 5 concludes with a brief discussion on underlying themes emerging from review.





# Chapter 2

## HEALTH AND PHYSICAL DEVELOPMENT AT 5 YEARS





## 2 HEALTH AND PHYSICAL DEVELOPMENT AT 5 YEARS

The early years are a particularly important time for the child's health and physical development. Ill health or injury at this time can disrupt development in other areas too—such as starting school or making friends with other children. Health-related behaviour patterns that are established now, such as in relation to diet and exercise, can persist into later childhood and beyond.

This chapter focuses on three aspects of children's health and development that are particularly pertinent to the Infant Cohort at age 5 years, and so more data were collected relative to previous waves. The first topic is injuries in early childhood: in the current wave, more detail is recorded on the child's most recent injury including its exact nature and where it occurred. The chapter then moves on to two aspects of the child's lifestyle at age 5 years: screen time and its relationship with becoming overweight or obese, and the child's physical play and exercise. More information is collected on these areas at age 5 years as the child may have more choice and capacity to control their recreational activities and they are both areas of concern for parents and policy-makers.

### 2.1 RISK AND CONSEQUENCES OF INJURY IN EARLY CHILDHOOD

#### 2.1.1 CONTEXT

Injuries are a leading cause of death among children around the world (WHO, 2008), particularly after 1 year of age (e.g. CDC, 2012), including in Ireland (European Child Safety Alliance, 2012a) where unintentional injuries contributed nearly 16% of all child and adolescent mortality (EU average = 18%) in 2009 and intentional injuries nearly 10% (EU Average = 6%). Provisional CSO figures for 2015 (as reported in the State of the Nation's Children Report for 2016, DCYA) suggest six children aged 1–4 years and seven aged 5–9 years died in Ireland that year from "external causes of morbidity and mortality".

However, for every fatal child injury there are many more non-fatal ones that have the potential to cause considerable physical and psychological trauma to the affected children. The WHO estimates that injuries account for an estimated 5 million hospital admissions and 70 million visits to emergency departments in the WHO European region (WHO Europe, 2008), while the CDC estimates that 8.7 million American children and adolescents were treated in Emergency Departments in 2009 alone. In Ireland, Scallan, Staines, Fitzpatrick, Laffoy, & Kelly (2001) reported that the average number of annual hospital admissions following unintentional injury between 1993 and 1997 was 4,332 for children under 5 years and 7,426 for those aged 5–14 years. More recently, the Hospital In-Patient Enquiry database (as reported by State of the Nation's Children 2016, DCYA) recorded "injury, poisoning and certain other consequences" as the principal diagnosis on hospital discharge for 3,748 children aged 5–9 years in 2015 and for 3,987 children age 1–4 years (Table 67, p.100). The same report notes that children aged 5–9 years accounted for 26.3% of all 'injury' discharges among under 18 years; and - for all under-18s<sup>4</sup>—the

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<sup>4</sup> External cause breakdown by child age group not provided in referenced table.



main external causes for the injury were “accidental falls” (42.6%) and “accidents caused by objects” (20.8%). Elsewhere, children taking part in the Irish component of the Health Behaviour of School-Aged Children study self-reported on injuries: 35% of children aged 10–11 years had been injured in the previous 12 months according to the 2014 survey (Perry, Keane & Molcho, 2016).

Some data on childhood injury are also available from earlier waves of *Growing Up in Ireland*. Among the Infant Cohort, about 16% had ever received an injury that needed hospital treatment by the time of the interview at 3 years of age (Williams, Murray, McCrory & McNally, 2013), and around a third of the *Growing Up in Ireland* Child Cohort when they were first interviewed at 9 years of age (Williams et al. 2010).

This review will deal primarily with non-fatal, unintentional injuries (i.e. excluding intentional injuries from abuse or self-harm). In more recent years, there has been a move away from referring to injury-causing events as “accidents” in order to recognise that such incidents are frequently predictable and preventable, and move the focus away from children as being ‘accident-prone’ (Grossman, 2000; WHO, 2008). A paradigm originally developed in relation to motor vehicle accidents (Haddon’s Matrix, e.g. Grossman, 2000), but now more widely applied to injury prevention and limitation, considers not just human factors (such as cognitive development of the child) but also those of the agent (e.g. car/driver), the physical environment (e.g. pedestrian-crossing) and the socio-cultural environment (e.g. attitudes to stopping at red lights).

### 2.1.1.1 DEVELOPMENTAL CONTEXT

Their relative immaturity, both physically and cognitively, puts children at greater risk of injury in multiple ways (WHO, 2008). In terms of their cognitive development, young children are not capable of understanding hazards and predicting the consequences of their actions in the same way adults can. They are particularly vulnerable from around one year of age when they start to walk and their motor development overtakes their cognitive capacities. As the WHO put it, “As children develop, their curiosity and wish to experiment are not always matched by their capacity to understand or to respond to danger” (2008, p. 8).

The physically smaller size of children also increases their injury risk (WHO, 2008). In the context of road accidents, for example, they are not as visible to drivers and are themselves less able to see around obstacles such as parked cars. But the list goes on: greater risk of choking; skin is more easily burned; smaller amounts of chemicals are toxic compared to adults; dog-bites are more likely to be to the face and neck; vehicle impacts are at head-height rather than knee-height. Not only are children at greater risk of receiving an injury, the extent of the injury is often worse than would have been sustained by an adult in the same situation.



### 2.1.2 TYPES AND CAUSES OF INJURIES

The WHO worldwide report for injuries in 2004 suggests that the most common type of injury in childhood are fractures to the upper and lower limbs (WHO, 2008)—over a quarter of injuries to children under 15 years were to arms, legs, hands or feet with the most common being to the ulna or radius (in the forearm). A similar picture emerges from Irish data: Scallan et al. (2001) report that for Irish hospital admissions of children aged 5–14 years (between 1993 and 1997), fracture to an upper limb was the most common at 29%; and fractures featured prominently in requested Hospital Inpatient Enquiry (HIPE) data for 5-year-olds in 2012, with forearm fractures the most common type. In both the Irish (Scallan et al. 2001) and world data (WHO, 2008), intra-cranial injuries (traumatic brain injuries) are the most common after fractures, followed by open wounds (25% and 16% respectively in Ireland according to Scallan et al. 2001).

However, there is strong evidence that the most common injury and accident type varies considerably according to the age of the child. A review of child cohort studies by Mytton, Towner, Brussoni and Grey (2009) suggests that cuts and wounds are the most common injury type for children aged around 6 years but are overtaken by fractures, sprains and strains as the children age. Similarly, an analysis of hospital records from selected units in the UK and Ireland by Kemp, Jones, Lawson & Maguire (2014) found that burn and scald injuries—particularly the latter - were much more common among pre-school children and reduced substantially from school-age onwards.

Not surprisingly the mechanism and event-location for childhood injuries also varies by age. For younger children, most injuries occur in the home but school, road and leisure/sports locations feature more frequently as children move towards adolescence (Mytton et al. 2009). In terms of mechanism, for most age groups up to late adolescence, falls tend to be the most common way of sustaining childhood injury. In the Irish hospital data for children aged both under 5 years and 5–14 years reported by Scallan et al. (2001), falls were the most common mechanism for each age group (43% and 45% respectively), followed by poisoning for the under-5's (21%) and 'struck by/against' among the older children (14%). This pattern tallies with international data: in US statistics published by the CDC (2012), falls were the most common mechanism for unintentional injuries in all age groups under 15 years followed by being 'struck by/against'. In the previously mentioned HBSC survey, the most common activity resulting in the child's most serious injury (of the past 12 months) was 'playing or training for sports/recreational activity' for all age groups between 10 and 18 years (48% for those aged 10–11 years who were injured in the last 12 months (Perry et al. 2016). In the same study, the most common location for 10–11-year-olds to be injured was at a home/yard (32%) followed by a sports facility or field (28%).

The circumstances surrounding injuries vary by age too (reviews by Grossman, 2000; Scallan et al. 2001). For example, within the broader category of 'falls', falls from furniture or baby equipment such as baby-walkers are more common among infants, falls from playground equipment are common in middle childhood while sports activities contribute to falls for older children. Fatal falls for young children are often from windows or balconies. The Irish Health Service Executive (HSE) has published a 'Child Safety



Awareness Checklist<sup>5</sup> for parents and other assorted safety leaflets<sup>6</sup> aimed at preventing injuries in the home such as using stair gates and window restrictors to prevent falls and keeping medicines and cosmetics out of reach. For the first time in *Growing Up in Ireland*, the age 5 year wave will collect more detailed information on type and context of the child's most recent injury which can be examined in the context of other family and child characteristics such as family size, type of accommodation and child temperament.

### 2.1.3 CONSEQUENCES OF INJURIES

Many children make a full and speedy recovery from their injuries. According to Scallan et al. (2001), 77% of Irish children under 5 years and 64% aged 5–14 years, spent just one day in the admitting hospital with the majority going directly home upon discharge (as opposed to another care unit). Only around 5% had stays of a week or longer. However, while only a minority of children may experience longer term consequences from injuries, these can be severe and potentially life-changing including disability, scarring or disfigurement; acute and chronic pain; psychological trauma; and brain damage. Such consequences can in turn lead to curtailment of physical, social and cognitive capacities and activities, and ongoing discomfort, pain or distress—and may extend into the medium and long-term. In the HBSC study, over half of those children aged 10–18 years who had been injured in the previous year had lost three or more days of school or other usual activities due to their most serious injury.

The capacity of family members to respond to the child's needs and support them after the injury-causing event can be an important factor in recovery. A study by Anderson, Godferey, Rosenfeld and Catroppa (2012) found that level of family functioning was an important predictor of 10-year outcomes for children with brain injuries. Caffo & Belaise (2003) state "the main conclusion that arises from the research on resilience in development is that [the] extraordinary resilience and recovery power of children depend on basic human protective systems operating in their favour" (p. 493). So while the support from family plays a key role in the child's overall recovery from injury, it may be that the injury-event has a reciprocal negative effect on the family. If an injury has occurred in the context of a house fire or car crash, for example, other family members may have been injured in the same incident, or perhaps traumatised by having witnessed the child receiving the injury. After the initial event, parents may have to care for the injured child necessitating time off work and a possible drop in income. A five-year follow-up of young adults who had been severely injured between the ages of 11 and 24 years found that many still had difficulty with ordinary living skills such as having a bath, shopping and preparing food—and that the people who provided them with the most help tended to be parents (53%) and siblings (16%) (Evans, Airey, Chell, Connelly, Rigby & Tennant, 2003). Furthermore, 65% of the respondents in that study said friends and family were the most important people in helping them to cope with the trauma.

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<sup>5</sup> [http://www.hse.ie/eng/health/child/childsafety/checklist\\_first\\_aid.pdf](http://www.hse.ie/eng/health/child/childsafety/checklist_first_aid.pdf)

<sup>6</sup> All available via <http://www.hse.ie/eng/health/child/childsafety/publications/>



As well as collecting information on the child's most recent injury, *Growing Up in Ireland* records details on other circumstances (which may or may not directly related to the child's accident) such as serious illness/injury of other family members in the lifetime of the child, parental stress, the child's current physical and mental well-being, use of health services and support from other family and friends.

#### 2.1.4 FACTORS ASSOCIATED WITH INCREASED RISK OF INJURY

The Centre for Disease Control summarises the main risk factors associated with greater child and adolescent injury risk in the USA as male gender and lower socio-economic status as indicated by lower income, lower parental education, lone parenthood, over-crowding in family homes and living in disadvantaged communities (CDC, 2012).

Among the *Growing Up in Ireland* Infant Cohort at 3 years, increased risk of childhood injury was associated with male gender (18% versus 15%), single-parent households - particularly with multiple children - and living in areas rated as less safe by parents (Williams, Murray, McCrory & McNally, 2013). Boys in the older *Growing Up in Ireland* cohort, at age 9 years, were also more likely than girls to have had an accident or injury requiring medical attention (37% compared to 32%); and although there was no effect of income overall, boys from families with the lowest income seemed to be at increased risk (Williams et al. 2010).

The previously mentioned systematic review of cohort studies covering injuries in school-aged children by Mytton et al. (2009) identified a set of characteristics associated with increased risk across more than one cohort and setting. In line with the CDC-reported data, these risk factors included male gender, younger mothers and more siblings. In contrast to the CDC summary, this review found that the relationship between various socio-economic indicators and injury risk was highly variable across studies. Likewise, findings as to a relationship between injury risk and the child's physical development and/or sensory disabilities were inconsistent. However, Mytton et al. did find fairly consistent associations between injury-risk and child factors relating to psychological, behavioural and risk-taking problems: they note in particular that "behavioural difficulties (such as antisocial or aggressive behaviours) were reported in 10 different cohorts, with authors reporting increased risk in both primary school-aged children and post-primary school-aged children, and across time and place" (p. 118). The studies reporting on primary school-aged children came from countries as geographically diverse as the UK, New Zealand and China.

Schwebel, Brezaussek, Ramey & Ramey (2004) also found associations between injuries and hyperactivity (and male gender) using a retrospective design with over 10,000 5-year-olds. They also found a positive mediating impact of greater parental time resources on the injury risk of hyperactive children in a second sample of 1,000 children followed between 6 and 36 months of age. However, recent research using a prospective cohort study in Norway with a sample of over 25,000 found limited evidence of behaviour as a risk factor for injury at 36 months: there was only a slightly increased risk associated with attention problems and a protective effect of shyness (Myhre, Thoresen, Grogaard & Dyb, 2012).



It has been suggested that poverty plays a role in increasing injury risk for children because poorer families tend to live in older, less safe accommodation and in neighbourhoods with more hazards such as traffic and waste materials in the environment (Grossman, 2000; WHO, 2008). On the other hand, one study using data from the UK's Millennium Cohort Study found that while children from less advantaged backgrounds were more likely to have sustained an injury between the ages of 9 and 36 months, as were those living in homes with fewer items of safety equipment, the latter did not explain the association between social class and injury (Pearce, Abbas, Ferguson, Graham & Law, 2012). In other words, it did not appear that the increased risk of injury for less advantaged children was due to their homes having less safety equipment such as fireguards and socket covers.

#### 2.1.4.1 POLICY IMPLICATIONS

Most injuries are preventable and predictable, but many also happen within the home and inadequate adult supervision—even if only temporary—can be a contributing factor. As already mentioned, the Irish HSE provides a range of information leaflets aimed at informing parents how they can take steps to prevent injuries in the home. Guidelines are also provided to childcare providers and schools, and most centres are subject to health and safety inspections.

The European Child Safety Alliance (2012b) noted that key safety equipment such as car seats, bicycle helmets, stair gates and smoke alarms are generally widely available and affordable for families within Ireland. In its 2012 'child safety report card' for Ireland, the European Child Safety Alliance gave the country an overall rating of 'Good'—the fourth point on a five-point scale ranging from 'unacceptable' to 'excellent'. However, it noted gaps in child safety policy in several areas. Its key recommendations for action included making wearing a helmet while cycling compulsory, introducing laws requiring fencing around public and private pools, and setting a national maximum temperature for domestic hot water to improve scald prevention (European Child Safety Alliance, 2012b). Information from *Growing Up in Ireland* can contribute to the wider understanding of the context in which accidents happen, and just as importantly, what seem to be the protective factors for children who avoid them. Being a prospective, multi-disciplinary study means that, in contrast to hospital records for example, researchers can look at circumstances before and after an injury. In addition it will be possible to follow children over the longer-term with scope for looking at the timing of events, such as time out of school in hospital or whether there is greater risk around transition periods such as the birth of a new baby.

#### 2.1.5 WAVE 3 OF THE INFANT COHORT

Previous waves of *Growing Up in Ireland* in both cohorts have collected data on whether an injury occurred, how many, number of fractures and number of nights in hospital. The Infant Cohort at age 5 years substantially expands the amount of information collected on the most recent injury: parents will be asked to provide more information on the type of injury (burn, cut, poisoning, loss of consciousness, etc., as well as fractures) and where the injury occurred (e.g. home, school, childcare). The advantage of collecting injury information within *Growing Up in Ireland*, as opposed to hospital records, means that the risk of injury can be compared to other risk and protective factors suggested by the literature such as



type and standard of accommodation, maternal age and health characteristics, child temperament and quality of the neighbourhood. Furthermore, as the data are longitudinal, early characteristics can be compared against later risk and the impact of childhood injuries assessed in relation to later outcomes. For example, the effect of head injuries on cognitive and socio-emotional development or how serious injury affects the dynamics of the parent-child relationship.

## 2.2 SCREEN-TIME AND ASSOCIATION WITH OVERWEIGHT AND OBESITY

### 2.2.1 BACKGROUND

The following sections provide an introduction to previous research on the estimates of access to screen media, and factors associated with how long children spend watching screen-based entertainment – particularly television.

#### 2.2.1.1 CONTEXT

Children born in the 21st century have unprecedented access to screen-based media, both in terms of traditional televisions and a wide variety of other devices that can show programmes, films, games, websites and user-generated content (e.g. YouTube). Increasingly, this content can be accessed ‘on demand’ via the internet. A recent report by the UK’s Ofcom agency (Ofcom, 2013) revealed that 45% of families with children aged 3–15 years said devices other than a TV set were used to watch television programmes, including 35% of children aged 5–7 years. In particular there has been a rapid growth in the use of tablet computers for media activities: in the Ofcom report about a quarter of 5-year-olds used a tablet and over 40% lived in households that owned one. In addition a wider range of devices, especially portable devices, are capable of accessing the internet including tablets, smartphones, games consoles and ‘smart TVs’ which may ultimately make it harder for parents to accurately monitor their children’s media use. A UK survey of 6–8 year-olds and their parents by Jago, Sebire, Lucas et al. (2013) revealed that families had, on average, 5.9 types of devices in the home (television set, smartphone, games console etc.).

It has become the norm for there to be multiple television sets per household. A report for the Broadcasting Commission of Ireland<sup>7</sup> in 2008 (on parents’ and children’s attitudes to advertising for children) found that over two-thirds of families surveyed had more than one television set (Ipsos Mori/BCI, 2008). The same BCI survey found that nearly a quarter of 4–7 year olds had a television in their bedroom and among nine-year-olds in the *Growing Up in Ireland* Child Cohort this figure was 45% (Williams et al, 2010). The Ofcom report (Ofcom, 2013) indicated that 37% of 5–7 year-olds (and 22% of 3–4 year olds) had a television in the bedroom and an American study of 5 year-olds reported a figure of

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<sup>7</sup> Now the Broadcasting Authority of Ireland.





41% (Mistry, Minkovitz, Strobino & Borzekowski, 2007). *Growing Up in Ireland* data from the Infant Cohort indicated that 16% of 3-year-olds had a television, computer or games console in their bedroom.

### 2.2.1.2 ESTIMATES OF SCREEN TIME

The screen time guidelines set out by the American Academy of Pediatrics<sup>8</sup> are no more than one to two hours per day for children. At 3 years old, the children in the *Growing Up in Ireland* Infant Cohort were spending, on average, two hours per day watching television which is in line with studies in other countries. For example in the UK's Millennium Cohort Study, at aged 5 years 65% of children spent 1–3 hours watching television (on a weekday during term time) (Parkes, Sweeting, Wight & Henderson, 2013) and a similar finding was reported for the *Growing Up in Ireland* Child Cohort at age nine years (Williams et al, 2010). The UK's Ofcom report (Ofcom, 2013) indicates weekly television viewing of 14 hours (which equates to two hours per day) among 5–7 year-olds, but additionally six to seven hours per week (just less than one hour a day) separately on internet use and on gaming.

Over a third of 5-year-olds in the American sample (n=2,707) studied by Mistry et al. (2007) watched more than two hours of television daily. The LSAC study (Longitudinal study of Australian Children) reported that 4 - 5 year-olds in their birth cohort were spending three hours per day watching television on weekdays and 2 hours (per day) at weekends, with additional time of 20–30 minutes per day on video games and computers (combined). However, at the next wave when the same children were aged 5 - 6 years, this had changed to 1.5 hours of television on weekdays and 3.3 hours at weekends (Sweetser, Johnson, Ozdowska & Wyeth, 2012), possibly because the children had started school in the meantime. Elsewhere, *Growing Up in Scotland* reported that 61% of their 4 - 5 year-olds spent up to two hours per day on screen time (i.e. television and computer games) and the remaining 39% spent more than two hours in this kind of activity on a term-time weekday (Parkes & Wight, 2011).

### 2.2.1.3 CORRELATES OF LONG SCREEN-TIME

In the report for the Broadcasting Commission of Ireland, more than 40% of parents said their child watched three hours or more of television on average 'on a day when your child/children are watching television' and a similar percentage was reported by children on the same survey (Ipsos Mori/BCI, 2008). Among the *Growing Up in Ireland* nine-year-olds, watching three or more hours of television on a term-time weekday, and/or an hour or more of video games, was more common among families with lower maternal education and single parent families (although 1 - 3 hours of TV and less than an hour of gaming was still the most typical viewing pattern for all families). Children in these family types were also the most likely to have a television, DVD player or games console in their bedroom (Williams et al. 2010).

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<sup>8</sup> American Academy of Pediatrics (n.d.). Media Use and Children. <http://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/pages/media-and-children.aspx>. Accessed 13th February 2014. Since revised in October 2016.



