TECHNICAL REPORT

NUMBER 2

Growing Up in Ireland

National Longitudinal Study of Children

INFANT COHORT

Design, Instrumentation and Procedures for the Infant Cohort at Wave One (9 months)

December 2013

Growing Up in Ireland
National Longitudinal Study of Children

Growing Up in Ireland

National Longitudinal Study of Children

DESIGN, INSTRUMENTATION AND PROCEDURES FOR THE INFANT COHORT AT WAVE ONE (9 MONTHS)

Maeve Thornton, James Williams, Cathal McCrory, Aisling Murray and Amanda Quail

Name	Title	Institution
Maeve Thornton	Research Fellow	ESRI
James Williams	Research Professor and Principal Investigator, Growing Up in Ireland	ESRI
Cathal McCrory	Research Fellow	TCD/ESRI
Aisling Murray	Research Fellow	ESRI
Amanda Quail	Research Fellow	ESRI

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.

ESRI

An Roinn Leanaí agus Gnóthaí Óige
Department of Children and Youth Affairs

TRINITY COLLEGE DUBLIN

Department of Children and Youth Affairs
43-49 Mespil Road
Dublin 4
Tel: +353 (0)1 647 3000
Fax: +353 (0)1 647 3101
Email: contact@dcya.gov.ie
Web: www.dcya.gov.ie

TABLE OF CONTENTS

APPENDICES – TABLE OF CONTENTS

Chapter 1

INTRODUCTION

1.1 INTRODUCTION

Growing Up in Ireland *– the National Longitudinal Study of Children* is a study of the factors that contribute to or undermine the well-being of children in 21st century Ireland. The project involves studying two main cohorts of children with a view to improving our understanding of their development across a range of domains. The first cohort, the Child Cohort, focuses on nine-year-olds; the second, the Infant Cohort, on infants of nine months of age. The Child Cohort is based on a nationally representative sample of 8,500 nine-year-olds and the Infant Cohort on a national sample of 11,000 infants and their families. The survey is longitudinal in nature, with both cohorts being interviewed at least twice over the course of the project. The older cohort along with their parents/guardians and teachers are interviewed at nine and at 13 years of age. The parents/guardians of the Infant Cohort are interviewed when their children are nine months old and subsequently when they are three years old.

The Child Cohort represents 8,500 children born between 1 November 1997 and 31 October 1998. Data collection for this group took place between August 2007 and May 2008. The Infant Cohort is made up of the families of 11,000 children who were born between 1 December 2007 and the end of June 2008. The first wave of data collection for this group took place between September 2008 and April 2009.

This report describes in detail the design, instruments and procedures used in respect of the Infant Cohort. The focus is on the nature and content of the questionnaires and other instrumentation, along with a general consideration of operational procedures. The Child Cohort is the subject of a parallel set of reports.

In the current chapter, we provide the context for the rest of the document. We begin by describing the background and objectives of the study, our interpretation of its requirements and how these have been met by the Study Team. We then move on to a brief summary of the conceptual framework underlying ***Growing Up in Ireland*** and how this is reflected in the instrumentation.

1.2 BACKGROUND AND OBJECTIVES

Growing Up in Ireland provides an important input to the implementation of *The National Children's Strategy* – a major national plan for children, published in 2000 by the Department of Health and Children. The principal objective of the study is to provide evidence-based research addressing the well-being of children and childhood. This increased understanding of the determinants and drivers of well-being and its change over time will be used to assist in policy formation and the design and delivery of services for children and their families, as set out in the National Children's Strategy (2000). ***Growing Up in Ireland*** is a key element in the strategy, especially with regard to its second goal which notes that "Children will be better understood; their lives will benefit from evaluation, research and information on their needs, rights and the effectiveness of services."

Growing Up in Ireland was commissioned by the Irish Government. It is funded by the Department of Children and Youth Affairs in association with the Department of Social Protection and the Central Statistics Office. Detailed recommendations for the design of a National Longitudinal Children's Study were first presented in a paper entitled *Design of the National Children's Strategy – Longitudinal Study of Children (Collins, 2001)*. The current study stems from a Request for Tender issued by the Department of Health and Children in December 2004. After an assessment and evaluation process throughout

2005 and early 2006, work on the project by a research consortium led by the Economic and Social Research Institute (ESRI) and Trinity College, Dublin (TCD) began in April 2006.