Having a television in the bedroom has been associated with longer periods of screen time even in children as young as 3–5 years old (Garrison & Christakis, 2012).

In a review of 71 studies of correlates of media use among children aged 7 years and under, Hoyos Cillero & Jago (2010) found that both family and environmental characteristics influenced screen-viewing. Family factors associated with increased screen-time were lower parental education, non-White ethnicity, maternal depression, higher parental body mass, high levels of family television viewing and fewer parental rules. Environmental factors included increased access to media equipment (positive association) and perceived safety of the neighbourhood (negative association). From their review, these authors describe the association between screen-time and the presence of a television set in the child's bedroom as “unclear” (p. 7).

Several studies by Jago et al. find that longer screen times for children are more common in families where the parents watch a lot of television (Jago et al., 2012; Jago, Sebire, Lucas et al., 2013; Jago, Sebire, Edwards & Thompson, 2013). In a qualitative study among parents of 4–6 year-olds in six European countries (De Decker et al., 2012), ‘parental habits in the home’ was one of the most important factors influencing children's screen-time (along with ‘the weather’); and another focus group study in New Zealand reported parents' reluctance to reduce their own television viewing as one of several barriers to reducing children's viewing (Dorey et al., 2010).

### 2.2.2 CONCERNS ABOUT CHILD OVERWEIGHT AND OBESITY IN IRELAND

There has been increasing alarm among parents, health professionals and policy-makers in Ireland about the levels of overweight and obesity among children. Statistics from earlier waves of *Growing Up in Ireland* have provided important evidence on this issue. Among the *Growing Up in Ireland* Child Cohort at age 9 years 17% were overweight and a further 7% were obese. By age 13 years 20% were overweight and 6% were obese (Layte & McCrory, 2011; *Growing Up in Ireland* Study Team, 2012). Of perhaps even greater concern was the finding that among the Infant Cohort at 3 years, 19% were already overweight and an additional 6% were obese (Williams, Murray, McCrory and McNally, 2013).

Layte and McCrory (2011) summarise the health risks associated with being overweight or obese in childhood as including higher prevalence of asthma, eczema and type-two diabetes. There is also an increased risk for overweight and obesity in adulthood which is in turn associated with greater risk of life-threatening conditions such as heart disease and certain kinds of cancer. A treatment programme for childhood obesity run by Temple Street Children's Hospital (Dublin) reported that of 312 children referred, 40% had risk indicators for heart disease such as high cholesterol, 30% had other physical ailments like breathlessness, 60% had psychological difficulties including depression and 11% described experiencing severe bullying ([www.cuh.ie](http://www.cuh.ie)). Another Irish study by Carolan et al. (2014) found evidence of disruption to the immune system in obese children compared to a non-obese sample. It is not surprising, therefore, that the issue has been the target of various policy initiatives.



A report from the (Irish) National Taskforce on Obesity in 2005 put forward over eighty policy recommendations in six areas: high-level government; education; social and community; health; food, commodities, production and supply; and the physical environment. It particularly notes that tackling the obesity issue requires a collaborative approach from public and private sectors, community and voluntary groups. Some of the taskforce’s recommendations in relation to children’s physical activity are summarised in Section 2.3; however some of their other child-specific recommendations included

- “multi-sectoral action on the marketing and advertising of products that contribute to weight gain, in particular those aimed at children” (p. 94)
- “all children and parents have the opportunity through the school health services to develop self-capacity in relation to healthy eating and active living and this should include the opportunity to have a growth assessment for overweight or underweight” (p. 93)
- “home-school-community coordinators should incorporate ‘healthy life skills’ within the wider framework of home visitation and should promote courses and classes for parents, where appropriate” (p. 88)

One of the major Irish initiatives, launched in June 2013, was a campaign run by safefood ([www.safefood.eu](http://www.safefood.eu)). This initiative comprised an advertising campaign across multiple media outlets including television and billboards with advice on reducing portion sizes, managing treat foods, replacing sugary drinks with water, encouraging children to be more active, get more sleep and reduce screen-time. The safefood advice to parents on reducing screen-time included a gradual reduction of overall screen-time to half of current time, removing screens from children’s bedrooms and during meal-times and leading by example by reducing parental screen-time. Of course, screen-time is only one avenue for encouraging both parents and children to adopt life-style changes in activity and diet that ultimately lead to a healthy weight; however, as we shall see in the following sections, there is large body of evidence from different countries that finds associations between screen-time and an increased risk for overweight and obesity in children.

### 2.2.3 EVIDENCE FOR A LINK BETWEEN BEING OVERWEIGHT AND CHILDHOOD SCREEN-TIME

A wide array of factors has been linked to childhood obesity—biological, psychological and environmental. From among these factors, there is now a substantial body of research that supports a link between high amounts of screen-time (i.e. typically classified as more than two hours per day) and heavier children, with television usually providing the bulk of screen-based entertainment for younger children (e.g. Sweetser, Johnson, Ozdowska & Wyeth, 2012). Included in this body of work are many papers that have also identified this link between screen-time and being overweight (typically an odds increase of 30–50%) in young children aged around 5 years old and which span different countries with varied diets, cultures, climates and television content: some examples are Greece (Manios, Kourlaba, Kondaki, Grammatikaki, Anasasiadou & Roma-Giannikou, 2009), the UK (Reilly et al., 2005), the USA



(Mendoza, Zimmerman & Christakis, 2007; Ariza, Chen, Binns & Christoffel, 2004), Australia (Hesketh, Wake, Graham & Waters, 2007; Edwards & Baxter, 2013), New Zealand (Hancox & Poulton, 2006) and China (Jiang, Rosenqvist, Wang, Greiner, Ma & Toshke, 2006). A systematic review of papers on the topic of television viewing and BMI in pre-school children (i.e. aged 2–6 years) by Cox, Skouteris, Rutherford and Fuller-Tyszkiewicz (2012) found that 23 of the 26 papers included reported evidence of a positive association. Additionally, 9-year-olds in the *Growing Up in Ireland* Child Cohort were at greater risk of being overweight or obese if they watched more than an hour, or particularly more than three hours, of television per day although the relationship was much stronger for boys than for girls (Layte & McCrory, 2011).

Many studies supporting the link between screen-time and weight gain are weakened substantially by their cross-sectional nature, and hence one cannot exclude the possibility that overweight children favour screen-based entertainment as they find physical activities difficult or that a third factor such as personality accounts for both outcomes. However, some longitudinal findings from large cohort studies have emerged in recent years. Pagani, Fitzpatrick, Barnett and Dubow (2010) reported that increased television exposure at age 29 months was associated with increases in BMI at age 10 years<sup>9</sup>, as well as decreased physical activity and higher consumption of soft drinks and snacks among children in the Quebec Longitudinal Study (who were born 1997/98). In Australia, Hesketh, Wake, Graham and Waters (2007) found that screen-time (combining television and electronic game/computer use) among children aged 5–10 years at baseline (born circa 1992) was positively associated with BMI z-score and weight status at follow-up 3 years later, when the cohort was aged 8–13 years.<sup>10</sup>

In the UK, the Avon Longitudinal Study of Parents and Children (ALSPAC) found that 3-year-olds who spent more than eight hours per week watching television were 55% more likely to be obese at age 7 years than those who watched less than four hours, while those who watched between four and eight hours were 37% more likely to be obese (Reilly et al, 2005). Crucially these figures were adjusted for a wide range of potentially confounding variables including family and parental characteristics and other lifestyle factors such as diet and sleep. Prior to adjustment, the actual percentage rates of obesity among the children at age 7 years were 10.3%, 8.3% and 5.2% for more than eight hours, four-eight hours, and less than four hours respectively (of weekly television at age 3 years).

Children in the ALSPAC study above were born between 1991 and 1992. However, longitudinal evidence is available from even earlier cohorts. The Dunedin study in New Zealand, whose cohort were born twenty years earlier than the ALSPAC children (i.e. 1972 and 1973), also reported a significant correlation between hours of weekly television viewing at age 5 years and BMI at age 7 (Hancox & Poulton, 2006).

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<sup>9</sup> Every additional hour of TV corresponded to a 5% increase in BMI, 13% unit decrease in physical activity, and increases in consumption scores of 9% and 10% for soft drinks and snacks respectively.

<sup>10</sup> Every extra hour of screen-based activities increased the child's odds of being overweight at three-year follow-up by 3%.



Cumulatively there was a significant association between television viewing in childhood from age 5 years and BMI at age 15 years, and the authors noted that while the effect size was relatively small it was greater than that usually associated with factors such as calorie intake and exercise. Further work with this cohort estimated that average weeknight television viewing between the ages of 5 and 15 years accounted for 17% of overweight, 15% of poor fitness and 15% of raised cholesterol at age 26 (Hancox, Milne & Poulton, 2004). Going back even further are two UK-based cohorts: Viner and Cole (2005) report an association between greater weekend television viewing at age 5 and BMI z-score at age 30 years among a cohort born in 1970<sup>11</sup> (BCS70). Parsons, Manor & Power (2008) were able to relate frequent television watching at age 11 years with higher BMI at age 33, and faster gain in BMI<sup>12</sup> between the ages of 23 and 45 years, for females included in the 1958 birth cohort study.

#### 2.2.4 POTENTIAL MECHANISMS

In 2006, an expert panel assembled by the Centres for Disease Control and Prevention in the US identified four potential causal mechanisms to explain the association between television viewing and weight status (Jordan & Robinson, 2008). These included the hypotheses that:

- a) watching television displaces physical activity (i.e. children are sitting inside watching television instead of playing football or riding a bike)
- b) children snack more on energy-dense foods while watching television, and that normal biological cues regarding fullness levels are disregarded because individuals are distracted by what they are watching
- c) watching more television means more exposure to advertising for energy-dense and nutritionally poor foods

It has also been suggested that watching television lowers the resting metabolic rate more than other sedentary activities - although Jordan and Robinson (2008) report that less work has been done on this hypothesis and the results have been equivocal—and, separately, that screen-time at bedtime indirectly contributes to weight gain through sleep disruption (e.g. Strasburger, Jordan & Donnerstein, 2010). The study by Reilly et al. (2005) using ALSPAC data found that 3-year-olds who were getting less than 11 hours of sleep per day were more likely to be obese by age 7 years than those who got more than 12 hours' sleep. Some of the research on screen-time and sleep problems is discussed elsewhere in this review (Chapter 3, Section 2); Evidence for the remaining three mechanisms is discussed in the following sub-sections.

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<sup>11</sup> Each additional hour of weekend viewing at age 5 increased the risk of being an obese adult by 7%.

<sup>12</sup> By 0.017kg m<sup>-2</sup> per year for 'often' watching TV.



#### 2.2.4.1 DISPLACEMENT OF PHYSICAL ACTIVITY

Although a logical and reasonable contender, the afore-mentioned US expert panel concluded that the evidence for displacement as a causal mechanism was weak at best, with several studies showing no significant association (Jordan & Robinson, 2008). Similar conclusions were reached in reviews by Sweetser, Johnson, Ozdowska and Wyeth (2012) and Cox et al. (2012) although in the latter's systematic review only some of the studies had included physical activity as a possible mediator. One of those that did was by Manios et al. (2009) who reported physical activity reduced the probability of obesity in pre-schoolers independently of TV watching. Epstein et al. (2001, summarised by Cox et al., 2012) did not find any evidence that reducing the amount of time children spent watching television affected time spent on physical activity in a randomised controlled trial. Vandewater, Bickham, Lee, Hope, Cummings and Rideout (2005), in a study of households with children aged 0–6 years, similarly did not find any relationship between living in a 'heavy-television' home (i.e. television on always or most of the time) and time spent playing outside or playing inside with toys. Children aged 5–6 years in 'heavy-television' households did, however, spend more time watching television, listening to music and playing video games and less time reading. Using data from LSAC (Longitudinal Study of Australian Children aged between birth and 8–9 years), Rutherford, Brown and Bittman (2011) reported that while no evidence was found for television displacing exercise, children who watched more television (or DVDs) tended to spend less time on homework and also more time with other digital media like computer games. Hence it may be that the availability of television and other screen-based media dictates how children spend their resting time more than it displaces physical activity.

#### 2.2.4.2 INCREASE IN SNACKING

The evidence for snacking during screen-time as a mechanism for the association with weight gain is more consistent than for displacement of physical activity. In the randomised controlled trial by Epstein et al. (summarised by Cox et al. 2012), a reduction in screen-time for young children was associated with a reduction in calories consumed even though it did not affect physical activity. Furthermore, the treatment group experienced a greater reduction in BMI than controls. The association between television viewing and obesity in pre-schoolers observed by Manios et al. (2009) was reduced to non-significance once adjustments were made for total energy intake.

Research by Dubois, Farmer, Girard and Peterson (2008) suggests a relatively complex relationship between food consumption and television viewing. Although overall they found no difference in BMI between 4.5-year-olds who watched more or less than three hours of television per day, children who ate snacks while watching television every day had a higher BMI and their diet was generally less healthy with more carbohydrates, fat and soft drinks and fewer proteins, fruit and vegetables. Interestingly, eating dinner, but not breakfast or lunch, while watching television was associated with higher BMI.

Other studies also find a correlation between consumption and screen-time: Cox et al. (2012) found that time spent watching television was positively correlated with energy-intake while viewing, consumption of obesogenic foods, and frequency of eating take-away foods among children aged 2–6 years. Layte and



McCrary (2011) reported a negative correlation between dietary quality and hours of both television and gaming among 9-year-olds in the *Growing Up in Ireland* Child Cohort. In longitudinal work by Gubbels et al. (2012), a ‘television-snacking lifestyle pattern’ at age 5 years—watching television, eating a lot of snacks, eating while watching television and not eating at the table —was associated with an increased risk of being overweight at age 7–8 years.

There are some dissenting voices, however. Brown, Skouteris, Bittman and Rutherford (2011) comment that while children’s television watching was associated with increased snacking among the LSAC cohort, a model using path analysis suggested that only viewing time remained significantly associated with weight status at age 8–9 years. Elsewhere Zimmerman and Bell (2010) reported that eating in front of the television was not a concurrent predictor of BMI z-scores among children 0–6 years.

#### 2.2.4.3 FOOD ADVERTISING

Although Zimmerman and Bell (2010) found no effect of eating while watching television on children’s weight, they did observe a longitudinal effect of watching commercial as opposed to non-commercial television. More specifically, it appeared that commercial television-viewing in 1997 among children aged 0–6 years at the time was associated with an increase in BMI z-score when measured in 2002. However the effect was not observed for concurrent commercial television-viewing at follow-up. The authors concluded these patterns provide evidence that it is exposure to advertising in particular, rather than general content, which mediates the link between television and weight status.

It may be that pre-school children are particularly susceptible to advertising messages: children up to the age of 5 years have difficulty distinguishing between commercials and regular content, and are some years off an understanding of the concept of ‘marketing’. So children aged around 5 years have no scepticism about the claims made by advertisers, are naive to the possibility that the commercials are not necessarily in their own best interests, and while they might have a rudimentary understanding of the concept of ‘buying’, are unlikely to appreciate differences in ‘cost’. Yet research suggests that children often react like consumers to advertising: they can match brand logos to products with reasonable success from the age of 3 years (Fischer, Schwartz, Richards, Goldstein & Rohas, 1991), and have been shown to influence parental buying choices (Martensen & Gronholdt, 2008).

Concern about the impact of television food advertising on children’s diets has already permeated through to Irish policy-makers. In June 2013, the Broadcasting Authority of Ireland issued new regulations for food advertising to children: commercials for foods or drinks high in fat, sugar or salt are now prohibited from broadcast during children’s programmes—at least for broadcasters regulated in the Republic of Ireland. In addition there are restrictions on such food advertisements shown during other programming but targeted at children including the exclusion of programme characters, celebrities or sports stars and promotional offers.



## 2.2.5 WAVE 3 OF THE INFANT COHORT

For the *Growing Up in Ireland* Infant Cohort at 5 years, information on the child's screen-time is based on parental report. In addition to estimates of the amount of screen-time the child has on an average weekday, parents were asked how this time is spent (educational games, other games, television viewing, or a mixture) and whether the child uses a computer, tablet or smartphone. In relation to food intake, the parent completed a detailed diet inventory for the child that can be translated into an estimated daily calorie intake. Parents' opinion on whether the child is a healthy weight was supplemented by direct measurements of height and weight taken by the interviewer during the household visit. As amount of television viewing and physical measurements were also recorded at age 3 years, there is potential for considering not just the effects of early viewing on later outcomes but also whether changes in viewing habits over time (either increases or decreases) are associated with corresponding fluctuations in weight status.

## 2.3 PHYSICAL PLAY AND EXERCISE

Play is an important part of childhood. Most developmental theorists view it as a key process in fostering healthy development. It is also an indicator of the child's development and progress through stages as the child's cognitive, social and physical capacities increase. For example, 'co-operative play' with other children and adults—as distinct from playing alongside others—only emerges from about 3 years of age. Although play at around 5 years can be 'non-symbolic' (e.g. playing with jigsaws, balls etc.), 'symbolic' (e.g. pretend play) as well as 'active or exercise play', this section focuses on physically active play in the context of health and physical development.

### 2.3.1 LEVELS AND GUIDELINES

At age 5 years, children's level of motor skills have typically increased sufficiently to allow them to engage in more frequent and more complex forms of physical play and exercise including cycling, climbing, dance and ball games. Increases in social skills and better relationships with other children facilitate more joint play and exercise such as chasing games, football etc. In addition, most children in Ireland start school around 5 years old and while this increases the opportunity for dedicated periods of physical exercise instruction within school, as well as play with other children, it may also reduce time available for free play of the child's choosing.

In Ireland, as elsewhere in the world, there are concerns about the sufficiency of time spent on physical play and exercise by young children and the implications this will have on their current and future health, particularly on rates of overweight and obesity. The HSE guidelines for children's physical activity and play in Ireland are a minimum of 60 minutes every day, with the benefits being "better cardio-respiratory and muscular fitness, stronger bones, better cardiovascular and metabolic health, and healthier body fat composition" (Department of Health and Children/HSE, 2009). An earlier *Growing Up in Ireland* review (Morgan, Thornton & McCrory, 2014) summarised the research demonstrating the effects of exercise for a wide range of health related outcomes, including cardiovascular health, muscular strength, weight maintenance, bone density, mental health and general well-being.





However the available evidence suggests that most Irish children are not meeting these minimum guidelines on physical activity. The Children’s Sport Participation and Physical Activity Study found that only 19% of primary school children (aged 10–11 years) were participating in the recommended daily 60 minutes or more of moderate to vigorous physical activity per day, and furthermore only 35% were receiving the prescribed minimum of 60 minutes per week of physical education (P.E.) in school (Woods, Tannehill, Quinlan, Moyna & Walsh, 2010). A report card on the physical activity of children and youth in Ireland awarded the country a grade of just ‘D minus’ on overall physical activity levels (Harrington et al., 2014). Furthermore, this report card noted a dearth of information on physical activity among Irish children under 7 years—it is hoped that the *Growing Up in Ireland* study on 5-year-olds will go some way to addressing this gap.

What is known from the *Growing Up in Ireland* study so far is that only a quarter of 9-year-olds met the recommended 60 minutes per day of physical activity, and girls were less likely to be doing the minimum amount than were boys (21% compared to 29%; Williams et al. 2010). From earlier waves of the Infant Cohort, it was observed that infants who had failed a measure of gross motor development at 9 months of age achieved their ‘first steps’ milestone at a later age (15.5 months versus 12.9 months) and were less likely to have achieved motor milestones like standing on one leg, throwing a ball and riding a tricycle by age 3 years.

More specific guidelines on physical activity for pre-school children have been published by the (American) National Association for Sport and Physical Education (2002, also cited by Timmons, Naylor & Pfeiffer, 2007). For children aged 3–5 years, they recommend:

- Accumulating at least 60 minutes of structured physical activity per day
- Unstructured physical activity of at least 60 minutes, and up to several hours per day, with no more than 60 minutes of sedentary activity at a time except while sleeping
- The development of movement skills that will provide the foundation for more complex movement sequences
- Access to both outdoor and indoor areas that are safe for large muscle activities (e.g. running and jumping)
- Individuals responsible for looking after pre-school children should be aware of the importance of physical activity and promote the development of movement skills

British guidelines for children under 5 years are for a minimum of 3 hours of physical activity per day in a mix of lighter (e.g. walking to the shop) and more energetic play (e.g. running) that exercises all the major muscle groups. They also recommend reducing sedentary time, not just screen time, but time spent sitting in pushchairs and car seats.



In a review of the literature on physical activity and pre-school children, Timmons et al. (2007) note different influences on amount of activity. In terms of the child's own characteristics, there is some evidence that patterns of activity fluctuate with age, boys are more active than girls, and young children who are overweight are less active. Some studies also find ethnic or racial differences in physical activity but these findings are not consistent. Family and environmental factors include seasonality/weather (i.e. less physical activity during winter), the quality of the play and pre-school environment, and particularly the physical activity levels of the child's parents. Weather may be a particular concern in the Irish context, tending to be rather wet generally and with the period 2006–2015 being one of the wettest in a historical context (Murphy 2018). According to Early Childhood Ireland, a representative group for childcare practitioners in Ireland, a survey of parents (which they commissioned) found that 88% of children have less outdoor play in winter and 74% do not play outside if it is raining<sup>13</sup>. Research summarised by the National Taskforce on Obesity (2005) suggests that accessible and pleasant facilities and spaces are influential in encouraging both adults and children to engage in more physical activity.

The National Taskforce on Obesity (2005) also laid out wide-ranging recommendations for the role of schools and the education sector in the promotion of physical activity among children. This included ensuring at least 30 minutes of physical activity in the school day, exclusive of P.E.; the provision and maintenance of physical activity facilities; and a safe and active journey to school for every child such as via safe walkways and cycle paths.

### 2.3.2 EFFECTS OF PHYSICAL ACTIVITY ON PHYSICAL DEVELOPMENT

There are several potential health benefits to physical activity, although the impact on weight status has received the most attention. In the review by Timmons et al (2007), the literature was more consistent in finding a positive relationship between physical activity and bone health than with weight reductions. According to the National Institute of Child Health and Development (NICHD), bones are living tissue that can be strengthened via weight-bearing activities that encourage new bone tissue to form. Examples of weight-bearing activities that young children could engage in are skipping and jumping, dancing, running and climbing. Such activities have the benefit of increasing muscle as well as bone strength. A study of over three hundred children as part of the Iowa Bone Development Study found that bone mineral content at ages 8 and 11 years was positively related to the amount of moderate to vigorous physical activity at age 5 years, even after controlling of current activity levels at the later ages (Janz et al, 2010).

A systematic review by Janssen and LeBlanc (2010) examined the relationship between exercise and several outcomes among children and youth: cholesterol levels, high blood pressure, depression, injury,

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<sup>13</sup> <http://www.earlychildhoodireland.ie/quality-in-practice/play/outdoor-fun/>



bone density, obesity and metabolic syndrome.<sup>14</sup> The authors found mixed results for the impact on cholesterol levels; positive effects on high blood pressure from intervention studies; positive effects on metabolic syndrome; weak to moderate associations with overweight but stronger associations where objective measures of physical activity levels were available; modest associations with improved bone mineral density; and small to modest associations with improvements in depression scores. Despite the favourable findings with respect to other outcomes, higher injury rates were found among children with higher physical activity levels in the three cross-sectional studies that met the inclusion criteria for this topic. A small intervention study (n=221), showed that children aged 7–9 years who were randomly assigned to a program of physically active play after school (as opposed to the control group), had a significant increase in aerobic fitness— as well as improvements in cognitive function that were the main focus of the study (Hillman, Pontifex, Castelli et al., 2014).

Despite much interest in the links between physical activity and weight or adiposity status, and guidelines to increase physical activity as a remedy to the current obesity problem in children, not all studies are supportive of the notion that exercise invariably results in weight loss by children. For example, Sallis et al. (1993) found a non-significant weight loss among children who participated in exercise activities over two years. Timmons et al (2007) report inconsistent findings in their systematic review, especially for intervention studies. Some studies find positive effects for one group but not others. For example, Mo-suwan, Pongprapai, Junjana and Puetpaiboon (1998) found that the addition of a 15 minute walk and a 20 minute aerobic dance session to a kindergarten group, three days per week, had a positive effect on a measure of adiposity for girls only. Inconsistencies in the way physical activity, and indeed adiposity/weight status, is recorded may contribute to the difficulty in quantifying the effect of exercise in this age group.

There are also differences in the kinds of intervention assessed. For example, a study by Alhassan et al. (2007) found that simply increasing the amount of free time available for outdoor unstructured play during pre-school attendance did not result in an increase in physical activity as measured by an accelerometer. However a study on a single disadvantaged school which involved attendance at a 60 minute P.E. class (by children aged 8–11 years) found that physical activity was greater on the days the classes occurred, not just within the class but also outside it—and the difference was more pronounced for the longer classes than classes of shorter duration. In a systematic review of interventions to increase physical activity levels in childcare, Mehtälä, Sääkslahti, Inkinen and Poskiparta (2014) found that 14 out of 23 studies did report increases but that many of these were modest. A study by Epstein et al. (1995) showed that choice may be especially important in effecting behaviour changes in physical activity. In their study, children had two options, spending less time on sedentary behaviour or increasing their

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<sup>14</sup> Metabolic syndrome is a condition characterised by having a range of metabolic markers outside the normal range (including abdominal obesity, triglycerides, HDL cholesterol, insulin and inflammatory markers). It is associated with an increased risk of heart disease.



physical activity. The fact that the first option produced greater weight loss was attributed by the researchers to the substitution by the children of high-energy-expenditure exercise of their own choice.

### 2.3.3 OTHER BENEFITS OF PHYSICAL PLAY AND EXERCISE

More recently researchers have been considering the potential of physical activity and play to improve child well-being in areas beyond physical health. A meta-analysis (59 studies) by Fedewa and Ahn (2011) on the impact of physical activity on cognitive/academic outcomes among school-aged children found that both correlational and experimental designs reported positive effects, but with stronger effect sizes for the latter. They also noted that small-group interventions appeared to work better than individualised programs, for younger children more than those in middle-childhood or adolescence, and greater benefits for aerobic activity. Overall effect sizes tended to be small to medium. Another systematic review concentrating on randomised controlled trials of aerobic exercise (8 studies) found a positive albeit small impact of this type of physical activity on both cognitive and psychosocial measures (Lees & Hopkins, 2013)—although some studies found no effect.

It may be that physical play by young children helps them to develop their cognitive capacity in relation to spatial organisation or hand-to-eye coordination that in turn assists more formal academic learning. Best (2012) suggested that physical activity may engage higher order processes and prime them for subsequent use. In an experimental study with children aged 5 years and upwards, participants completed activities that varied in terms of the demands on physical activity and cognitive engagement. The results indicated that physical activity (what is referred to as ‘exergaming’) enhanced executive functions as indicated by better performance in tasks requiring resolving interference from conflicting stimuli. A Finnish birth cohort study of over 8,000 individuals was used by Kantomaa et al. (2013) to test for an association between self-reported physical activity and parent-reported motor skills at age 8 years with obesity and academic achievement. The authors concluded that (a) physical activity had a positive effect on grade-point average, while obesity had a negative effect; and (b) having motor difficulties in childhood was indirectly linked to reduced attainment by age 16 years through reduced physical activity and obesity. Another Finnish longitudinal study of nearly 4,000 children and youth, aged between 3 and 18 years, found evidence of a relationship between mother-reported physical activity for children aged 3 and 6 years and later self-reported physical activity as young adults (Telama et al. 2014); although ‘tracking’ over time was stronger for boys.

A review of the benefits of physical education and sport (PES) in schools by Bailey (2006) concluded that there was also potential for PES to “support the development of social skills and social behaviours, self-esteem and preschool attitudes, and in certain circumstances, academic and cognitive development”, particularly through the positive interactions with teachers, parents and coaches. Singh, Uijtdewilligen, Twisk, van Mechelen and Chinapaw (2012) summarise the hypothesized mechanisms for a physiological effect of exercise on cognitive development and function as (a) increased blood flow and oxygen to the



brain, (b) increases in hormones/neurotransmitters associated with more positive mood, and (c) stimulation of new nerve cells.

#### 2.3.4 GENDER DIFFERENCES IN PLAY

Considering the marked gender differences in physical activity levels that have been observed from middle-childhood onwards—including within the Child Cohort of *Growing Up in Ireland* (e.g. Williams et al., 2010)—the development of gender-roles in play deserves further consideration. There is evidence that both parents and peers play an important role in cultivating gender differences in forms of play. Parents tend to be more physically active with sons than daughters from infancy and this is maintained through early childhood; there are indications that physical play is especially more likely among fathers and sons (Lindzey & Mize, 2001). Another aspect of parental influence is their tendency to offer ‘gender appropriate’ toys to children rather than those considered appropriate for the other sex. Furthermore, they are likely to express approval of play that is in line with traditional sex-typing and to disapprove of behaviour that is considered appropriate for the other sex (Wood, Desmarais & Gugula, 2002). There is also evidence that as children move into school, parents seek to provide different experiences for their sons and daughters and that these differences predict changes that emerge in later childhood (Lillard et al., 2013). For example, in the early school years parents are likely to encourage their sons to engage in sports while daughters are more likely to be encouraged to read.

The peer group is an important influence for the socialisation of gender-typed play in children. The evidence indicates that peers reinforce what is considered gender appropriate play and reject those children who deviate from this expectation. While this applies to both boys and girls, it would seem that boys’ rejection of cross-gender forms of play is stronger than girls’ (Zucker, Wilson-Smith, Kurita & Stern, 1995). In an early study examining this phenomenon among 4–5 year olds, Fagot & Leinbach (1993) found that girls who enjoyed boys’ games were allowed to move between male and female groups without difficulty; while boys reacted quite negatively to other boys who crossed gender boundaries in games.

While the role of parents and peers is acknowledged in relation to play, evidence suggests that children self-socialise their gender roles - a process that is reflected in play. In a study of pre-schoolers (Bussey & Bandura, 1999), participants were given an opportunity to play with a variety of gender-typed toys or with toys traditionally associated with the other gender. Their regulation of their own sex-typed play was especially evident among boys. However, the relative inflexibility of boys in terms of gender roles in play does not further an understanding of why girls tend to drop out of physical activity and sport, except to suggest that boys may be more motivated to maintain this ‘gender-appropriate’ play.

#### 2.3.5 INFANT COHORT AT WAVE 3

At age 5 years, parents were asked more detailed questions about their child’s play and activities. There are a number of detailed questions on specific physical activities including bike-riding, chasing and climbing. There are also questions on joint activities with other family members such as attending sports events or engaging in sports. The data collected at 5 years can be used to investigate gender, regional

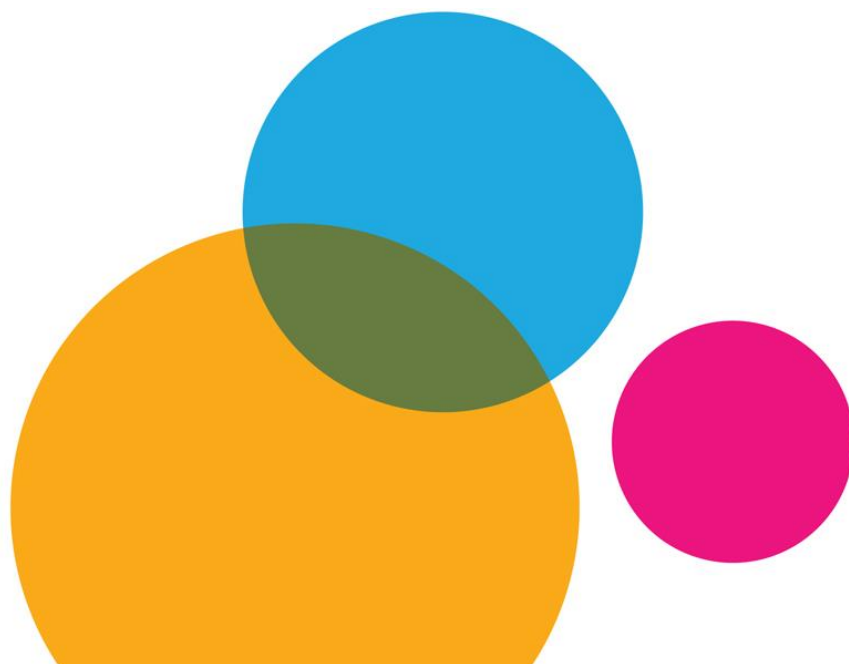


and socio-economic differences in the physical activity patterns of young children. Furthermore, these patterns can be compared with outcomes such as weight status and overall health as well as cognitive development and socio-emotional well-being both cross-sectionally and longitudinally: for example the Strengths and Difficulties Questionnaire which looks at peer problems, emotionality, hyperactivity, conduct problems and pro-social behaviour has been administered at both 3 and 5 years and is likely to be included in future waves too.



# Chapter 3

## SOCIO-EMOTIONAL DEVELOPMENT AT 5 YEARS





### 3 SOCIO-EMOTIONAL DEVELOPMENT AT 5 YEARS

The importance of an appropriate level of socio-emotional development for the child's overall well-being will only increase as the child gets older, starts school and will need to interact with new people, both adults and other children, on a regular basis. Over childhood, each child will experience a myriad of events and experiences, some of which will be positive and others negative, and by age 5 years the child is likely to be more aware of both their own and others' reactions to events. At least as far back as Harlow's controversial studies in the 1960s with baby monkeys separated from their mothers,<sup>15</sup> it has been recognised that optimal development requires not just physical nourishment but also a source of socio-emotional comfort and security (via Association for Psychological Science, 2018). From an extensive review of existing experimental, observational and longitudinal studies on the impact of positive psychological well-being (and not just an absence of 'ill-being') on other outcomes, Huppert (2009) concluded that "psychological well-being is associated with flexible and creative-thinking, pro-social behaviour, and good physical health" (p.154). Some of these effects seem to be mediated by neurochemical processes such as cortisol levels, while others likely relate to a sort of chain-effect whereby a positive approach to a task or person is more likely to have a good outcome that in turn boosts positive feelings (ibid).

While much of the following chapter focuses on risks to a child's socio-emotional development, it should be borne in mind that the *Growing Up in Ireland* dataset also provides ample scope to consider protective factors. For younger children especially, it is likely that support from parents will be an important buffer in times of difficulty but that in turn may be influenced by the strength of the parent's own emotional resources. For example, a longitudinal birth cohort study found that while over a quarter of children exhibited internalising and externalising behaviour problems by aged 6–8 years, parental factors such as good maternal health and self-esteem, and sufficient quality parenting time were protective for children otherwise at high-risk of emotional problems. In addition, child characteristics such as high self-esteem and academic ability were also protective (Cabaj, McDonald & Tough, 2014). From their review of forty years' of resilience literature, Masten, Cutuli, Herbers and Reed (2012) summarise factors consistently associated with protective

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<sup>15</sup> To help answer the question as to whether baby monkeys became attached to their mothers because they were just a source of food, monkeys were separated from their biological mothers at an early age and placed in cages with wireframe 'mothers' equipped with feeding bottles. Monkeys who had a wire 'mother' covered with soft cloth that they could cuddle up against displayed much better outcomes than those who just had a bare metal frame – even though the nourishment value was the same. Harlow, Dodsworth and Harlow (1965) summarised the effects of total maternal deprivation and no opportunity to bond with peers as a "progressively deepening syndrome of compulsive nonnutritional sucking, repetitive stereotyped movements, detachment from the environment, hostility directed toward others and inwardly toward the animal's own body, and inability to form adequate social or heterosexual attachments to others when such opportunities are provided in preadolescence, adolescence, or adulthood. (p.90).





effects as including “self-regulation skills, good parenting, community resources, and effective schools” (p. 117).

In terms of risk factors, one category of event that might impede the child’s socio-emotional well-being at this point in the life-course (age 5 years) is his or her exposure to adverse or potentially traumatic events. Although such events are likely to be a negative experience at any time of life, this will be the first time this information has been collected for the children in the Infant Cohort and it is also a stage where there is an increased likelihood of the child retaining an explicit memory of an event going forward. The first question in this review focuses on the likelihood of a traumatic event occurring and what the repercussions might be for a child.

The second question for this chapter of the review looks at whether socio-emotional development is affected by watching television and other forms of screen time: as outlined in Chapter 1 the ‘digital landscape’ has changed dramatically in recent years, even in contrast to the children of the Child Cohort at 9 years. There is much public and policy interest in the repercussions of children’s virtual immersion in an alternative digital world, and as the pace of technological development shows no signs of slowing it is an issue which will likely be at the forefront of debate for some years to come. There has even been some commentary on whether Bronfenbrenner’s bio-ecological framework should be extended to account for the digital context; which has the capacity to interact directly with the child’s development without moderation by parents or teachers.

Finally, this chapter considers factors relating to the child’s readiness for school in terms of their socio-emotional development. Starting school is a major transition for the child at this time, and research suggests social, emotional and behavioural skills are as important as cognitive ones. There has been an increasing interest in the extent to which individual children should be socially and emotionally ready before entering formal schooling. It is an issue of particular interest in Ireland since it has traditionally had a much earlier start to formal schooling (ages 4–5 years) than other European countries, and prior to a recent scheme for a universal entitlement to a free academic year of pre-school, ‘kindergarten’ type classes were at both the discretion and expense of individual parents.

### **3.1 ADVERSE EVENTS IN EARLY CHILDHOOD**

#### **3.1.1 PREVALENCE**

Although the idea that traumatic events in early childhood can affect adult wellbeing is not new (going back at least as far as Freud), it is only in more recent years that this area has been subject to more serious investigation. Something of a landmark study in this area has been the Adverse Child Experiences (ACE) study in the United States (see for example [www.cdc.gov/ace](http://www.cdc.gov/ace)), and the categories of experience used therein have been repeated in



several subsequent studies. They can be grouped under three broad headings of ‘abuse’, ‘neglect’ and ‘household dysfunction’ (e.g. household substance abuse, parental separation or divorce). Typically, but not exclusively, information is collected from adults asked to recall events from childhood. Although the rates vary somewhat across different studies, it is still possible to discern a trend whereby the most frequent adverse child experiences tend to be household substance abuse and parental separation or divorce.

However, the ACE study is not the only taxonomy of negative childhood experiences. Other researchers, such as Briggs-Gowan, Ford, Fraleigh, McCarthy and Carter (2010), have thought in terms of PTEs or Potentially Traumatic Events, the definition for which they cite as “events that involve actual or threatened death or serious injury to the physical or psychological integrity of the child or another person” (p. 725, citing Zero to Three, 1994). These, and earlier, authors further distinguish between events that are ‘interpersonal’ such as seeing someone threatened with a weapon and ‘noninterpersonal’ events such as a car accident—with the former thought to be more detrimental.

The Briggs-Gowan et al. work is particularly useful in that it collects timely information from a healthy birth cohort study on events that occurred before 5 years of age: longitudinal data were collected in two waves and the children were aged 12–36 months in Year 1 and 24–48 months in Year 2 (n=1,152). Overall, by Year 2, more than a quarter of the children (26.3%) had experienced at least one of the PTEs: 14.5% had experienced at least one ‘noninterpersonal event’ (major injury or burn/dog bite/car accident) and 13.8% witnessed at least one incident with violence (violence in the neighbourhood/family member being hit, pushed or kicked/family member hurt by or threatened with a weapon). The most frequent individual events were seeing a family member being hit, pushed or kicked (12.3%) followed by car accidents (10.3%).

Other birth cohort studies have asked about ‘stressful life events’ during childhood, although frequently using different measures that make direct comparisons difficult. Thinking of events as stressful because of the change they bring about will obviously encompass a wider range of events, as some changes while stressful at the time may ultimately bring about positive change. For example moving house could mean an increase in the size and standard of accommodation. Data from Growing Up in Scotland (GUS) estimates that by age 5 years, 30% had experienced the death of a grandparent or other close relative, and 40% had moved house (Chanfreau et al, 2011). Among children in the birth cohort of LSAC it is estimated that around 7% had experienced the death of a grandparent, parent or sibling (Jacobs, Agho & Raphael, 2012) and there had been the death of a ‘close family friend or another relative’ in the lifetime of at least 25% of the children (Qu, Baxter, Weston, Moloney & Hayes, 2012) by the time they were aged 4–5 years. Interestingly, GUS and LSAC also include the birth of a new sibling as one of the ‘significant’ life events in the life of a child due to the change this particular event



is likely to bring about. This type of change had occurred in the lives of 38% of the GUS 5-year-olds, with 31% of parents of the LSAC children reporting being pregnant or having a new baby by the time the Study Child was aged 2–3 years. While *Growing Up in Ireland* does not specifically include the birth of a new sibling in its taxonomy of stressful events (see Table 3.1), it is perhaps worth noting that nearly a third of the *Growing Up in Ireland* Infant Cohort had experienced the arrival of a new sibling by the time they were 3 years old.

These types of events vary in both their potential for a negative effect on the child, and also the extent to which policy might reasonably be expected to tackle their occurrence. For example, policy cannot limit new births in a family to safeguard the current status of a first-born child; although there may be scope for providing parents with useful information on managing the transition to siblinghood. On the other end of the spectrum, however, policy may actively seek to protect children from being abused or witnessing abuse by putting in place protocols for the management, reporting and support of ‘at risk’ children.

**Table 3.1 Prevalence of stressful life events for equivalent categories for Growing Up in Scotland age 5 years, LSAC (Birth Cohort) aged 4–5 years and Growing Up in Ireland (Child Cohort) age 9 years**

Event	GUS (age 5 years)	LSAC (age 4–5 years)	GUI (age 9 years)
Death of a parent	1 (parent or sibling)	7 (grandparent, parent or sibling)	3
Death of close family member	30	plus 25 <sup>16</sup> (other relative or friend)	43
Divorce/separation of parents	12 <sup>17</sup>	15	15
Serious illness/injury of family member	11 <sup>18</sup>	12 (parent injury/assault only)	13
Moving house	40		42
Moving country			10
Drug-taking/alcoholism in immediate family		5	4
Stay in foster/residential care		0.1	5
Conflict between parents		10	12
Mental disorder in immediate family			4
Serious illness/injury to child			5
Parent in prison			1

*Growing Up in Ireland* collected data from parents of the Infant Cohort at age 5 on whether they had experienced any of the potentially stressful events given in Table 3.1 (Williams et al.