Growing Up in Ireland is designed to describe and analyse what it means to be a child in Ireland today and to understand the factors associated with children's well-being, including those affecting their physical health and development, their social, emotional and behavioural well-being, and their educational achievements and intellectual capacities. While children's current wellbeing is of immense importance, researchers are also cognisant of the future outcomes for the child as they develop into young adults. The longitudinal nature of the project facilitates the recording of current data with a view to using them to assist in understanding future outcomes. By gathering comprehensive data on childhood development, the study will provide a statistical basis for policy formation and applied research across all aspects of children's development – currently and into the future.

The study has nine over-arching objectives.[1] Each of these, with the Study Team's interpretation, is set out below:

1. **To describe the lives of Irish children, to establish what is typical and normal as well as what is atypical and problematic**
   At each data wave we attempt to identify the developmental status of the children sampled in relation to all the key indicators of well-being, both quantitative and qualitative. The variability on key indicators and determinants of variability is critical to this, with a view to defining, for example, normality, borderline problematic status and problematic status. In doing so we intend to compare children in Ireland with international norms and, where available, their indicators of developmental status with those of their international peer-group.

2. **To chart the development of Irish children over time, to examine the progress and well-being of children at critical periods from birth to adulthood**
   Within the confines of the initial seven-year period set out for the project, the Study Team will attempt to identify those changes that occur between data waves on key indicators, and to identify the developmental trajectories of markers of child development and well-being. A key consideration of this is the variability in the rate of progression of children in the cohort. Aside from critical normative events and transitions, issues addressed will include non-normative events that have occurred in the children's lives (such as parental death and separation).

3. **To identify the key factors that, independently of others, most help or hinder children's development**
   This involves identification of the factors most strongly correlated with child well-being and investigating whether these factors are child- and/or environmentally oriented. A key aspect of the conceptual framework underlying ***Growing Up in Ireland*** is the interaction between individuals and their environments that results in variations in outcomes; the environment not only acts on the child but the child also affects change in his/her environment. This framework also acknowledges the importance of identifying moderating and mediating variables, as well as the influence of the timing of particular events.

---

[1] *Request for Tenders (RFT) for Proposals to Undertake a National Longitudinal Study of Children in the Republic of Ireland*, issued by the National Children's Office of the Department of Health and Children and the Department of Social and Family Affairs, December 2005, p.20.

4. **To establish the effects of early child experiences on later life**
   The primary focus with regard to the Infant Cohort will be based on retrospective data, principally recorded from the child's parents/guardians. The issues involved here relate to those factors and circumstances in the early years of life that predict good or poor outcomes at the later stages of development – middle childhood and beyond.

5. **To map dimensions of variation in children's lives**
   To fully map out the dimensions of variation in children's lives, we will describe the nature, range and patterns of distribution of all variables. This will include a consideration of the variability within the cohort in developmental status, progression and outcomes, and, in particular, how variables such as class, family structure, gender, level of educational attainment of parent(s), ethnicity, early child experiences, parenting styles, family relationships, etc predict differences in developmental progress and outcomes.

6. **To identify the persistent adverse effects that lead to social disadvantage and exclusion, educational difficulties, ill-health and deprivation**
   The work of Rutter (e.g. 1988) and others on using longitudinal data to understand psychosocial risk will be particularly useful in framing specific questions in this field. In particular, we aim to provide an appropriate range of variables to facilitate the identification of factors, operating singly or in combination, that are associated with negative outcomes for children. This should allow us to identify whether or not there are factors or combinations of factors that predict specific types of negative outcomes, such as social disadvantage and exclusion, educational difficulties, ill-health and deprivation. This in turn will permit us to address whether or not there are different pathways to similar negative outcomes, and to isolate those categories of children and their characteristics that are most at risk for adverse development.

7. **To obtain children's views and opinions on their lives**
   To capture the richness of children's experience of their worlds, a most important aspect of the study is the inclusion of children themselves in the interview and data collection process. This means that children in the Infant Cohort can be involved in the interviews from three years of age (as feasible and appropriate). Children in the Child Cohort will be centrally involved in the interview from nine years of age.