<sup>16</sup> Prevalence estimates for death of a ‘close family friend or another relative’ only available on a year-by-year basis. The highest figure was 25% at age 1 year - 18% in the year preceding the age 4-5 year interview.

<sup>17</sup> GUS category wording was ‘parent has stopped living in the household’.

<sup>18</sup> GUS figure estimated based on combining separate categories for 7% parent and 4% sibling.



2010). This listing had already been adopted with the *Growing Up in Ireland* Child Cohort at age 9 years and the prevalence for each event at that stage is provided in Table 3.1, along with that for comparable events from the GUS and LSAC studies. This table shows that, as with GUS, the 9-year-olds in *Growing Up in Ireland* were most likely to have experienced the death of a close family member (43%) and moving house (42%), and overall nearly 80% of children had experienced at least one of the events listed. However, not all children will experience distress, especially prolonged distress, as a reaction to such an event.

### 3.1.2 VARIATIONS IN RISK OF ADVERSE EVENTS

Analysis of the *Growing Up in Ireland* 9-year-olds pointed to a number of protective and risk factors in children's lives. Children in one-parent families were more likely to have experienced some categories of the events in Table 3.1; often those linked to being in a one-parent family such as death of a parent, conflict between parents, divorce or separation of parents and moving home. Children in one-parent families were also much more likely to have experienced four or more stressful events (circa 30%) than children in two-parent families (circa 4%) (Williams et al., 2010). By the same token, growing up with both parents can be seen as a protective factor in that it is associated with a lower incidence of certain stressful life events.

Morgan and Williams (2012) observed socio-economic patterns in the *Growing Up in Ireland* data for 9-year-olds such that some events like drug-taking/alcoholism, divorce/separation and death of an uncle or aunt (when the 'death of a close family member' is disaggregated) were more common in families with lower maternal education; however events such as moving house or moving country were more frequent in families with higher maternal education, possibly reflecting high-skilled immigrants moving to Ireland. In contrast, GUS found that moving house was more associated with younger mothers and private renters. They further found that increased likelihood of parental separation, moving house twice or more, the onset of maternal health problems and job loss were all associated with living in income poverty (Chanfreau et al. 2011).

Poverty emerges as risk factor for adverse events in other studies too. Briggs-Gowan et al (2010), in the afore-mentioned study of potentially traumatic events (PTEs) in a healthy birth cohort aged up to 5 years, found that 49% of children in poor families had experienced any event by Year 2 compared to just 20.5% of non-poor children; and the contrast was particularly marked for violent PTEs (33.7% versus 8.7%). Hence there is evidence to suggest that children who grow up in poverty are not only at risk from the consequences of poverty per se (e.g. poorer diet, poorer housing, fewer educational opportunities), but living in poverty potentially puts them at greater risk of stressful or traumatic events that could impinge on their wellbeing and development even further. Where poverty is a risk factor, having



adequate material resources is a protective factor in that it is associated with a lower prevalence of potentially traumatic events.

Work on the *Growing Up in Ireland* cohort at age 9 years by Williams, Murray and Whelan (2013) found that children in socio-economically disadvantaged groups (in terms of lower maternal education and lower social class) were more likely to be experiencing three or more indicators of deprivation from a list of 10 that included low literacy skills, low income, being overweight and having experienced three or more of the stressful events from the list in Table 3.1. It has been suggested that stressful events may explain some of the negative associations between poverty and child outcomes: a neurological study that used MRI scans to measure the brain volume of school-aged children, who had been enrolled in a prospective study since pre-school, found that children who had grown up in poverty tended to have measurably less brain matter in a number of areas (Luby et al., 2013) and that stressful life events were one of the mediators of this association. Just as low maternal education and lower social class could be seen as risk factors for deprivation, higher levels of maternal education and higher social class could be seen as protective factors or assets available to the family that reduce the likelihood of deprivation.

Elsewhere, there is some evidence that the experience of stressful events may form part of a pathway that sees children with externalising behaviour problems go on to develop internalising problems. Using a longitudinal study with data collected at 3, 5, 10 and 18 years, Timmermans, van Lier & Koot, 2010) found that stressful events were more likely to be experienced by children with externalising problems and that, in turn, these experiences contributed both to the continuation of the externalising problems and the development of internalising problems. These authors also outlined a model whereby stressful life events could trigger externalising behaviour from internalising problems, but only among adolescents.

### 3.1.3 CONSEQUENCES

Numerous studies have outlined the associations between childhood experiences of adverse events and an increased risk of negative outcomes in later life, both physical and psychological. Research based on the previously mentioned Adverse Child Experiences study found that these events, particularly where multiple events had been experienced, were associated with increased risk for adult diseases such as those of the heart, lung and liver as well as cancer and skeletal fractures (Felitti et al., 1998). Furthermore there was also increased risk for psychological and behavioural outcomes including alcoholism, smoking, drug abuse, depression, suicide attempts, sexually transmitted disease, physical inactivity and obesity (Felitti et al.) and unintended and adolescent pregnancy (Dietz et al. 1999; Hillis et al., 2004).



However, the negative effects of adverse or stressful events in childhood are not necessarily delayed until adulthood. The study of youth in Bayview, San Francisco found that exposure to four or more adverse events was associated with an increased risk for learning/behaviour problems as well as obesity (Burke, Hellman, Scott, Weems & Carrion, 2011), even though the mean age of participants was only eight years old (with a range of up to 20 years). Jones, Gutman and Platt (2013) using data from the ALSPAC study—a longitudinal birth cohort study based in the UK—found childhood experience of domestic abuse, victimisation or abuse outside of the family, being homeless or placed in care and a family member being arrested, were associated with lower educational attainment and wellbeing outcomes among teenagers. They also found a negative relationship between lower wellbeing and a death in the family, serious illness of a family member or the child and exposure to an accident or crime. Although it is important to note that details on all these events were only recorded if the parent reported that the event was something that “would upset almost anyone”, “a terrible accident” or “a disaster of some sort”.

At an even earlier age, using data from the UK’s Millennium Cohort Study at 9 months and 3 years, Flouri, Tzavidis and Kallis (2010) found that experience of stressful events such as death of a family member, family moved, and/or birth of a new sibling (among others) predicted worse scores on a measure of emotional and behavioural wellbeing at age 3 years. Furthermore, events that happened since the age of 9 months (between wave 1 and wave 2) were better predictors than events that happened before 9 months.

### 3.1.4 MECHANISMS

Identifying the mechanisms may be important to providing insight into the kinds of supports that are likely to reduce the negative impact of adverse events on children’s outcomes. McCrory, Dooley, Layte & Kenny (2015) summarise three possible models for explaining why there might be a link between adverse events in childhood and poorer health outcomes in later life. These include (a) adversity in childhood contributes to a pathway of other ‘risk’ characteristics such as lower educational qualifications that limit occupational choice and hence income; (b) growing up in risky family or community environments fosters the development of less-healthy socio-emotional or behavioural coping strategies; and (c) the neurobiological response of the body to the presence of stress increases vulnerability to disease, particularly if childhood is to be considered a ‘sensitive’ period in this regard. In the context of the epidemiology of disease risk over the life course, Kuh, Ben-Shlomo, Lynch, Hallqvist and Power (2003) describe two ‘chain of risk’ models: one where early experiences lead to a greater probability of further risk exposures and there is an accumulation of risk for a particular disease; while the other chain sees an increase in the risk of an ultimate ‘trigger event’ but where the disease is not expected in the absence of the trigger.



However these models are perhaps more applicable to experiences that persist, or multiply, over a period of time such as conflict between parents, substance use in the family, and other similar ongoing difficulties. The mechanisms by which a single stressful event might have long-lasting impacts on physical health and/or psychological wellbeing could be different and perhaps vary depending on the event. For example, the death of a parent could affect the child not only through their own grief but also through the surviving parent's struggle with their grief, the change in practical circumstances such as a drop in income, moving home or the absence of a second supporting-figure through later childhood transitions. So for some events, the negative effect on the child may be mediated at least in part through the impact on other family members: GUS found that parental separation during the child's lifetime (up to age 5 years) was associated with a drop in household income and a greater risk of poor maternal mental health (Chanfreau et al. 2011) even after controlling for Year 1 factors. Similarly, LSAC data indicated that particular events such as separation, and suffering an illness, injury or assault (to a parent or close relative) led to an increase in the percentage of mothers classed as 'distressed' (Baxter, Qu, Weston, Moloney & Hayes, 2012).

Other types of events such as witnessing, or being involved in, an accident may lead to Post Traumatic Stress type symptoms that interfere with normal functioning in a manner akin to adults. Terr (1991) suggests four psychological consequences of childhood trauma that appear to be long-lasting: "visualized or otherwise repeatedly perceived memories of the traumatic event, repetitive behaviours, trauma-specific fears, and changed attitudes about people, life and the future" (p. 10).

### 3.1.5 INFANT COHORT AT WAVE 3

Given that childhood amnesia may, over time, affect the individual's recollection of events in early childhood (Bauer and Larkina, 2013) it was important for the *Growing Up in Ireland* study to collect information on this topic at the five-year wave of the Infant Cohort. It will be collected from the Primary Caregiver rather than the child, as it is possible that (a) the child may not have a verbal memory of the event, (b) may not yet realise an event's significance and (c) it may be upsetting for the child to be asked to recall it. While this raises some issues in regard to the fact that the Primary Caregiver may not be aware of all relevant events or possibly be reluctant to report an event they might feel some responsibility for, on balance it was the best option. In an attempt to counter the problem that the Primary Caregiver might not have realised that an event was stressful for the child, he/she was presented with a list of events and asked to indicate any that had taken place in the child's lifetime regardless of what the child's reaction at the time was thought to be. There was also an open-ended 'other event' option to allow the inclusion of events that the child did find stressful but were not specified on the pre-coded list.



The information on adverse events has the potential to identify children at greater risk of being exposed to traumatic experiences, to consider the effects over time and what other factors either helped or hindered development after a setback. As well as identifying risk factors, the data can be used to identify protective factors. Longitudinally, when contrasted with data collected in future waves, there could be an analysis of the effect of the timing of particular events. Furthermore, given the extensive information available on potential protective factors there will be an opportunity to consider resilience in spite of adversity: some possibilities include parental mental health, socio-economic circumstances, grandparental involvement, school supports and the child's own characteristics.

### **3.2 SCREEN-TIME AND CHILDREN'S EMOTIONAL AND BEHAVIOURAL WELL-BEING**

#### **3.2.1 BACKGROUND**

The context for research on screen time and media use among children in Ireland is discussed in Section 2.2. In summary, the potential impact for screen time on the current generation of children is greater than ever before given the increase in the number, type and portability of electronic media devices; in tandem with the huge rise in amount, range and accessibility of content. Chapter 1 also describes how children in socio-economically disadvantaged families typically have a higher risk of exposure to excessive amounts of screen time, particularly televisions. Recommended screen time for children over two years is no more than two hours per day, and none at all for infants and children under two years.

#### **3.2.2 ASPECTS OF CHILDREN'S COGNITIVE AND PERCEPTUAL DEVELOPMENT RELEVANT TO MEDIA USE**

Infants and young children do not automatically perceive television in the same way as older children and adults. For example, children up to 3 years old, and particularly those under two, show evidence of what has been termed "video deficit" whereby they learn better from observing real-life interactions than from watching video (e.g. Courage & Howe, 2010), perhaps because they have difficulty with symbolic representation more generally. Kirkorian, Wartella & Anderson (2008) also describe research findings that suggest young children, even after two years old, have difficulty delineating between what happens on television and the real world: they cite work by Jaglom and Gardner (1981) which suggested that it is not until three or four years old that children realise, for example, that characters cannot move from the television set into their bedrooms and findings by Flavell, Flavell, Green and Korfmacher (1990) that children under four believe objects on screen will be affected by actions in reality (such as the popcorn in a video will fall out of its bowl when the television set is turned upside down). Furthermore, both Kirkorian et al. (2008) and Comstock and Scharrer (2006) review studies that indicate children have difficulty distinguishing between commercials and





programmes until about 5 years old, with little or no distinction before the age of three, and do not appreciate their primary purpose of selling until some years later.

Comstock and Scharrer (2006) highlight other research from the last number of decades that has provided an insight into young children's processing of information. For example it appears that children will attend more to programmes that are the best match for their comprehensibility, and their ability to understand content increases rapidly from infancy (citing Valkenbarg & Vroone, 2004). As early as 1972 it was found that the majority of children are capable of naming a preferred television programme from as young as 3 years (citing Lyle & Hoffman), and that up to six years old pay greater attention to cartoons (citing Bechtel, Achelpolt & Athers, 1972). Cartoon formatting, as opposed to live action, can signal to children that the content is designed for younger viewers although this link may have been confused in recent years with the emergence of a new genre of cartoons with adult themes and content.

So, in summary, we might expect that children aged from 3–5 years can attend to, learn from and even express a preference for television programming but may have difficulty separating video from reality, and are unlikely to detect underlying themes such as commercials. Given how much potential access today's children have to various media, and the time they will spend on it every day, this raises interesting questions as to how this will affect their development. The next section reviews some of the recent literature on screen-time in relation to effects on their socio-emotional development and behaviour.

### 3.2.3 EFFECTS ON BEHAVIOUR AND SOCIO-EMOTIONAL DEVELOPMENT

Despite the apparent "video deficit" for very young children, it appears that certainly from the age of 3 years children have the capacity to learn from television, and by extension probably also from other media—perhaps more so given the greater interactive component in video games for example. However, there is uncertainty as to how exactly children learn from screen-media as opposed to real-life observations; but the consistency with which the video deficit emerges suggests that it is cognitively different, at least up to a certain stage of development.

The fact that conflicting results often emerge from the research further muddies the waters. Even for a relatively defined aspect of learning such as language, an inconsistent picture emerges. For example, Anderson & Pempek (2005) in their review, looked at a number of studies that examined the effect of watching a particular children's television programme (Sesame Street) on young children's language development and found that some reported a negative impact and others a positive one: hence there were conflicting patterns even with the same programme and very similar outcome measures. One possible explanation for these different results is the age of the children: studies where the participants did not benefit were



younger. Regrettably, it is not possible to measure the important issue of content in the *Growing Up in Ireland* survey.

### 3.2.3.1 CONCERNS ABOUT CONTENT

Likewise, research on the effect of television on children's socio-emotional well-being and behaviour has produced mixed results - even to the extent that different teams reach different conclusions using the same data but with different analyses (Courage & Howe, 2010, commenting on Christakis et al., 2004 and Foster & Watkins, 2010). This last example concerned amount of television viewing and later symptoms of ADHD; however work on the effect of violent content and behaviour has been more (if not entirely) consistent. So much so that, in their review, Comstock & Scharrer (2006) comment that even though effect sizes and research designs vary, in aggregate the evidence supports a clear link between exposure to violent media content and behaviour in children and adolescents. The same reviewers also note that successive reports (1972, 1982, 2001) by the US Surgeon General conclude that there is a causal link between watching violence on television and subsequent violent behaviour.

In what has become a classic study on the issue, Bandura, Ross and Ross (1963) observed the play of children aged 3–4 years after they had witnessed an adult model aggressively attacking a large inflatable toy known as a 'Bobo doll'. Children witnessed the display either first-hand (real-life condition), a video, or a 'cartoon-like' version which was not animated but featured the adult model in a cat suit that resembled known cartoon characters, and other elements such as cartoon music were added to the video to make it appear less realistic. After the viewing children were deliberately frustrated by experimenters and then given the chance to play in a room that contained a mixture of aggressive and non-aggressive toys, and a Bobo doll. Compared to controls, children in all three of the experimental conditions showed more aggressive play, and importantly were also observed to imitate specific actions (such as sitting on the doll and punching it repeatedly on the nose). The authors reported that "88% of the subjects in the Real-Life and in the Human Film condition, and 79% of the subjects in the Cartoon Film condition, exhibited varying degrees of imitative aggression." (p.9). Some other interesting observations from the experiment were that boys overall were more aggressive than girls, but also that both genders were less aggressive after viewing a female adult model as opposed to the male adult model; and there was a significant increase in aggressive gun-play (which did not feature in the original display) relative to controls for the video condition but not in the real-life or cartoon conditions.

Reducing screen-time overall may have the knock-on effect of also reducing the likelihood of exposure to violent content. Robinson, Wilde, Navracruz, Haydel & Varady (2001) found a significant decrease in peer-rated aggression and observed verbal aggression, but not observed or parent-reported physical aggression, after a classroom-based intervention that



focused on reducing time spent on television and video game use among children aged around 9 years. In contrast, another study by Christakis et al. (2013) specifically focused on an intervention aimed at improving content without reducing overall screen-time: they reported an improvement in the externalising behaviour and social competence, but not internalising behaviour, among children aged 3–5 years old.

However not all studies have found strong evidence of aggressive behaviour in children after watching aggressive content. In a review of experimental studies on the issue as it relates specifically to children with pre-existing difficulties, Mitrofan, Paul & Spencer (2009) summarise their findings as “A total of 12 studies: three experiments with children with behavioural and emotional difficulties found increased aggression after watching aggressive as opposed to low-aggressive content television programmes, one found the opposite and two no clear effect, one found such children no more likely than controls to imitate aggressive television characters.”(p. 5). While *Growing Up in Ireland* is not able to capture information on content, it did ask parents about the type of activities their 5-year-olds use screen-media for (e.g. educational games, other games, watching TV, or a mixture), whether the child was supervised when accessing the internet, and how often they played on a tablet or similar device by themselves.

### 3.2.3.2 OTHER EFFECTS

Violent content and aggression is not the only model of cause-and-effect that concerns parents and researchers, and accurately assessing content is difficult and frequently impractical in large-scale studies. Hence many studies focus on the amount of time spent watching television and other screen-based activities.

One set of findings of particular interest uses data from the UK’s Millennium Cohort Study. Parkes, Sweeting, Wight & Henderson (2013) examined the link between daily hours of watching television and playing electronic games at age 5 years, and emotional well-being and behaviour at age 7 years using the Strengths and Difficulties Questionnaire (SDQ, also used by *Growing Up in Ireland*). They found that three or more hours per day of either watching television or playing video games was associated with higher (i.e. worse) scores on all the problem sub-scales of the SDQ (conduct problems, hyperactivity/inattention, emotional symptoms and peer problems) and poorer scores on the pro-social scale, when the models were adjusted for gender and age in months at follow-up. However, when adjustment was made for a wide range of other variables including socio-demographic factors, maternal characteristics, measures of family functioning and other child characteristics such as cognitive ability and sleeping difficulties, only the negative effect of screen-time on conduct problems remained statistically significant. This suggests at least two possibilities: higher exposure to screen-time may be a proxy for other characteristics that are the main driver of poor behavioural outcomes or that one mediates the other.



Another large scale study—this time in Scotland—found that, cross-sectionally, three hours or more of screen entertainment was associated with worse scores on the SDQ measure among children aged 4–12 years and was robust to a range of socio-demographic characteristics as well as medical conditions and diet and activity measures (Hamer, Stamatakis & Mishra, 2009). The authors noted that a combination of high screen-time and low physical activity exacerbated the negative effect on problems as measured by the SDQ (see Chapter 2 of this report for a discussion on screen time and physical health outcomes). Very similar patterns were reported in another British sample by Page, Cooper, Griew and Jago (2010): long screen-time (television viewing and computer use), particularly when combined with low physical activity, was associated with worse scores on the SDQ among children aged 10–11 years. The main difficulty associated with cross-sectional studies is the question of whether children start with behavioural problems and then choose screen-based activities; however, *Growing Up in Ireland* has the advantage of child temperament measures from as early as 9 months.

It may be that timing of exposure to screen-time is particularly important. In Japan, Cheng et al. (2010) reported that watching television for four hours or more per day at 18 months was longitudinally associated with worse scores on the SDQ measures of hyperactivity/inattention and prosocial behaviour at age 30 months, but there was no apparent cross-sectional relationship at follow-up. Yet Mistry et al. (2007) found that television viewing of more than two hours a day at age 30–33 months was not associated with poorer behavioural and social skills outcomes at 5.5 years if viewing time had been reduced by follow-up. However, sustained exposure (i.e. more than two hours per day at both time points) was associated with poorer behavioural outcomes while later, but not sustained, exposure was linked to poorer social skills. The authors were unsure as to why only longer viewing at 5.5 years was associated with poorer social skills, but not with longer viewing at both time points.

In Canada, a large longitudinal study found that longer times spent watching television as pre-schoolers (29 – 53 months) was associated with an increased risk of later victimisation at school when the children were aged 10 years, but not teacher-reported emotional distress or reactive aggression (Pagani, Fitzpatrick, Barnett & Dubow, 2010). There were also negative associations with academic achievement and physical health behaviours. An analysis of *Growing Up in Ireland* data at age 3 years by Egan and Murray (2015) identified a correlation between longer periods spent watching television and having worse scores on a measure of socio-emotional well-being: 24% of 3-year-olds who typically spent more than three hours a day watching television score in the top (worst) decile on the SDQ total difficulties measure in contrast to just 10% who typically watched 1–2 hours. The association was attenuated only slightly in a regression analysis that controlled for a wide range of potential confounding variables including child, parental and neighbourhood characteristics.



### 3.2.4 MECHANISMS

Comstock and Scharrer (2006) suggest that one of the mechanisms by which prolonged screen-time may affect later child outcomes is that it sets in place a pattern by which individuals establish a preference for screen-based entertainment early on. Over time, children are less likely to opt for potentially more beneficial activities such as reading or physical activity. In the Canadian study by Pagani et al. (2010), increased pre-school television was associated with decreased weekend physical activities at the later follow-up. In a cross-sectional study, Vandewater et al. (2005) found that children aged 5–6 years in households where the television was on all or most of the time not only watched more television, they also spent more time listening to music and playing handheld video games, but less time reading or being read to and were less likely to be able to read.

Another possible mechanism by which screen-time could negatively affect children’s socio-emotional well-being is through sleep difficulties. Zimmerman (2008) summarises the negative associations of inadequate quantity or quality of sleep in children or adolescents as “significant impairments in immune function, the regulation of metabolism ( . . . ), creativity and memory, accidents and injuries, school failure, and behaviour” (p. 1). A proper night’s sleep is crucial to a child’s ability to self-regulate (Shanker, 2012) and manage their own stress reactions and behaviour.

Garrison, Liekweg & Christakis (2011) found increased sleep problems among children aged 3–5 years were associated with evening screen use and exposure to violent content (but not non-violent, daytime use). They suggested three possible reasons for this: going to sleep later (e.g. due to media use in the bedroom), increased arousal (e.g. the bright screen disrupts production of sleep hormones) and state anxiety from watching inappropriate content. Later the same group of authors reported that these children showed a reduction in sleep-problems following an intervention that aimed to reduce the amount of violent content in their screen-based entertainment (Garrison & Christakis, 2012). As previously discussed, the same intervention also had a positive effect on behaviour (Christakis et al., 2013). Mistry et al. (2007) reported an association between sleep problems and a television in the bedroom at 5.5 years; there were also unadjusted associations with behavioural and social skills problems but these did not remain statistically significant after adjustment for other child and family characteristics.

### 3.2.5 INFANT COHORT AT WAVE 3

At 5 years of age, the *Growing Up in Ireland* data is able to provide information, based on parental report, on the amount of screen-time the child has on an average weekday, and the main reason for it (educational games, other games, television viewing, or a mixture). It also collected information on the child’s independent use of a computer, tablet or smartphone; whether he/she had access to the internet at home and whether that access was supervised.



The data on screen-time activities can be contrasted with other types of activities the child could engage in (e.g. sports, art, and reading) as well as a variety of outcome measures relating to emotional well-being, health and learning. Finally, as some information on screen-time was also collected when the child was 3 years old, some longitudinal analyses should be possible.

The more detailed information on type and function of screen time at age 5 years will allow a consideration of what may be the benefits as well as the downsides of electronic media. The *Growing Up in Ireland* data can also be used to look at the extent to which screen-based activities appear to supplement or displace other activities with more established benefits such as reading, pretend play and activities with parents. A further avenue for investigation is a consideration of the combination of screen activities between home and school, given that not only were some individual-level outcome measures collected from teachers but also classroom-level information was collected on the use of technology in school.

### 3.3 SOCIO-EMOTIONAL SCHOOL-READINESS

The following section considers the socio-emotional and behavioural aspects of school-readiness; cognitive aspects are discussed in Chapter 4. While these latter may ultimately prove stronger predictors of later academic achievement (e.g. Forget-Dubois et al., 2007), the transition to school is a demanding one for the young child: it requires management of emotions, negotiations with peers, an ability to understand and comply with their teacher's instructions, navigate around new surroundings, and adapt to a new and highly-structured routine. Hence how the individual child copes with this new situation, and how their new classmates and teachers react to them, can reasonably be expected to impact on their acquisition of new academic skills.

#### 3.3.1 BACKGROUND

##### 3.3.1.1 WHAT IS 'SCHOOL-READINESS'?

The concept of school-readiness has come to reflect a wider competence for young children than just cognitive or pre-literacy skills. Forget-Dubois et al. (2007) suggest a definition for school-readiness as “a multi-dimensional construct that refers to cognitive, communicational, behavioural, and emotional skills, as well as basic knowledge that facilitate the child's learning and adjustment at school entry” (p. 406). Some authors also include the child's physical health and development (e.g. being able to go to the toilet unaided, dress themselves etc.) in the school-readiness construct (e.g. Janus & Duku, 2007), although it is more common for authors to focus on cognitive/literacy and socio-emotional/behavioural factors (e.g. Fomby, 2011; Flouri, Midouhas & Joshi, 2014; Smart, Sanson, Baxter, Edwards & Hayes, 2008; Hyson, Copple



& Jones, 2006). The 'Learning Metrics Taskforce'<sup>19</sup> suggests that, in seeking to develop a global school-readiness indicator, it should cover at least the five domains of (a) physical well-being, (b) social and emotional, (c) literacy and communication, (d) learning approaches and cognition, and (d) numeracy and mathematics (Raikes/OECD, 2013).

### 3.3.1.2 CONTEXT—PRE-SCHOOL AND NON-PARENTAL CHILDCARE

Before the milestone of 'first day at school' finally arrives, many children will already have experienced centre-based care in a crèche or playschool setting, and this *Growing Up in Ireland* cohort will be among the first to have availed of a new scheme aimed at giving all children the opportunity to experience one year in formal centre-based education and care prior to starting school (known colloquially as the 'Free Pre-School Year'<sup>20</sup>); a primary aim of which is to improve school-readiness<sup>21</sup>. This scheme, at the time the Infant Cohort were aged 5 years<sup>22</sup>, was open to all children aged between 3 years, 3 months and 4 years, 6 months on September 1st each year and typically provided pre-school sessions in approved centres for 3 hours per day, 5 days per week over 38 weeks, although parents had the option to pay for extra hours. There is a national curriculum framework for early childhood education from birth to six years, called Aistear, and the main themes within that framework are communicating, well-being, identity and belonging, and exploring and thinking. At age 3 years, over a quarter of the *Growing Up in Ireland* Infant Cohort were attending centre-based care on a regular basis and nearly all parents signalled their intention to avail of the Free Pre-School Year (Williams, Murray, McCrory & McNally, 2013).

However, many children will also experience non-parental care on a more informal basis. At age 3 years, half were in some form of non-parental childcare (Williams, Murray, McCrory & McNally, 2013); and they were roughly divided between a crèche or preschool and being cared for in a home-setting by a relative or a non-relative (as their main form of care). Parents who were in employment and those with higher educational qualifications were more likely to be availing of non-parental childcare; 77% of Primary Caregivers who were at work on a full-time basis made use of non-parental childcare in comparison to 23% who were not at work. In the case of Primary Caregivers with a degree level education, 66% used some form of non-parental childcare while only 30% with lower secondary education did so. The average time spent in childcare was 23 hours per week with an average cost of €4.50 an hour. More than 60% of relatives who provided childcare were not paid for this work.

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<sup>19</sup> The taskforce includes an international mix of governments, UN agencies, regional bodies and others.

<sup>20</sup> Full title: Free Pre-School Year in Early Childhood Care and Education (ECCE).

<sup>21</sup> [http://www.dcy.gov.ie/viewdoc.asp?fn=/documents/childcare/ECCE\\_guideforparents.htm](http://www.dcy.gov.ie/viewdoc.asp?fn=/documents/childcare/ECCE_guideforparents.htm).

<sup>22</sup> The terms of the scheme have since been expanded.



### 3.3.1.3 CONTEXT—STARTING SCHOOL

Of the 3-year-olds in *Growing Up in Ireland*, more than two-fifths of parents had registered their child with a primary school, including a minority who had registered the child in more than one school. School registration of the child was associated with the level of education of the Primary Caregiver, with 52% of those with degree level education having registered the child with at least one school compared to 35% of Caregivers with lower secondary education (Williams, Murray, McCrory & McNally, 2013).

In Ireland, children can be enrolled in primary school from the age of four years, and legally must have started by the time they are six years old. In practice, the majority of 5-year-olds and over a quarter of four-year-olds will have started school. The first year of primary school is termed 'Junior Infants' and is the first in an eight-year primary cycle. In the academic year 2017/2018, there were over 67,000 children enrolled in Junior Infants in the country's primary schools (referred to in Ireland as 'national schools'). A majority of schools cater for both boys and girls, although a substantial minority are single sex and a smaller subset are mixed for junior classes but single sex for older children.

Typically children in primary school are based in the same room and have the same teacher for all their classes, although there may be classroom assistants. In the academic year 2017/2018, most Junior Infants were in a class of between 20 and 29 children (DES, 2018). Some schools, particularly small schools in rural areas, operate what are termed 'multi-grade classrooms': this is where one teacher is responsible for several different year groups in the same room (at the same time). So, for example, a teacher may teach a class made up of Year 1 and Year 2 pupils (i.e. Junior and Senior Infants—referred to as 'consecutive grade' classes) or even Years 1, 2 and 3 concurrently. In 2017/18, over a quarter of primary school pupils were in a multi-grade (or consecutive grade) classroom (DES, 2018).

The school year starts in early September and usually finishes at the end of June. The primary school day must be at least 5 hours and 40 minutes long but can be reduced by up to one hour for Junior Infants, Senior Infants and First Class (Year 3) pupils. As Junior Infants is the first year of formal schooling, it has a curriculum specified by the National Council for Curriculum and Assessment. There are seven major strands to this curriculum; these are summarised in Table 3.2 (note the subject of 'Religious Education' is largely set by the patron body of individual schools). English is the main language of instruction in the majority of schools although a minority teach only through Irish (circa 248 out of 3,111 primary schools) and a more substantial minority teach some subjects or activities through Irish (circa 29 schools).





**Table 3.2 Curriculum areas for Junior Infants classes**

Major Areas	Specific subjects (where relevant)
Arts Education	Visual Arts Music Drama
Language	Irish English
Mathematics	
Physical Education	
Religious Education	
Social, Environmental and Scientific Education	History Geography Science
Social, Personal and Health Education	

### 3.3.2 WHAT MAKES A CHILD SOCIO-EMOTIONALLY ‘SCHOOL-READY’?

In their review Ackerman and Barnett (2005) discuss findings from various studies (mostly American) that suggest teachers and parents have different perspectives when it comes to deciding whether a child is ready for school. In particular, teachers often give more or equal emphasis to social and emotional competencies such as being mindful of other children’s feelings, able to share and motivated to engage in new activities. Teachers were less likely to consider academic abilities such as knowing letters and numbers as essential for starting school compared to parents, especially lower-income parents. Ackerman and Barnett also include some findings from Australian research that, unusually, asked children about the skills needed for starting school: they focused on “knowing – and following – a teacher’s rules, (. .) becoming familiar with where things were and what to do, and knowing how to make friends” (p. 8).

A recent Irish mixed methods study indicated that while there were some differences in perceptions of school readiness between teachers and parents, as in international studies, both groups placed a strong emphasis on the importance of social and emotional maturity (Ring et al., 2016). This study highlighted important differences in the perspectives of early-years educators and primary school teachers. Social and emotional skills were seen as the most important by both groups, though early years practitioners tended to place greater emphasis on the importance of children’s dispositions and attitudes than primary teachers. Both groups also emphasised the importance of English language communication skills, though primary teachers placed greater value on fluency in the child’s mother tongue (where it was not English). Preschool staff and parents were more likely to emphasise the importance of the child having pre-academic skills (for example, recognising numbers or letters) than were primary teachers.



The child's ability to use language to communicate their feelings and needs also emerged as an important competency in Ackerman and Barnett's review (2005), an issue that may be even more salient for parents in families where the child's first language is not that spoken in schools. Aside from the fundamentals of understanding what is going on in the classroom, the development of language skills is thought to assist the young child in regulating their emotions (Hyson et al. 2006), for example by allowing them to recognise and 'label' what they are feeling, and utilise 'private speech' to think about feelings rather than reacting instinctively. Flouri et al. (2014) found that high verbal ability helped to moderate the link between poverty and internalising socio-emotional problems among younger children in the Millennium Cohort Study.

The child's ability to self-regulate their emotions is a crucial component of being school-ready, particularly considering that an individual's use of physical aggression tends to peak around age three-and-a-half, with a subsequent decline as the child gets older (Tremblay & Côté, 2009). Hyson et al. (2006) suggest that target outcomes for appropriate emotional self-regulation in children include being able to restrain themselves from displaying inappropriate behaviour and to develop the capacity to self-soothe when experiencing high levels of emotion; be able to manage their thoughts, feelings and behaviour to maintain attention and attain their goals; and use their emotions to influence others in a positive way. Negotiating peer relationships is an important undertaking for integration into the school 'ecosystem'. In a review, Hay (2005) notes that toddlers who played well with others were better placed to negotiate peer relationships during the school years, and that greater pro-social behaviour with less aggression is associated with increased peer acceptance. Hay also argues that characteristics such as shyness or impairments in joint attention, imitation and vocabulary skills negatively affect peer relations. Elsewhere, Flouri et al. (2014) found that high self-regulation in children moderated the association between poverty and emotional and behavioural adjustment, and Blair and Razza (2007) reported that self-regulation, particularly 'inhibitory control', contributed to maths and literacy ability among kindergarten children from low-income families, independently of a measure of general intelligence.

A third capacity necessary for children when starting school is an appropriate level of emotional security. Starting in infancy, the child develops a close relationship with regular caregivers, particularly parents. As they develop physically and cognitively, the feeling of security children associate with these caregivers empowers them to explore more of the world around them, knowing they can return to safety if they need to. By the time children are school-age, their cognitive capacities have developed enough that they can still draw on these feelings of security even when they are physically separated from their caregivers for a number of hours (Hyson et al., 2006). Malekpour (2007) summarises the research findings on the benefits of a secure attachment for children (in relation to schooling) as fostering



emotional strengths like empathy, self-confidence and independence; along with better social skills for more positive interactions and less conflict with teachers and other children.

Hence a compromised parent-child relationship, where a child does not feel secure enough to constructively spend time apart from their regular caregiver, may impair the child's ability to cope with the emotional demands of starting school. A longitudinal study by Schmidt, Demulder and Denham (2002) found that children who were less securely attached to their mothers at age 3 were more aggressive and less socially competent when they later started kindergarten. In another longitudinal study, Belsky & Fearon (2002) found that children who had been securely attached at 15 months and were experiencing sensitive parenting at 24 months were the most competent on developmental indices including (cognitive) school-readiness, social competence and behaviour when assessed at age 3 years. Furthermore, children who experienced low parenting sensitivity at age 24 months fared worse on these measures even, in some instances, when their attachment as infants had been classified as secure.

In *Growing Up in Ireland* the quality of the parent-child relationship at the ages of 3 and 5 years is primarily assessed via the Pianta parent-child relationship measure which features subscales for both 'closeness' and 'conflict' in the dyad. A 1997 American paper using the same measure applied to both the mother's and teacher's relationship with the child concluded that while interactions with both adult figures were related to a measure of the child's cognitive development, the quality of the relationship was more important for adjustment to preschool and kindergarten (Pianta, Nimetz & Bennet, 1997). A recent study among kindergarten children in China (Li, Liu, Lv, Xu, Wang & Huntsinger, 2015)—also using the Pianta measure—reported an association between internalising behaviour issues and higher conflict in the mother-child relationship. In addition, there was evidence (in the same study) of a positive correlation between closeness in the relationship and better social skills in the child, but was more pronounced for children with siblings. Parent-child interactions that are warm, responsive and consistent may help to protect the young child's socio-emotional development in the face of other family risk factors (e.g. Connell & Prinz, 2002). It has been suggested that positive social interactions with parents provide a foundation that the child can use to interpret new social situations and respond in a prosocial manner (Edwards, Sheridan & Knoche, 2008).

### 3.3.3 WHAT FACTORS AFFECT BEING SOCIALLY AND EMOTIONALLY READY FOR SCHOOL?

A substantial amount of research, from different jurisdictions and often from large longitudinal studies, finds that children from socio-economically disadvantaged households are at increased risk of being inadequately prepared for starting school—both cognitively and emotionally (e.g. Hair, Halle, Terry-Humen, Lavelle & Calkins, 2006 [USA]; Janus & Duku, 2007



[Canada]; Smart et al., 2008 [Australia]; Washbrook & Waldfogel, 2011 [UK]). In terms of facilitating factors, Hair et al. (2006) used a cluster analysis to identify children within the US Early Childhood Longitudinal Study kindergarten cohort who had a 'comprehensive positive development profile' at kindergarten entry based on five indicators of school-readiness: physical health and motor development; social/emotional development; language development; and cognition and general knowledge. Children with this most positive profile were more likely to be female; White; normal birth weight; to have two biological or adoptive parents at home who were older, highly educated, married, spoke English and with higher income; and a smaller than average household size. In contrast, children with a 'socio-emotional risk profile' tended to have more indicators of socio-economic disadvantage. As predicted, children with the most positive school-readiness profiles tended to be doing better in school at follow-up.

However, a majority of studies focus on identifying the factors that negatively impact on school-readiness and, to a large extent, the question may be re-framed as to why socio-economic disadvantage has such a negative effect on school-readiness. Two of the main theoretical models for this association (as summarised by Schoon, Hope, Ross & Duckworth, 2010) are the family stress model and the family investment model. The former suggests that economic hardship leads to parental distress which reduces their (the parents') mental or emotional capacity to engage in positive child-focussed activities and interactions, such that there is an absence of activities or interactions are negative. The latter, investment model, emphasises how low income reduces the time, energy and resources parents have to spend on their children because of, for example, working multiple low-paid jobs. Data from studies such as the UK's Millennium Cohort Study (MCS) confirm that higher income families are more likely to have favourable parenting and home environment profiles when it comes to characteristics such as regular bed and meal-times, home-learning activities (reading, outings etc.), constructive discipline strategies, and lower levels of parental psychosocial distress (Kelly, Sacker, Del Bono, Francesconi & Marmot, 2011).

Using data from the same study, Schoon et al. (2010) suggest that the effect of economic hardship on children's behaviour problems at age 3 years is mediated, to a significant degree, through the mother's emotional distress and its impact on the emotional quality of her relationship with the child. In contrast, the provision of a cognitively stimulating home environment appeared more important for academic measures of school-readiness. With the same cohort, but focussing on age 5 outcomes, Kelly et al. (2011) report that indicators of home learning, family routines and psychosocial distress explained more of the gap between richest and poorest families for socio-emotional and behavioural difficulties than for cognitive abilities.



Staying with the MCS study, Washbrook and Waldfogel (2011) concentrated on explanations for the school-readiness gap between children from the richest and low-to-middle income families (excluding the lowest income families); the rationale being that apart from income and education these families are often quite similar on other demographic indicators such as family structure and non-immigrant status. They found that at age 5, while the home-learning environment and parenting style were important in explaining the income gap for vocabulary and behaviour problems, maternal psychosocial well-being played a much bigger role in the latter. Further work with the MCS cohort at age 5 by Fomby (2011) reported that the observed negative impact of family instability (marital break-up, new partners, etc.) on children's cognitive and behavioural outcomes was largely explained by maternal education and family income in relation to emotional behaviour and non-verbal ability but did not fully account for conduct problems or lower verbal ability. This suggests that part of the relationship between socio-economic disadvantage and lower school-readiness is due to the greater disruption in the child's immediate family context.

Family and parental characteristics associated with socio-economic disadvantage were also predictive of low social/emotional school-readiness among children in LSAC at age 4 - 5 years. Specifically, having a mother in employment and/or with university education was associated with protective effects but being a young mother, maternal psychological distress, an absent father and living in a disadvantaged neighbourhood were risk factors (Smart et al., 2008). The authors report that income per se was not an independent predictor of low readiness when incorporated into multivariate analyses with the wider range of indicators.

There were other risk factors for poor socio-emotional school-readiness, aside from socio-demographic characteristics, including aspects of a parenting style that were hostile, inconsistent, low in warmth and/or low use of reasoning for dealing with the child's behaviour; a poor home-learning environment; high television viewing; and an absence of formal non-parental care or pre-school (Smart et al., 2008). Financially disadvantaged children were also more likely than others to be experiencing these additional obstacles and hence more frequently subject to multiple risk factors: 40% of children in financially disadvantaged families had five or more risk factors and only 3% had none (compared to 11% and 18% respectively for non-financially disadvantaged families).

It is worth noting that the instrument used in LSAC at this age was the Strengths and Difficulties Questionnaire (SDQ) which measures five aspects of development in this area: hyperactivity, peer problems, conduct problems, emotional symptoms (all difficulties) and pro-social behaviour (strength) —and not all risk factors affected every area. So, for example, while a hostile and inconsistent parenting style increased the risk of poor outcomes on all aspects, the lack of formal childcare or pre-school only had a negative impact on pro-social



behaviour (Smart et al., 2008) suggesting that a multi-faceted measure of socio-emotional or behavioural readiness is necessary for research on this topic.