8. **To provide a bank of data on the whole child**
   Growing Up in Ireland has been designed so that it provides information on the developing child across a range of different domains. This will allow researchers and others to take a holistic view of the child's development and will, among other things, permit a consideration of how outcomes relate across different domains of the child's life. This will be particularly important in analysing developmental trajectories as longitudinal data become available.

9. **To provide evidence for the creation of effective and responsive policies and services for children and families**
   The focus of the project throughout will be on generating evidence through research, with a view to informing policy and service provision to ensure that they are as effective as possible. This strong applied focus is reflected in the prescribed outputs from the study.

1.3 CONCEPTUAL FRAMEWORK

1.3.1 SUMMARY OF CONCEPTUAL FRAMEWORK[2]

The study takes a dynamic systems perspective founded on five insights from different disciplines: (i) ecology, (ii) dynamic connectedness, (iii) probabilism, (iv) period effects, and (v) the active role or agency of the child in the developmental process. The bioecological model of Urie Bronfenbrenner (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006) is a key tool in creating this perspective.

The child's relationships with others operate both within and outside the household, in the school, through the workplace, and in the wider community. As discussed in detail in Greene et al. (2010) and summarised in Figure 1.1 below, Bronfenbrenner illustrates the intimate relationship between the *microsystem*, the face-to-face interactions that the child experiences, and the *mesosystem*, which encompasses the links between the different actors in the micro-system, i.e. the relationship between parents, between home and school, or between close family and extended kin.

Outside the mesosystem in Bronfenbrenner's model sits the *exosystem*. This comprises the structures, institutions and settings that, while not in direct contact with the child, exert an important influence on his/her quality of life and outcomes. Examples of determinants within the exosystem are government departments that have an important impact on child well-being in areas such as education, health and welfare. The last ring of Bronfenbrenner's schema is the *macrosystem*, which consists of the culture-specific ideologies, attitudes and beliefs that shape the society's structures and practices. Together these different levels provide a taxonomy of factors that may influence the experiences and well-being of a child as he/she develops from birth to adulthood.