Smart et al. (2008) also looked at how well poor socio-emotional school-readiness at age 4–5 years predicted school progress at age 6–7 years. Children with the worst (i.e. highest) scores based on the parent-reported SDQ at the earlier wave were the most likely to have poor scores again on the teacher-reported version of the same measure two years later, for three of the four problem sub-scales (hyperactivity, conduct and peer problems but not emotional symptoms). Financial disadvantage was an additional risk factor, with children who were both disadvantaged and not school-ready being at the greatest risk of poor socio-emotional skills at 6–7 years. Among school-ready children, those who were financially disadvantaged had a higher risk of poor outcomes than their school-ready peers who were not disadvantaged; although this was still less than children who had not been school-ready at the earlier wave, regardless of financial circumstances. In addition, children with earlier socio-emotional problems had poorer ratings on an ‘engagement in learning’ measure at the later wave.

### 3.3.4 DO PRE-SCHOOL PROGRAMS AND INTERVENTIONS IMPROVE SCHOOL-READINESS?

To a large extent, the predictors of better school-readiness are the obverse of those associated with risk of low readiness.

One of the ways in which policy-makers have endeavoured to improve school-readiness, especially for children from socio-economically disadvantaged backgrounds, is through the provision of pre-school education in formal centre-based settings. A large longitudinal study in the UK has been specifically looking at the impact of pre-school experiences on cognitive and socio-emotional development at school-entry and beyond (The Effective Provision of Pre-School Education (EPPE) Project). So far they have reported that children with at least some pre-school attendance, as opposed to none, were better prepared for school entry in terms of cognitive ability, sociability and concentration (Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2004), and that pre-school appeared particularly beneficial for children from disadvantaged backgrounds. However, the authors also noted that early entry to centre-based care (particularly before the age of 2 years) had a negative impact on socio-emotional development for a small group of children; and that the cognitive benefits of pre-school were more likely to last into the second year of primary school than were socio-emotional benefits. While this review focuses on the factors influencing children’s skills on school entry, it is worth noting that the level and nature of preschool attendance among the cohort of children in the EPPE study has been found to have much longer term effects in terms of attitudes to secondary school, socio-emotional wellbeing in adolescence, and academic achievement at lower and upper secondary levels (Sammons et al., 2014a, 2014b, 2015).



The impact of pre-school programs specifically targeted at improving school-readiness and ultimate academic achievement, particularly for disadvantaged children (e.g. Head Start), have been much researched in the USA. Reviews by authors such as Hyson et al. (2006) and Ackermann and Barnett (2005) generally report that such studies show evidence of significant and enduring benefits of these pre-school programs, but often with more focus on literacy and numeracy. However, as Ackerman and Barnett point out, while the emphasis is often on improving the school-readiness of children from the lowest income groups, there is evidence that middle-income children could also benefit from quality pre-school experiences but may fall through a gap whereby their families are above the income threshold for state-funded schemes yet cannot afford private centres. This point is echoed to a degree in work by Washbrook and Waldfogel (2011) which looked at the school-readiness gap between children from richer families and those on low-to-middle incomes in the UK. Although in this instance the authors found that the presence or absence of childcare explained only a very small part of the gap, they did point out that the absence of a strong effect may have been due to their inability to include a measure of the quality of that childcare.

Results from several studies including those taking part in the UK's EPPE study confirm the importance of quality: Sylva et al. (2004) report that higher quality pre-school education was associated with better development in both cognitive and socio-emotional areas. They summarise indicators of quality as including highly trained staff, having a trained teacher as a manager and evidence that staff have "warm interactive relationships with children" (p. 1). This last point may be of particular importance given that a secure relationship with early childhood education teachers may compensate to some extent for gaps in the parent-child relationship: Hyson et al. (2006) summarise research that suggests teachers may serve as attachment figures for young children in a similar way to parents, acting as a secure base from which the child may venture out to explore the world and return to if distressed. In a small longitudinal study, a secure relationship between the child and pre-school or child-care teacher was associated with lower levels of hostile aggression and higher levels of complex peer play, and gregarious and prosocial behaviours when the children were four years old (Howes, Hamilton & Matheson, 1994). In another longitudinal study, Hamre and Pianta (2001) showed that teacher-child relationships in kindergarten characterised by conflict and dependency predicted future socio-emotional and academic problems in later school years, especially for boys and those who started school with behavioural issues.

### 3.3.5 INFANT COHORT AT WAVE 3

The *Growing Up in Ireland* Infant Cohort at 5 years will provide almost a unique opportunity to examine the issue of school-readiness at this important stage as some of the children will have already started school, while others will be due to start the following school year. Furthermore, all primary-school teachers will be asked to complete a questionnaire about the child when the entire cohort has started school. An important period effect for this Cohort, in



contrast to the older Child Cohort, was the introduction of the universal scheme known as the ‘free pre-school year’ (Office of the Minister for Children and Youth Affairs, 2009) which may have directly impacted on children’s readiness for school but could also have had an indirect effect by delaying the age at which they start formal schooling.

At this wave there are real possibilities for longitudinal analysis given that there have been two earlier collections of data on information such as child temperament, the parent-child relationship and non-parental care. For example, do children who have behavioural problems at age 3 years have more trouble adjusting to school or could the obverse be true for some children, in that they are actually helped by the routine, discipline and cognitive stimulation associated with the classroom? Another area which could be examined in more detail using *Growing Up in Ireland* data is peer relations in early childhood. This is, perhaps, a somewhat neglected area in contrast to later childhood and adolescent peer interactions but research suggests that problems in this arena may start early. At age 5 years, the study introduced new measures of social skills, adapted from the scale known as the Social Skills Improvement System, such as empathy and assertion. It also includes the specific ‘peer problems’ subscale from the Strengths and Difficulties Questionnaire which was previously measured at age 3 years.

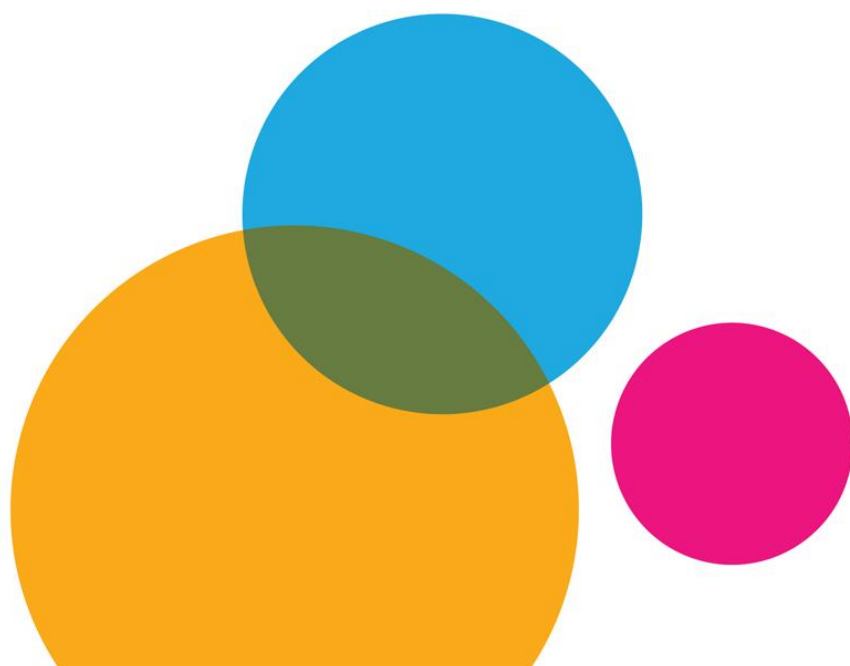
The collection of data from teachers and schools also opens up the possibility of looking at what school and classroom characteristics are associated with a successful adaptation to life in ‘big school’: factors to consider could include size of class, teaching approaches, school facilities and how these interact with the family and child characteristics. The education system is an aspect of the child’s micro-system, which while sharing many common features with other jurisdictions, is and can be much influenced by political and social contexts that may be unique to Ireland.





# Chapter 4

## SCHOOL-START AND COGNITIVE DEVELOPMENT





## 4 SCHOOL-START AND COGNITIVE DEVELOPMENT

Starting formal schooling is a key transition for the children at the age 5 year wave of the Infant Cohort. The context for starting primary school is outlined in Section 3.3. Before examining the specific research topics reviewed here, the cross-cutting themes running through much of the research on beginning school are worth considering briefly. First, Ireland is unusual in that the age of beginning formal school is earlier than for most countries, and furthermore, there is considerable variation in the age of beginning school. Secondly, the initiatives to address educational disadvantage in Ireland have placed considerable emphasis both on preschool and on the early years of primary school. A third related theme is a concern about an appropriate curriculum for the early years of primary school. A particular focus in recent reforms has been on a play-based, developmentally sensitive approach based on three core ideas: an emphasis on process in the curriculum rather than content, a recognition that all aspects of development are interdependent, and sensitivity to the developmental stage of children (McGuinness, Sproule, Bojke, Trew, & Walsh, 2014). Finally, the importance of the intersections between domains of the child's development (i.e. cognitive and social influences) and between the school and home environments are increasingly recognised. Hence this chapter examines issues relating to preparing the child for starting school, parental and child engagement when in school, and concludes with a review of the factors relevant to acquiring literacy at age 5 years.

### 4.1 PREPARING FOR SCHOOL

The early years, both at home and in more formal care or pre-school, are critical for the development of the child's cognitive skills and his/her subsequent capacity for the academic challenges of formal schooling. While cognitive and socio-emotional skills develop in parallel (although not necessarily in synchrony), some competencies are more closely linked to later literacy, numeracy and problem-solving and these are the focus of the review in this section. This review covers the development of early cognitive skills at age 5, the role of the home-learning environment and particularly parent-child interactions, other predictors of cognitive school-readiness and finally enrolment in pre-school.

#### 4.1.1 EARLY COGNITIVE SKILLS

Hyson et al. (2006) posit that the three cognitive 'foundational' skills for learning and school-readiness are representational thought, self-regulation and planning. Representational thought emerges during the second year of life with the child's ability to use symbols (including words and gestures) to refer to people or things that are physically absent. This may start with play using replica toys like cars, dolls or kitchen utensils but over time the child develops the capacity to mentally represent more abstract concepts and to use less concrete substitutions for the real thing. This ability is essential for the development of cognitive skills such as reasoning and problem-solving. In addition, being able to mentally represent



attachment figures such as parents when separated from them facilitates spending longer periods at school or pre-school.

Attentional self-regulation in particular refers to the child's ability to direct and focus their attention on certain tasks and to self-direct their thinking and problem-solving attempts. Parents and educators are likely to be important role models for self-regulation, and in encouraging the child to engage in attempts to direct their behaviour; for example in joint activities like play and reading. From the second year of life onwards, the development of language helps the child to direct their behaviour by essentially verbalising what they want to achieve and what they need to do to get there. This 'egocentric' or 'private' speech develops into internalised thought as the child gets older.

Self-regulation, 'private speech' and representational thought contribute to the child's capacity for planning. Again, from the second year of life, children show evidence of intentional behaviours that are oriented towards a particular goal and their planning increases in frequency and complexity as they mature. Hyson et al. quote a study by Casey, Bronson, Tivnan, Riley and Speciner (1991) that showed considerable individual differences in the planning capacities of children aged 4–5 years ranging from systematic to quite disorganised.

From a Vygotskian perspective, pretend play in particular assists children in developing skills like representational thought, self-regulation, and planning (Vygotsky, 1978). Pretend (or symbolic) play is characterized by an 'as-if' perspective; the child knowingly projects an alternative on the situation/objects. That is, acting out scenarios where children take on other roles such as the 'princess' or the 'bus driver', or using toys or other objects to represent things that are not there (e.g. a large cardboard box as a 'bus' or a pencil as a 'wand'). It can be either a solo activity or a group activity and often involves imaginary friends who may remain a part of the child's activities for a long time or may involve other children who enact a variety of related roles (e.g. mother and baby). The enjoyment of the play scenario, particularly when shared with others, is an important motivation for seeking appropriate representations (e.g. for a bus), being able to take the perspective of others (either a role that they are playing, or the perspective of the other players), and encouraging appropriate self-regulation to stay within the 'rules' of the game. Pretend play is commonly seen among 5-year-olds.

***Growing Up in Ireland*** asked parents to report on the frequency of pretend play. At ages 3 and 5 years, parents completed a measure of the child's temperament that included items relating to persistence. By the time the 5-year-olds were at school, their teachers were asked to record if they have attained a range of cognitive and language milestones such as 'talks activities through, reflecting on and modifying actions' and 'uses language to imagine and recreate roles and experiences'.



#### 4.1.2 THE ROLE OF PARENT-CHILD LEARNING ACTIVITIES

A considerable body of evidence now supports the beneficial effects of joint parent-child learning activities in the home. These activities include reading to the child, singing to/with him or her, painting and drawing, and playing games—and need not be as formal as instruction in letters and numbers. Research using the *Growing Up in Ireland* data from the Infant Cohort at 9 months showed a modest but positive association between activities such as reading, showing pictures and talking to the infant and scores on measures of early communication and problem-solving skills (Murray & Egan, 2014). Murray and Egan summarise a number of mechanisms as to why reading to children as young as 9 months may benefit their cognitive development: exposure to wider vocabulary and the written word; the strengthening of emotional ties between parent and child; the development of social skills through listening and interaction with an adult; and the opportunity for joint attention which likely has implications for understanding the perspective of others, language and memory development.

Cross-sectional analysis at age three years for this cohort showed a significant advantage of reading to children several days per week for scores on direct assessment of not just their expressive vocabulary, but also their problem-solving skills (Williams, Murray, McCrory & McNally, 2013). Other studies show similar benefits of home learning activities, particularly for vocabulary. These include the UK's Millennium Cohort Study (e.g. Ermisch, 2008) and LSAC (e.g. Farrant & Zubrick, 2012). The UK's EPPE study, although focused on the role of pre-school in fostering cognitive and social skills associated with later school achievement, observed the strong positive effect of parents engaging young children in learning activities such as reading, singing and painting—particularly for cognitive skills (Sylva et al. 2004). They concluded that “what parents do with their children is more important than what parents are [in terms of education or financial position]” (p. 5).

An emerging body of work points to the importance of the home-learning environment as a mediator of the apparent link between lower parental education/financial disadvantage and poorer cognitive scores in children. Research using the *Growing Up in Ireland* Infant Cohort at 3 years suggests that a significant portion of the gap in vocabulary observed between 3-year-olds of higher and lower educated mothers is explained by the better home learning environment (i.e. greater frequency of reading and more books available) found in the former (McNally, McCrory, Quigley & Murray, 2014). Work on the UK's Millennium Cohort Study (MCS) by Schoon et al. (2010) indicates an indirect effect of financial hardship on children's cognitive development at 3 years through maternal distress and a corresponding decline in the quality of cognitive stimulation in the home—although there was also a significant direct negative effect of financial hardship on cognitive scores (much more so than for socio-emotional development). Washbrook and Waldfogel (2011), also using MCS data, found that the most important predictor of the cognitive gap between low-to-middle income and high



income families was the poorer quality learning environment in less wealthy homes. Both this study and Schoon et al. found that deficits in the home learning environment were important for explaining gaps in cognitive skills particularly, with a different pattern observed for socio-emotional problems. In Australia, research examining the role of financial disadvantage in children's transition to school found being read to less often than three days per week and fewer than 30 books in the home to be significant risk factors for poorer cognitive outcomes (Smart et al. 2008).

### **4.1.3 OTHER FACTORS ASSOCIATED WITH EARLY SCHOOL COMPETENCE**

#### **4.1.3.1 CHILD CHARACTERISTICS**

Life-course work by García, Heckmann, Leaf & Prados (2016) shows evidence for the importance of good quality care and education in preparing the child for life and not just school start. For a sample of disadvantaged American children who received a high level of investment in a quality early-life program—that included nutrition, healthcare as well as childcare—there were measurable benefits in the areas of health, social behaviours, education and employment. The financial value of this investment to the national economy has been estimated at 13% per year (García et al., 2016). Interestingly, however, there were significant gender differences with boys who were placed in low-quality care (rather than remaining at home or being enrolled in the high-quality program) faring worse than girls in similar situations.

While much of the research supports the idea that social and cognitive skills are heavily intertwined, some studies of school readiness have shown substantial variability and somewhat different pathways for social-emotional and cognitive competencies; suggesting that children may make more progress in one area than the other even though it is unlikely that the two competencies can ever be completely divorced. A study by McWayne, Cheung, Green Wright & Hahs-Vaughn (2012), based on a national sample of American low income families, was focused on whether configurations of school readiness predicted school adjustment by the end of kindergarten. What was particularly interesting was the finding of distinct patterns of school readiness, with behaviour problems and social skills being especially important (as well as cognitive skills). However, the correlation between the two was modest. While it was the case that those children with strong social skills and high cognitive competence did best, and those with behaviour problems and poor cognitive skills did poorly, the two domains were relatively independent of each other.

Where the focus is on academic ability in the early school years, some findings suggest that this will be best predicted by evaluations of specifically cognitive skills. Forget-Dubois et al.



(2007) compared children's ratings by their kindergarten teacher against school performance by the end of first grade (also teacher-rated). They found that kindergarten scores on 'language and cognitive development' were the most important predictor of later school performance, whereas the explanatory value of the socio-emotional ratings was negligible. Hair et al. (2006) found that children who were doing well on language, cognition and general knowledge aspects of school-readiness, as well as socio-emotional and health indicators, scored better on later measures of reading and maths outcomes than did children who only did well on earlier socio-emotional and health measures (i.e. were below average on cognitive skills). A study by Duncan et al. (2007) has been especially influential since it contrasted cognitive competencies at pre-school with social-emotional factors in terms of predicting school readiness. The research drew on six international longitudinal datasets that collected data between birth and entry to formal school up to third grade. Furthermore, they included a large set of family and child characteristics as controls. The resulting meta-analysis showed that cognitive measures, including early maths and reading competencies as well as measures of attention, were significant predictors of school performance, but that internalising and externalising behaviour and social skills were not significant predictors. While this is an important and influential finding, the authors concede that there are limitations to the study, particularly that social-emotional factors may be relatively more important when children enter school and that correlations might emerge at that stage. Whether the focus is on academic ability or socio-emotional development, it is likely that a certain threshold is necessary in both skill areas for the successful adjustment to school and progress in either ability.

Studies which have sought to identify the specific cognitive skills that facilitate early achievement in school include that by Welsh, Nix, Blair, Bierman & Nelson (2010) who looked at the longitudinal importance of working memory and attention control in school readiness for children participating in the Head Start programme. The results showed that these measures were strong predictors of subsequent emergent literacy and numeracy skills, even when controls were applied for background influences. The authors interpreted the results as indicating the importance of executive function (like working memory) for learning in specific domains such as emergent literacy and numeracy. (See Section 4.1.1 for a discussion of foundational cognitive skills such as representational thought).

The work of Grissmer, Grimm, Aiyer, Murrah & Steele (2010) points to the importance of two further child characteristics related to school readiness. They found that fine motor skills were an important predictor of early school achievement. They also used a test of 'general knowledge of the social and physical world' as a predictor of later school performance and this was by far the best predictor of later reading and maths performance as well as of science performance. In particular, the general knowledge test was a stronger predictor than social-



emotional factors or pre-reading measures. The authors conclude that measures of attention, fine motor skills and general knowledge are the strongest predictors of school readiness.

#### 4.1.3.2 INTERACTIONS BETWEEN BEHAVIOURAL CONTROL AND INDICATORS OF COGNITIVE ABILITY

A classroom study by Lopes, Mestre, Guil, Kremenitzer & Salovey (2012) is directly relevant to the general issue of the capacity to manage emotions. Their study of adaptation to school is based on teachers' ratings as well as school records. The results indicated that the ability to manage emotions as measured in a situational judgment test and indicators of adaptation to school were significantly related even when controlling for socio-demographic factors and cognitive ability. They concluded that the skills to manage and regulate emotions account for a major part of school adaptation above and beyond the variables normally considered most important like IQ and background characteristics.

A recent study by Duckworth, Quinn & Tsukayama (2012) was concerned with the ways in which emotional regulation interacts with measures of intelligence and achievement. They proposed that standardized achievement test scores assess competencies that are determined more by intelligence than by self-control, whereas report card grades assess competencies determined more by self-control than by intelligence. In two longitudinal studies, they found that IQ predicted improvement in standardized test scores while self-control predicted report card improvements. This indicates the importance of capturing both a direct assessment of the child's cognitive development and teachers' ratings of the child as an overall student.

#### 4.1.3.3 ENVIRONMENTAL FACTORS

Similar to findings relating to socio-emotional competency for school-start (see Section 3.2), studies typically find that children from socio-economically disadvantaged backgrounds are less likely to be cognitively ready for school (e.g. Janus & Duku, 2007; Flouri et al. 2014; Smart et al. 2008; Kelly et al. 2011). Smart et al., using data from LSAC, identified several early risk factors for poorer cognitive attainment at school-start and/or at 6–7 years of age. These included (other than child characteristics): financial disadvantage, lower maternal education, unemployment, indigenous ethnicity of the mother, inconsistent parenting style, poor home learning environment, living in a disadvantaged area, and not being in formal childcare or pre-school before starting school. Kelly et al., (2011), using longitudinal data from the UK, observed that the income gap (favouring higher incomes) that was evident at age 3 years had widened by the time the same children were aged 5 years.