Figure 1.1: Bronfenbrenner's Ecological Perspective on Child Development

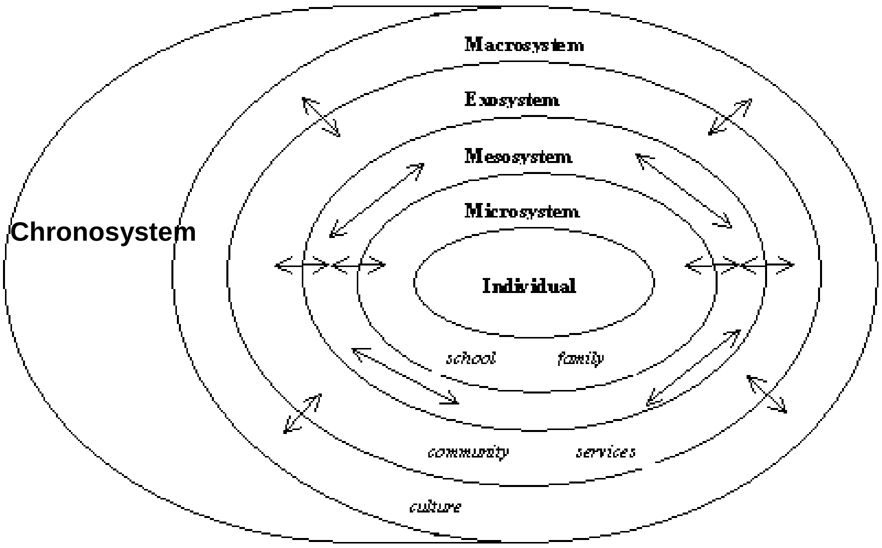


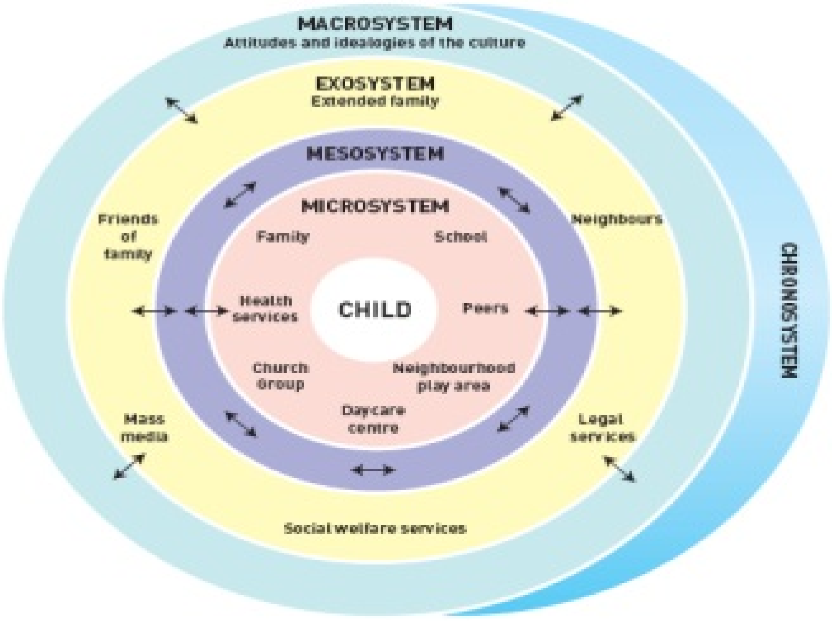
Figure 1.2 provides a schematic summary of the study's overall view of the complex multi-directional and recursive relationships between the child, on the one hand and, on

---

[2] For a detailed discussion of the conceptual framework used in the study, see Greene et al, Background and Conceptual Framework (2010).

the other, the environments and actors within which and with whom he/she operates, relates and interacts.

Figure 1.2: Hypothesised relationships between Child Characteristics, Child Outcomes and Contextual Variables in *Growing Up in Ireland*



Source: Adapted from Garbarino (1982)

From Figure 1.2 one can see that we extend outward from the individual child to: close relationships in the home and childcare (*microsystem*), to the relationship between the elements of the microsystem such as between parents and school (*mesosystem*), to the institutions and settings that influence the microsystem and mesosystem such as health services (*exosystem*), and, finally, to all the actions and interactions that take place under the influence of more global forces such as cultural beliefs, national policies and general economic prosperity (*macrosystem*). Table 1.1 gives examples of variables used in ***Growing Up in Ireland*** that are relevant to each layer in Bronfenbrenner's bioecological model, along with relevant section headings indicating where each variable is discussed within the current report.

Table 1.1: Examples of variables in *Growing Up in Ireland* in each layer of the bioecological model

Layer	Illustrative characteristics include:
Child	Gender; temperament; physical development; social & psychological development; cognitive development; health; ethnicity
Microsystem	Parental health; parent-child attachment; parenting style; parental lifestyle; parental education; parental stress; size of household; family structure; parent marital relationship; childcare
Mesosystem	Work-life balance; maternity leave policies; parental involvement with community; parental/child involvement with child's grandparents
Exosystem	Access to healthcare, church and religion; social welfare support; parental occupation; availability of/access to public services
Macrosystem	Citizenship/nationality; socio-historical setting of current study; current economic climate

1.3.2 FROM CONCEPTUAL FRAMEWORK TO INSTRUMENTATION

The project has been designed to record details about the array of factors that have been previously identified or hypothesised as having an influence on a child's developmental outcomes in all spheres of his/her life. As noted by Wake et al (2008), "an outcome is an attribute of the child at a particular point in time" (p.11). Outcomes will generally be influenced by a range of inputs, a few of the more important of which include parenting, education and the health services. Furthermore, children's attributes will also act as influences on later outcomes. For example, the child with positive behaviours and temperament may elicit a very different parenting style than those with more negative ones. This, in turn, will affect subsequent outcomes. As outlined in Greene et al. (2010), the child outcomes focused on in ***Growing Up in Ireland*** are:

- Physical health and development
- Social, emotional and behavioural well-being
- Cognitive/intellectual capacity and educational achievement

In adopting the 'whole child' perspective and a rounded view of child well-being, it was clearly not feasible to record all derived information. Choices had to be made as to what measures and variables should be included or excluded. The criteria used in making decisions on inclusions and exclusions were as follows:

- *Importance:* Are there scientific grounds for believing that the variable exerts a substantial influence on one or more outcomes or dimensions of child development?

- *Measurability:* Can the variable be validly, reliably and ethically measured using the methods of large-scale survey research?

- *Policy relevance:* Is the variable actionable through public policy?

- *Policy urgency:* Is it acknowledged that the area of public policy to which the variable is relevant needs an evidence base for reform?