Other studies have looked at the negative impact of family instability, which can coincide with financial difficulties. The study by Brown, Ackerman & Moore (2013) was concerned with the relationship between aspects of family adversity and school readiness among a group of



economically disadvantaged children attending a Head Start preschool in Philadelphia. Two critical measures included an index of family instability (number of changes in where and with whom children had lived) as well as a measure of the confusion/disorganisation in the child's home environment, with a higher score representing a more chaotic, disorganised and hurried home. The results indicated that while measures of income did not predict school readiness, the measures of adversity had strong relationships with this outcome. The data further suggested that a critical mediating factor in the effects of adversity on school readiness was self-regulation. Fomby (2011), using UK data, found that changes in family structure up to age 3 years were associated with lower cognitive scores (and greater behavioural problems) at age 5—but with only the negative effect on vocabulary remaining statistically significant after controls for selection effects.

#### 4.1.4 PRE-SCHOOL ATTENDANCE

An important decision for parents in preparing their child for school is whether to enrol them in a formal pre-school programme. A substantial body of research has examined the effects of early childhood education, particularly preschool attendance, on features of school readiness. A review of extant research by Burger (2010) was concerned with the effects of preschool attendance on cognitive development and whether such attendance could foster equal opportunity to education for children from different backgrounds. The findings indicated that the vast majority of pre-school programmes had considerable positive short-term effects and somewhat smaller long-term effects on cognitive development. The review also indicated that children from disadvantaged families made slightly more progress than their more advantaged peers. However, they also concluded that pre-school education cannot completely compensate for the full range of challenges encountered by children from disadvantaged backgrounds.

Because of its status in the American system, the Head Start programme has been the subject of considerable research attention, particularly in relation to school readiness. Although early evaluations of Head Start raised some doubts about its effectiveness, rigorous assessment studies have demonstrated academic benefits for the participants in the programme (Lee, Zhai, Brooks-Gunn, Han & Waldfogel (2014). Comparing children randomly assigned to Head Start at age 3 or 4 years with those who were not, findings have shown that the Head Start experience confers significant short-term gains in areas that are crucial for school readiness including pre-reading, pre-writing and vocabulary test scores (e.g. Deming, 2009).

There is evidence that the size of the benefit of Head Start depends on the comparison group. A study by Zhai, Brooks-Gunn & Waldfogel (2011) found that while participants showed benefits for academic outcomes at age 5, these were no greater than for children attending other similar programmes. On the other hand, Lee et al. (2014) showed that children involved in Head Start had higher levels of reading and maths than was the case for children attending





other programmes or in parental care. Furthermore, the benefits of the programme were more pronounced for children whose cognitive ability was initially low or whose parents had lower levels of education.

There is recent evidence that the traditional Montessori programme can be especially beneficial if tailored to meet the needs of the target group. Ansari & Winsler (2014), based on data from the Miami School Readiness Project, found that Latino children in Montessori programs began the year at most risk in pre-academic and behavioural skills, yet exhibited the greatest gains across these domains and ended the year scoring above national averages. Conversely, children from other minorities exhibited healthy gains in Montessori, but they demonstrated slightly greater gains when attending more conventional pre-Kindergarten programs.

There may be different ways in which pre-school attendance could promote cognitive development and ease the transition to school; not just through a 'head start' on literacy and numeracy but by introducing learning as something that can be enjoyable, getting children used to group activities and instructions from someone other than their parents, or even an improvement in nutrition during the day. For the Infant Cohort of *Growing Up in Ireland*, the issue of pre-school attendance was of particular interest given that they were among the first children eligible to avail themselves of the new Free Pre-School Year scheme. This scheme aims to give universal access to an academic year of formal early years education and is outlined in more detail in Section 3.3.1.2.

#### 4.1.5 INFANT COHORT AT WAVE 3

There are several relevant indices of school readiness in the data collection at age 5 in *Growing Up in Ireland*. These include detailed ratings by the class teacher (when a child is in primary school) of attitudes to and engagement with school, language for communication and thinking and aspects of social-emotional competencies including relationships with teachers and peers and capacity for self-regulation. In turn, there is potential to identify the major factors that influence school readiness including child and home characteristics, measures of the home learning environment, and attendance at pre-school (including participation in the Free Pre-School Year).

A longitudinal perspective is particularly relevant to this topic given the detailed home learning measures available for age 3 years (with some limited information for age 9 months), and the capacity to track change in family structure and socio-economic circumstances over time. Furthermore, it will be possible to compare the direct assessments of the child's cognitive abilities at age 3 years with the same assessments conducted at age 5 years, and the addition of the teacher's ratings of ability once they have started school. In terms of exploring what it is about pre-school experiences that can foster progress in development, researchers



will be able to draw on details collected at age 3 years when a detailed questionnaire was posted to the regular non-parental carers of children. These questionnaires collected information from both home and centre-based carers including the qualifications and experience of the carer, the duration of care, the activities available to the child and (for centres) whether the facility was a pre-school, crèche, Montessori etc.

## **4.2 IN SCHOOL: PARENT AND CHILD ENGAGEMENT**

One of the major decisions for parents at this age is when to send their child to formal schooling. In general Irish children start school the September after they turn 5 years old but can start as early as 4 or as late as 6 years. Once the child begins school, these two major components of their micro-system (home and school) should not, and will not, run along separate parallel lines. How the child interacts with the school environment and the significant new adults and peers in his or her life (i.e. teachers and other school staff) will be crucial to their overall school experience; but the parents' engagement with the school and the child's education is important too.

### **4.2.1 AGE OF STARTING SCHOOL**

An important decision for parents in relation to schooling is the actual age at which they should send the child to school. Because Irish children, unusually, can begin primary school as early as age 4 but are not required to attend school until age 6, there is considerable variation in ages of children in any class—a feature that is especially noteworthy in infant classes. In many respects Ireland is quite different from most other countries. In the recent Trends in International Maths and Science study (TIMSS; Eivers & Clerkin, 2013), Ireland was only one of six countries in which more than 90% started school at age 5 or younger. In contrast, nearly half of the pupils (48%) in other countries started school at age six while 26% were either seven years or older. Irish schools are unusual in that they enrol large numbers of children who are younger than the compulsory age of attendance (six years). An additional complicating factor is that individual schools, in order to control enrolment, may introduce additional age requirements, such as reaching the fifth birthday by a certain date. In most countries in the TIMSS study, attendance at school is compulsory from six upwards, while in five countries children are required to attend from age four or five, and in six countries compulsory schooling begins at seven years.

Because of the variation between countries and indeed the consequences of the application of a strict date of commencement of school, age of entry has generated a considerable body of research. As noted above, because many countries have a specific regulation regarding age of school enrolment there is considerable variation in classes between children who are barely that age and others who are almost a year older. Much of the international evidence considered below is based on this quasi-experimental feature of school systems.



The study by Fertig & Kluge (2005) was concerned with the effects of age of entry to school on educational attainment in Germany, based on a dataset involving children who went to school in East and West Germany in the late sixties and seventies, when delaying enrolment was relatively common. While some initial differences were observed which were largely due to differences in ability between early and late school entrants, and which resulted in late entrants being more likely to be required to repeat a grade, when controls were applied for initial ability differences there was no significant effect of age of school entry on educational performance.

In Sweden, children typically start primary school the year they turn seven, thus giving rise to variation of nearly a year. Using data from the entire Swedish population born between 1935–1984, Fredriksson & Ockert (2005) examined the effect of age of starting school on school performance and on labour market earnings. The results indicated that those who started school at an older age tended to do better in school and go on to have more education than their younger peers. However, since starting school entails entering the labour market later, the effect on earnings over the life-cycle is negative. The authors also concluded on the basis of their analysis that the beneficial effects of starting later on school achievement was due to absolute maturity rather than to relative age in the class.

A major study by Black, Devereaux & Silvanes (2011) was concerned with the effects of school starting-age in Norway. This is one of the more comprehensive studies since it examined effects not only on later IQ scores but also on educational attainment, teenage pregnancy and subsequent earnings. This study gave particular attention to distinguishing between the effects of school starting age and age effects per se—a feature that is not attended to in some other research. The results showed that there was a small positive effect of starting school younger on IQ scores measured at age 18 but there was little effect on educational attainment of boys or girls. There appeared to be a short-run positive effect on earnings of beginning school at a younger age; however, this effect had essentially disappeared by age 30. The authors concluded that while starting school later reduces potential labour market experiences for a given age and a given level of education, these factors become less important as individuals age and disappear entirely in adulthood.

A study by Ponzio & Scoppa (2011) investigated the effects of school entry age in Italy based on the TIMSS and PISA research series. Their results indicated that older school entrants did relatively better at the 4th, 8th and 10th grades. They found that the advantage did not decrease as children got older. Furthermore, later school entrants were more likely to transfer to more academic schools on completion of primary education.

A study in Hungary by Altwicker-Hámori & Köllő (2012) looked at the effect of school starting age on standardized test scores using data covering all grades between Grade 4 and Grade 8. The results indicated that children generally gain from starting school one year later, and the



effects are much stronger in the case of students coming from low-educated families. The authors concluded that the observed patterns are most probably explained by the better performance of children in kindergarten rather than in later grades, especially in the case of children from disadvantaged backgrounds.

A small number of studies including one by McEwan & Shapiro (2007) sought to give a precise estimate of the benefits of later primary school enrolment. This study used administrative data on Chilean students that includes exact birth dates. Using regression discontinuity estimates, the results indicated that a one-year delay decreased the probability of repeating first grade by two percentage points, and increased fourth and eighth grade test scores by over 0.3 of a standard deviation. Interestingly there were slightly larger effects for boys. Similarly, Smith (2009) sought to establish the precise areas in which there were advantages for children who enrolled at an older age. His analysis is based on data from British Columbia to estimate the effects of age of entry on test scores in grades 4, 7, and 10. The findings indicate that there is an advantage in numeracy, reading and writing tests, especially in grade 10 and that the advantage is greater for girls and for low-income students.

The study by Sakic, Burusic & Babarovic (2013) is based on nearly 90,000 fourth and eighth grade students in Croatia. Students were divided into groups of younger and older school entrants based on the difference between the year of birth and the year of school entry. The outcome measure was based on school subjects covered in the curriculum and involved two measures: an objective test for a national assessment and school grades that were awarded by class teachers. The results indicated that among fourth grade students, older school entrants performed on average slightly better than the younger entrants regardless of the achievement measure used. However, the differences involved were small. Among the eighth grade students, younger and older school entrants did not differ in their achievement in the majority of the school subjects.

Taken together, the international findings make it difficult to come to definite conclusions as to the precise benefit to be obtained from starting school at a specific age relative to one's peers; although the available evidence leans towards a later age being preferable to an earlier one. There are the added complications of heterogeneity in the school systems between countries and this underlines the need for data drawn specifically from the Irish context.

#### **4.2.2 TEACHER-STUDENT RELATIONSHIP AND SCHOOL ACHIEVEMENT**

For a child just starting school, the teacher is an enormously important new caregiver. The time the child spends in the care of the teacher will, most likely, be second only to that of his or her parents. The extent to which the child is able to form a secure relationship to their first teacher is likely to influence the degree the child can use him or her as a base from which to explore their new classroom environment. As noted in Section 3.3, Hamre and Pianta (2001)



found that a poor relationship between a child and his/her kindergarten teacher was associated with poorer academic and behavioural outcomes for several years afterwards—particularly for boys and children with behavioural problems.

There is now substantial evidence that liking for school and teachers has an impact on academic performance beyond other potentially confounding factors like social background. Roorda, Koomen, Spilt, & Oort (2011) used a meta-analytic approach to explore the association between affective dimensions of the teacher-student relationship and student engagement and achievement in almost 100 studies with students from preschool to high school, involving over 130,000 students. The results of the analysis led the authors to conclude that this relationship had a strong beneficial effect on engagement with school and also had a positive impact on achievement. It was especially interesting that the effect sizes were somewhat higher in the case of students with learning difficulties. The authors suggest that part of the reason for these findings could be that having a conflicted relationship with their teacher may add to the existing extra load for students, which in turn results in a decline in engagement and, subsequently, achievement.

#### **4.2.3 INTERACTIONS BETWEEN HOME AND SCHOOL**

Epstein (2001) outlines six main activities by which parents can engage with school and vice-versa. Parenting involves enhancing the parenting skills of families and supporting children's development. Communication centres on letting parents know about the school as a whole, as well as individual level information on the child. Volunteering is based on opportunities for parents to be involved in particular activities at various times during the school year while learning at home refers to parental assistance with homework and related curriculum activities. Decision making is concerned with parental input into decisions regarding both school and individual children and community collaboration refers to the school's involvement in community development and activities to benefit families and school.

A study by Lee and Bowen (2006) was concerned with the type of involvement and engagement with school that was most strongly associated with children's achievement. Their results showed that direct involvement with school (as in visiting the school) was important as were educational discussions with children about what happened in school. Furthermore, homework help contributed to achievement as did advice to children on time management. It should be noted that this study, while employing a sophisticated multiple regression model, is based on data gathered at one point in time.

Recent work on parenting programmes has shown evidence of their long-term impact on school achievement (Sandler, Schoenfelder, Wolchik & MacKinnon, 2011). That review showed that there were long-term effects of parenting programmes directly on skills and also through improvements in children's adaptation to stressful events—an effect that can persist



into adolescence and beyond. In line with the evidence considered above, the research indicates that parent programmes that focus on social and emotional development can enhance children's school performance, sometimes as much as programmes that focus exclusively on reading or mathematics (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011).

#### 4.2.3.1 RESEARCH IN THE IRISH CONTEXT

Because it has been recognized for some time that home-school interaction has a crucial role in school achievement, a substantial body of work has been carried out in Ireland on various features of parental involvement and engagement. These have included programmes like Incredible Years (IY) as well as an examination of the crucial features of home-school interaction and evidence regarding their association with school achievement.

Incredible Years is an evidence-based school and home programme to support positive emotional and social development in primary-school aged children, to address behaviour management and, by implication, to improve achievement. The programme has been designed in collaboration with schools and community organisations and is delivered in Ireland by Archways, the national promoter of Incredible Years in Ireland. The three related components of Incredible Years consist of (i) parent training programme, (ii) child programme and (iii) teacher classroom management programme. Each of these components has been designed as a stand-alone intervention; between them they provide a cohesive strategy for managing emotional and behavioural difficulties of children. In an evaluation of the IY Parenting programme carried out in Ireland by McGilloway et al. (2009), it emerged that the programme improved parenting competencies and the well-being of children as well as rated academic achievement.

Eivers & Clerkin (2013) compared the perceived involvement of parents in schools across the various countries participating in the international studies, PIRLS (Progress in International Reading Literacy Study) and TIMSS. Both Principals and class teachers in Ireland rated parental involvement in school activities and parental support for school achievement more highly than the average across the various countries. For Ireland, 44% of children were in schools where Principals rated parental involvement as 'very high' or 'high' in comparison to an international mean of 32%, while in the case of teachers the corresponding figure was 46% compared to the mean of 33% for other countries in the studies. Even more striking were the ratings of parental support for school achievement, with 70% of children in schools where the Principal rated such support as high or very high compared to the international average of 36%.

What is especially important is the relationship between the perceived parental support and involvement, and the mean achievement in the various schools. For example, in the case of



reading, schools in which the Principals rated parental support as ‘very high’ had a mean score of 570 while in those schools where the rating was ‘low’ the mean score for reading was 520 (compared to PIRLS means of 527 and 488). The corresponding scores for mathematics were 548 and 491 (TIMSS: 508/470) while for Science the scores were 539 and 481, respectively (TIMSS: 504/464). It will be interesting to see if engagement is reported at similarly high levels among *Growing Up in Ireland*, and whether ultimately it is related to actual achievement by individual children.

A central feature of the DEIS<sup>23</sup> programme (discussed below) is the Home-School-Community Liaison (HSCL) scheme which has been the subject of a number of evaluations (Ryan, 1994; Lewis & Archer, 2006; Weir et al., 2018). All of these studies focused on the role of the HSCL Coordinator and found that the largest amount of time on any single activity related to home visits, though the proportion of time spent on these has declined since 1992/3 as has time spent talking to parents and to school staff. In contrast, the time spent on contact with external/community agencies and on administration/paperwork has increased over time. Most coordinators had positive views about the impact of their role on parental involvement in the school as well as improved communication between school and home. In *Growing Up in Ireland*, it will be possible to look at interactions between children’s home and family characteristics and those of DEIS and non-DEIS schools; and the facilities and supports (such as HSCL co-ordinators) available through the school.

#### 4.2.4 INFANT COHORT AT WAVE 3.

*Growing Up in Ireland* has the potential to make an important contribution to the understanding of the relationship between home and school, and how this interaction affects children’s educational outcomes. Information regarding engagement with the child’s school is being sought from both parents and teachers. In the parents’ questionnaire, items focused on how often they speak in person to the child’s teacher, whether the child is dropped to school each day by a parent or by someone else, and how often that person would speak to the child’s teacher. Teachers were asked about their perception of how interested the mother and father are in the child’s education. They also completed a scale measuring their levels of conflict and closeness in relationships with individual children.

As noted, at school-level Principals supplied a range of information on school-level supports and facilities such as home-school liaisons, parenting courses and breakfast clubs—including those provided under the DEIS scheme. They indicated their perception of overall levels of parental involvement. With a range of cognitive and socio-emotional information on the child available, in addition to information on both parents and teachers, it should be possible to

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<sup>23</sup> Delivering Equality of Opportunity in Schools.



develop a well-rounded understanding of the child's overall experience in the early school years.

Some specific avenues of investigation include patterns of early or later school-start and subsequent effects on outcomes if any. Although it is generally assumed that a later school start is preferable, the research findings are quite mixed. It is a question that needs to be considered in the specific Irish context as children in other countries who start school later may have spent a number of years in relatively formal pre-school education, and there may be significant variation in the focus and quality of the school environment once more formal schooling actually starts.

Another possibility is how different children are affected by the same school environment. It will be possible to investigate, for example, whether children of a particular temperament or ability level fare differently to their peers sharing a similar (or in some cases identical) school environment. Another analysis might consider whether advantaged children attending DEIS schools also benefit from the extra resources deployed in those schools; or whether disadvantaged children do better when they attend non-DEIS schools but mix with more advantaged children.

### **4.3 ACQUISITION OF LITERACY AT AGE 5 YEARS**

The emphasis in the review below will be somewhat different from earlier sections as it has a very specific focus on the Irish context. In particular, account will be taken of the national strategy to improve literacy (DES, 2011) as well a major review of literacy in early childhood and primary education commissioned by the National Council for Curriculum and Assessment (NCCA) (Kennedy et al., 2012). With regard to the definition of literacy, most approaches give particular emphasis to a constructivist perspective which prioritises the reader's ability to actively construct meaning from the text. Furthermore, definitions now tend to be broader than was traditionally the case. For example, the national strategy advocates a definition that includes not only the capacity to read and understand but also other forms of communication including spoken language, broadcast media and digital media (DES, 2011). It is interesting to note that this definition includes the internet in what have been called the 'new literacies'.

Since the focus of the present review is on age 5 years, a conceptualization of emergent literacy is especially important. Focusing on early childhood education, the NCCA (2009) noted the importance of emergent literacy as part of the skills and knowledge that are developmental precursors of reading and writing. It placed particular emphasis on the importance of play and hands-on experience, in which children see and interact with print, and thereby build an awareness of its functions and conventions (p. 54).





### 4.3.1 COMPONENTS OF LITERACY

Rather than thinking of the acquisition of literacy as one skill, the research in this area has identified key components including word recognition, vocabulary development and comprehension (Kennedy et al., 2012). A brief overview of each area is set out below.

With regard to word recognition, there is a consensus that children pass through developmental stages in the capacity to read words. The work of Frith (1985) has been particularly influential: he proposed three stages, logographic, alphabetic and orthographic. The young child starts at the logographic stage which involves a reliance on the visual patterns of words for recognition. Later they move to alphabetic skills involving detecting the letter-sound association. At the orthographic stage a competence in grapho-phoneme knowledge (i.e. knowing what exact sound is represented by the visual symbol that is 't' or 'T') is central, as is the capacity to integrate the information built up at earlier stages.

While models of word recognition emphasise perceptual processes, there are also interactions with cognitive processes. The evidence reviewed by Rumelhart (1998) shows that several sources of knowledge can be involved including letter-cluster knowledge (that is, the use of knowledge regarding the likelihood of particular letter sequences or of sound). In addition, syntactic knowledge is important as readers judge the probable interpretation of a particular word, while using semantic-level knowledge to provide text-based information on which comprehension depends. There has been some debate on the benefits of an emphasis on word recognition (e.g. Kennedy et al., 2012).

Acquisition of vocabulary is a core skill for spoken language, reading and writing. A review by Snow and Oh (2011) concludes that vocabulary knowledge is one of the best indicators of early and later literacy outcomes and is a major predictor not only of reading comprehension but of school achievement in the broadest sense. For these reasons, the findings regarding the differences between the experiences of children from disadvantaged children and other children are striking. The evidence suggests that by age 3 years children from disadvantaged backgrounds hear only about a quarter of the words that their advantaged peers encounter (Kennedy et al., 2012).

While there is consensus that comprehension is crucially important to reading, it is a complex cognitive process that greatly depends on the prior knowledge of the reader. There is a considerable body of evidence suggesting that reading strategies make a major contribution to literacy (Pressley & Harris, 2006). Strategies can be thought of as active goal-directed action to construct meaning from text. The extant research suggests that strategies can be taught and that such learning results in an improvement in reading comprehension (Shanahan et al., 2010). As regards approaches to teaching, the evidence indicates a gradual move from a teacher modelling strategy to a child independently using the strategy. It also seems more appropriate that strategies should be learned one at a time and eventually cross a range of



types of texts. In *Growing Up in Ireland*, information on the child's development of these key literacy skills will come from both the teacher's assessment of these core skills (e.g. linking sound to letters and an awareness of rhyme) and the direct assessment of vocabulary conducted by the interviewer in the home (the same test as used when the child was 3 years old).

#### 4.3.2 CRITICAL INFLUENCES ON LITERACY

As might be expected, a major focus of research on literacy has centred on the instruction of the skills involved in reading. However, another line of research indicates that informal influences (not involving direct instruction) have a major impact on success in reading. Whether called 'leisure reading' or 'paired reading' or 'print exposure', there is substantial evidence that home literacy activities from an early age have a major impact on children's language and their reading comprehension (National Centre for Family Literacy, 2008). Specifically, it has been shown that children who had storybooks read to them, and live in homes where parents read themselves and have a large number of books, have better vocabularies and comprehension skills than their peers who do not have these experiences.

It is noteworthy that children's books are an important source of new words. Part of the reason is that children's books contain more low frequency words than either TV shows or adult conversation (Mol & Bus, 2011) and because parents and caregivers may ask questions about pictures, new words, and the events portrayed, thus boosting comprehension and language development. There is evidence that vocabulary is especially likely to be increased when children are asked to repeat or label words (Ard & Beverly, 2004).

A recent meta-analysis (Mol & Bus, 2011) has examined the impact of leisure time reading in the case of kindergarten and preschool children, students in Grades 1–12 and college students. Positive correlations were found with print exposure for all measures relating to comprehension and technical measures. The authors speculated a trajectory wherein children who were exposed to print became more proficient in reading which in turn resulted in a greater involvement and exposure to books. The correlation between success in reading and print exposure increased across the three target groups (kindergarten, grade students and college students). The authors conclude that out-of-school reading, including shared book reading, may be an important part of the experiences that facilitate language and reading achievement.

#### 4.3.3 ADDRESSING EDUCATIONAL DISADVANTAGE IN IRELAND

Since the 1990s, policy to address educational disadvantage in Ireland has centred on the targeting of additional resources and supports towards schools serving disadvantaged populations. Partly in response to research and inspection reports which indicated a continued gap in performance by school social mix (Eivers et al., 2005; DES, 2005), the



Delivering Equality of Opportunity in Schools (DEIS) programme was introduced in 2006 to bring together a number of earlier stand-alone schemes which addressed specific aspects of educational disadvantage. A central feature is the School Support programme which is intended to integrate and build upon existing interventions for school clusters that have concentrated levels of educational disadvantage. Among the features to which designated schools have access are as follows: (i) more favourable class size, (ii) access to literacy support services, (iii) financial allocation aimed at supporting the operation of book loan/rental schemes, (iv) access to home-school-community liaison services including literacy and number activities like paired reading, (v) access to planning supports and (vi) access to professional development support.

Evaluation was built into the DEIS programme from the outset, with a number of studies conducted by the Educational Research Centre and the Inspectorate of the Department of Education and Skills (see, for example, DES, 2009, 2011; Weir, 2011; Weir et al., 2011; Weir & Denner, 2013; Kavanagh & Weir, 2018). These evaluations have pointed to changes in school organisation and process as well as in student outcomes within DEIS schools. DEIS schools have experienced an improvement in planning for teaching and learning, and in setting targets for achievement. Evaluation studies indicate a significant improvement over time in the literacy and numeracy test scores of students in DEIS primary schools, with greater increases for literacy than for numeracy. However, National Assessment data indicate an improvement in test scores for all primary schools, with no marked reduction in the achievement gap between urban DEIS and non-DEIS schools over time.

As already noted, in *Growing Up in Ireland* information was recorded from Principals on whether the school was part of the DEIS programme, as well as other characteristics such as the school's mix of pupils and available resources. These school-level factors can be included in analyses of the academic outcomes of individual children from varying backgrounds both cross-sectionally at 5 years and looking forward to outcomes at age 9 follow-up.

#### 4.3.4 EFFECTIVE SCHOOLS AND EFFECTIVE TEACHING OF LITERACY

A body of research gives important guidelines on the school and teaching factors that facilitate the various interventions to close the achievement gap between disadvantaged children and those who are more privileged. The main school factors enhancing this success in relation to literacy have been summarised by Kennedy, Dunphy, Dwyer et al. (2012). A first important factor is leadership, which involves unifying the school, and providing opportunity for collaboration, planning and agreement on the resources that are necessary for literacy instruction. Ongoing professional development is another crucial factor and is better if tailored to the specific needs of the school. This should lead to teachers 'owning' the changes that occur. Related to professional development is the opportunity for staff to collaborate, especially in relation to planning instruction for literacy activities and to coordinate the



components of literacy programmes of each classroom. A balance of formative and summative assessment is also a critical factor for effective programmes of literacy. It is especially important to make appropriate use of formative assessment techniques and to monitor changes in pedagogy with changes in children’s achievement and engagement.

Some of the key features of effective teaching in addressing the enhancement of literacy of children from a disadvantaged background have been examined by McGough (2008). She notes the importance that has traditionally been assigned to reduction of class size despite the research being much less certain on this point; suggesting reduced class size leads to higher achievement if teachers adapt their methods to take advantage of the smaller number. Another crucial point emerging in the research is the need for continuity in teaching approaches and styles—such as between pre-school interventions and subsequent school experiences (Ramey & Ramey, 2003). Another important factor meriting attention is the need for cohesion between teaching approaches and parental involvement.

#### 4.3.5 INFANT COHORT AT WAVE 3

As well as assessing relevant skills the 5-year phase of *Growing Up in Ireland* can examine a range of potentially important factors influencing literacy that encompasses both home and school activities. Teachers were asked to rate each child’s reading ability on a nine-point scale as well as their capacity to link sounds and letters. It is possible to consider these outcomes in relation to various factors such as socio-demographic influences within the family and school influences such as the relationship of the child with the teacher. Researchers could also relate achievement in reading to the general test of cognitive ability that is being administered; and to the Strengths and Difficulties Questionnaire which focused on social and behavioural indicators.

At age 5 years literacy levels can be viewed both as an outcome of earlier experiences and a launching pad for further achievement and school engagement. Of particular research interest is how children from homes where English is not the first language, or not spoken at all, have coped with literacy in the classroom. In contrast to previous generations of children in Irish infant classrooms, the Infant Cohort are more ethnically and linguistically diverse than ever before and not randomly allocated across schools.

Other avenues for investigation in relation to literacy at age 5 years include the effect of specific home-learning activities, early childhood care influences (for example, home-based versus pre-school environments at age 3), and associations between current play and screen-time activities. Prospectively, the study has the potential to consider literacy status at age 5 years and later academic outcomes including the trajectories of children who appear to decline as well as those who improve or stay stable. *Growing Up in Ireland* has the added



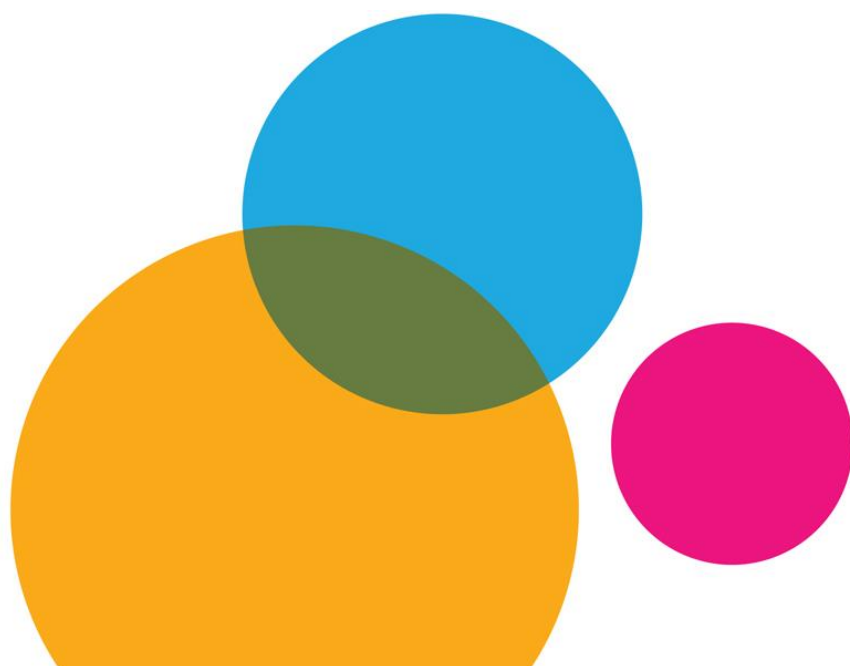
benefit of varied indicators of literacy and academic ability: parent ratings, teacher ratings and direct assessment.





# Chapter 5

## CONCLUDING REMARKS





## 5 CONCLUDING REMARKS

### 5.1 BRIEF OVERVIEW

This review of literature for the Infant Cohort at age 5 years detailed selected key issues that are particularly pertinent for the study children at age 5 and/or reflect new analysis opportunities given additional data collection. In terms of the life-stage for the cohort, the most significant feature will likely be the start of formal schooling—with many already started and some due to start at the time of the home interview. *Growing Up in Ireland* at this wave included an additional phase of fieldwork in the schools which was timed to coincide with the Winter term after the home phase: this means that nearly all of the children should have started school by that time.

In the chapter on health and physical development, the review started with childhood injuries up to 5 years of age. For the first time, *Growing Up in Ireland* is collecting detailed information on the nature and context of the child's most recent injury that required professional medical attention. The next section was the first of two in this review that examined the issue of screen-time. While the negative effects of television on child development is an old chestnut, in comparison to the older Child Cohort, the pervasiveness and interactive nature of digital media has expanded exponentially. In the health chapter, the review examined the relationship between screen-time and overweight/obesity. The final section of the health chapter looked at physical activity and play: additional information on types of play is collected at the age 5 interview, and it is a time when the child's motor skills have developed sufficiently to make more complex activities such as cycling accessible.

The chapter on socio-emotional development also highlighted three topics. The first section looked at the issue of adverse childhood events, on which data are collected for the first time with this cohort. *Growing Up in Ireland* captures information on both traumatic events such as serious illness/injury of self or family member and stressful transitions such as moving house or birth of a new sibling. This chapter continued the special focus on screen-time in this review with a consideration of how screen-time, especially television, may impact socio-emotional development. Finally, there was a review of the factors that influence how ready a child is, socially and emotionally, for the start of formal schooling and whether it really matters.

The final review chapter was on cognitive development and education with a focus on the transition to primary school. The first section considered the preparation before starting school and in particular the home learning environment. The second chapter reviewed prior research on the importance of both child and parental engagement with school, including the teacher-child relationship. The final section of this chapter, and the overall review, discussed the particular issue of literacy development with a focus on school characteristics and the policy environment in Ireland.

### 5.2 UNDERLYING THEMES

Although the topics covered in this review are varied, and of course there will always be an enormous amount of individual difference between children and families, nonetheless some common themes are





evident. The rest of this section considers how these themes seem to emerge in different domains of development and makes some suggestions as to how *Growing Up in Ireland* data could be used to explore them further.

### 5.2.1 GENDER DIFFERENCES

Across different domains of development, the existing research notes the existence of gender differences by age 5 years. In general the literature suggests that boys are at greater risk of less favourable outcomes in relation to injuries and socio-emotional development, with some suggestion that they may benefit from a later starting age in school. Research into gender differences in play indicate that gender-stereotyped play can be encouraged by parents and other adults but also finds children self-regulate these divides, with boys being less flexible than girls. One area in which boys seem to fare better than girls is participation in physical play and activity. In Ireland, some children are segregated into single-sex schools from as early as Year 1 (Junior Infants) and it remains to be seen how this might affect gender-role perceptions as the children grow up.

While the nature/nurture debate on gender differences has raged for decades, it is likely that both biological and socialisation factors—and probably the interaction between the two—have a role in determining differences. The longitudinal nature of *Growing Up in Ireland* should facilitate an investigation of the emergence of gender differences and how these evolve over the life-course. In theory, researchers could compare children with very similar profiles in terms of health, family circumstances, temperament and schooling with a view to estimating differences that may be attributable to gender; perhaps using a propensity score matching technique or comparable framework. Such an approach might be useful in looking at decreases in sports participation among girls as they get older, the apparent lower academic achievement of boys or whether the reasons for becoming overweight or obese are different for each sex.

### 5.2.2 SOCIO-ECONOMIC DIFFERENCES

Somewhat depressingly, although not unexpectedly, much of the literature finds that children growing up in socio-economic disadvantage are faring less well at the age of 5 years. They tend to be at greater risk of injury, more likely to watch excessive amounts of television (with associated risks for socio-emotional problems and overweight), at greater risk of experiencing an adverse or potentially traumatic event, and less likely to be ‘school-ready’.

Ordinarily it is difficult to address precisely the reasons why socio-economic disadvantage should be associated with such a range of outcomes, and from such a young age, but *Growing Up in Ireland* offers scope for exploring these pathways in terms of more specific drivers such as income, parental education, social class, community effects, parental ill-health and so on. It is possible that some outcomes are more related to the personal characteristics of the parents such as low education, young age or high stress; while others are driven more by family circumstances like low income, family size, poor accommodation and neighbourhoods characterised by less salutary environments. Additionally, *Growing Up in Ireland*



collects information on family processes such as the parent-child, teacher-child and inter-parent relationships. Emotionally close and stable relationships with caregivers may, for example, provide an important buffer against structural privations so that the child feels safe, loved and confident that their parents will respond to their needs and concerns even in circumstances where the family struggles to provide the nicest accommodation or latest toys.

Unfortunately, it is to be expected that often families who are affected by one measure of socio-economic disadvantage are going to experience some of the others as well. Given that *Growing Up in Ireland* collects detailed information on multiple possible indicators of disadvantage, at different points, it should be possible to explore what aspect of disadvantage is most relevant for particular outcomes (e.g. education or income for cognitive development) and, longitudinally, what happens when there is a change in circumstances such as a decrease in income or a return to employment. Longitudinal work using the first two waves of both the Infant and Child Cohorts of *Growing Up in Ireland* (Watson, Maitre, Whelan & Williams, 2014), for example, showed an increased risk of socio-emotional problems for children consistently in economically vulnerable households compared to those who were vulnerable at one wave or neither.

Furthermore, this breadth of data facilitates analysis of features associated with Bronfenbrenner's meso- and exosystems. One example would be the interaction between family and work for parents in terms of commuting distance, the provision of family-friendly workplace policies by their employer, perceived work-life balance and so on: do parents in higher-status jobs have better access to flexible hours and subsidised childcare? Another example might be the family's access to 'social capital' in terms of where they live, whether their children go to a school in which other parents are highly involved, or if being recent immigrants means that they are detached from the informal support networks that indigenous families can draw on when needed.

### 5.2.3 THE DIFFICULTY OF DEFINING 'NORMAL'

One of the key objectives for the *Growing Up in Ireland* study is to determine what is 'typical and normal'<sup>24</sup> for children in Ireland and not to focus on specific sub-groups or 'clinical' populations. When drawing on the international literature to inform Irish best practice, sometimes it seems that one can identify almost as many divergences as commonalities. Some of these divergences relate to culture and jurisdiction: for example much of the literature on the effect of pre-school programs for disadvantaged children comes from the USA where educational policies, employment practices, the alternatives for non-parental care and other State supports are quite different to Ireland. Hence what might be considered a

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<sup>24</sup> First founding objective for *Growing Up in Ireland*: "1. to describe the lives of children in Ireland in the relevant age categories, to establish what is typical and normal as well as what is atypical and problematic"



normal or preferable choice for a child in one country or community may not apply in the same way to Ireland.

Another source of divergence is time. In some areas there is rapid change and what is considered best practice also evolves. The digital world is a prime example of an area where there have been massive developments, particularly in recent years. Technology has changed to allow many more powerful and portable devices with a corresponding increase in the amount and diversity of content. Whereas twenty years ago ‘screen-time’ would have effectively meant ‘television’, it now encompasses sophisticated games, a cornucopia of internet content, enhanced communication with distant family members, and a means of sharing information about oneself with the world that previously would have been known to only close family and friends. But the rules have changed too and television content that would have previously been considered normal and acceptable viewing for children (in terms of violence or gender or racial stereotypes) might not even make it into production today. Even since the first draft of this review, the American Academy of Pediatrics has reviewed its guidelines for screen-time and young children (in October 2016); moving from a recommendation of no screen media for children under 2 years to small amounts of “high-quality” programming being acceptable for children from 18 months with co-viewing by parents to explain content. The recommendations for 2–5 year-olds are for no more than 1 hour of high-quality programming per day, again with parents co-viewing.

Sometimes what is normal for a particular group of children does not equate to what is healthy. Consistently in *Growing Up in Ireland* there has been cause for concern over the prevalence of overweight and obesity among children. There are two particular challenges to the ‘normalisation’ of being overweight: one is the clustering of weight problems in particular groups such as the socio-economically disadvantaged and among girls; second is the relationship between a child being overweight and their parents also being overweight. A problem may thus arise that parents are less likely to recognise that their children are heavier than the recommended healthy weight because they look similar to their peers or to themselves. This example illustrates that sometimes what is ‘normal’ or ‘average’ is not necessarily optimal.

#### 5.2.4 INTER-DEPENDENCE OF DEVELOPMENTAL DOMAINS

An important theme to emerge from this review is the extent to which progress or delay in one domain of development has the potential to affect development in other areas of the child’s life. A key example is socio-emotional development. Chapter 3 (and also Chapter 4) examined how being able to self-regulate emotional reactions, attention and get on with peers and teachers has important repercussions not just for children’s behavioural adjustment to school but their cognitive development and academic achievement too. However, the child’s capacity to adjust to school and get on with new people is in turn influenced by their cognitive and language development—an appropriate vocabulary is necessary for labelling emotions, thinking things through and communicating effectively with others. So, theoretically, a child who is behind in their cognitive development might also experience delays in their socio-emotional development, which in turn will further impede cognitive development.



Another example of the inter-relatedness of development in this review concerns childhood injuries. A significant injury to the child, such as from a car accident, can cause not just physical pain and disability, but potentially psychological distress or even cognitive impairment (as in the case of a head injury). Depending on the nature and severity of the accident, there may be additional repercussions for family relationships or family income. Conversely, the factors that may contribute to the increased risk of sustaining an injury in the first place include the child's own temperament or behaviour and their stage of development; as well as the home environment, parenting style, and safety of the neighbourhood.

The connectedness of a child's development across domains is an important consideration from both an academic and policy viewpoint; in particular recognising that a child who is not doing well in one area of development is at increased risk of poorer outcomes in other areas. Furthermore, as already noted, socio-economic disadvantage emerges as a significant risk factor to all areas of development given that the home environment in particular is so influential on children's well-being in the early years. *Growing Up in Ireland* provides a rare opportunity to disaggregate the multiple factors affecting a child's development and identify moderators and mediators. For example, a young child who is struggling behaviourally or cognitively may make significant progress when they start formal primary school and are supported by a teacher who is able to get them back on track. Parents who are under financial strain may be able to limit the negative effect on the child by drawing on emotional support from their own family and friends or financial support from the State's social welfare system.

A theme of inter-connectedness might also consider how the pathways of individual children may be redirected through the successful (or otherwise) transition of important milestones and significant changes in the world around them. *Growing Up in Ireland* has the scope to trace trajectories in health, temperament, relationship with parents and cognitive development from the first wave at 9 months—and can be marked against significant life events such as family structure changes, starting school, moving home as well as more 'random' but potentially life-changing events like serious injury. When the children of the Infant Cohort 'catch up' with the members of the older Child Cohort at age 9 years, there will be potential to contrast outcomes for children a decade apart considering period effects such as the recession and policy initiatives (such as the Free Preschool Year) as well as cohort effects (such as the higher employment rate of mothers in the younger Cohort '08 than in Cohort '98).

### 5.3 CONCLUSION

The principal milestone in most children's lives around 5 years of age is the transition to formal schooling. Some children will cope better than others depending on their level of maturity in terms of socio-emotional and cognitive development; and how well both parents and teachers are able to support them. This is an age in which children are becoming more competent in their motor skills, ability to regulate their own behaviour, interactions with others, and their language and reasoning skills. It is a time of great opportunity to progress their growing skill set but they remain highly dependent on the guidance and care-giving of parents and teachers; especially in regard to keeping them safe from danger, appropriate



nutrition and activities, secure and warm relationships, and nurturing of their behavioural and cognitive potential.

***Growing Up in Ireland*** provides an opportunity to look at what is going well for children, and why; in addition to what is going wrong or would benefit from improvement. It will also provide an important benchmark for what is ‘normal’ or expected in the Irish population, with all the diversity and potential that population now encompasses.



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