- *Prevalence and variance:* Is the variable sufficiently prevalent in the population to yield an analysable level of variance in the available sample?

- *Added value:* Does the variable relate to influences on child well-being that are inadequately covered by other research?

- *Longitudinal focus:* Is the variable relevant for potential *longitudinal* analysis of stability or change in child outcomes over time?

The selection of outcome and exploratory variables was based on the following criteria:

- *Robustness:* Does the variable provide a measure of the construct of interest that had been proven to be valid and reliable? With this in mind the Study Team concentrated on items which had been previously tested in survey work, particularly in longitudinal cohort studies.
- *Ethical acceptability:* Does the variable meet relevant ethical standards as set by the review process?
- *Acceptability to respondent:* Would the variable be likely to deter participation or increase attrition among the study respondents by increasing response burden, being offensive or troubling?
- *Age appropriateness:* Are age-appropriate variants of the variable available or could they be designed, taking account of the need to maintain consistency in measurement across cohorts and across time?
- *Time efficiency:* Does the variable involve as little interview time as possible, taking account of its importance and the requirement for robust measurement?
- *International use:* Has the variable been successfully used in research in other countries, particularly in comparable studies such as the UK Millennium Cohort Study and the Longitudinal Study of Australian Children (Growing Up in Australia)?
- *Use in Ireland:* Has the variable been successfully used in previous research in Ireland?
- *Value for target setting and impact assessment:* Could the variable be used to set targets for policy and/or to measure the impact of policy interventions?

The individual child is clearly the key participant in ***Growing Up in Ireland***. Not only were parents/guardians interviewed about the child, but the Study Team also sought to record information from other informants where possible. As well as interviewing the parental figures in the home, ***Growing Up in Ireland*** gathered information directly from non-resident parents and regular carers (where appropriate and feasible).

The broad range of information gathered in the study reflects the acknowledged importance of the proximal and distal contexts in the life of the nine-month-old. Information has been gathered about the infant's health, development, activities, family relationships, temperament, access to service, and the local neighbourhood and community. Information was also gathered about parental health, education and ethnicity, thus facilitating consideration of the influence of parental characteristics and behaviour on the infant's development. Collecting data on significant events in the child's life, and the longitudinal aspect of the study, will contribute to research on individual pathways and trajectories. The geo-coding of children's homes will provide researchers and others with the potential to look at the impact of various environmental conditions on child outcomes in the future.

1.4 STRUCTURE OF REPORT

The main objectives of this report are to:

- Outline the sample design and explain the procedures for respondent selection

- Describe the broad outline of how the instruments were developed, including a discussion of the main contributions made to instrumentation development from the Scientific and Policy Advisory Committee (SPAC), the Delphi consultation process, the Children's Advisory Forum (CAF), and the Panels of Experts coordinated by the Study Team

- Discuss the ethical review procedures for the study

- Describe fieldwork procedures

- Provide a detailed breakdown of the main instruments used at all levels of the study, including the broad domains of interest, specific variables of interest, and information on scales used in the study, along with a rationale for the use of each

- Present, in the appendices, the various instruments and related documents used in the study (the appendices are bound separately in an accompanying document)

- Provide a platform or reference point for subsequent waves of the study in terms of operational procedures and substantive input, and thus a benchmark against which change and improvement in subsequent rounds of the survey may be measured

To this end, the report has eight subsequent chapters. Chapter Two summarises sample design and sampling. Chapter Three outlines the inputs to the instrumentation from various advisory groups and other interested parties. Chapter Four looks at ethical considerations, in particular the ethical review procedure. In Chapter Five, a broad overview of the various levels of instruments and questionnaires used in the survey aspect of Wave 1 of the Infant Cohort is presented. Subsequent chapters are divided into the main areas and units of data capture. Chapter Six details all of the instruments used in the household and considers in detail the main questionnaires used in the study – the Primary and Secondary Caregiver instruments. Chapter Seven summarises all of the other instruments used, including those sent to the non-resident parents, the non-cohort caregivers, the direct measurement of height and weight, and the GPS coordinates of respondents' households recorded by the interviewer. Chapter Eight presents a discussion of the scales and other standardised measures used in the project. Finally, conclusions are presented in Chapter Nine.

Chapter 2

METHODOLOGY/SAMPLING

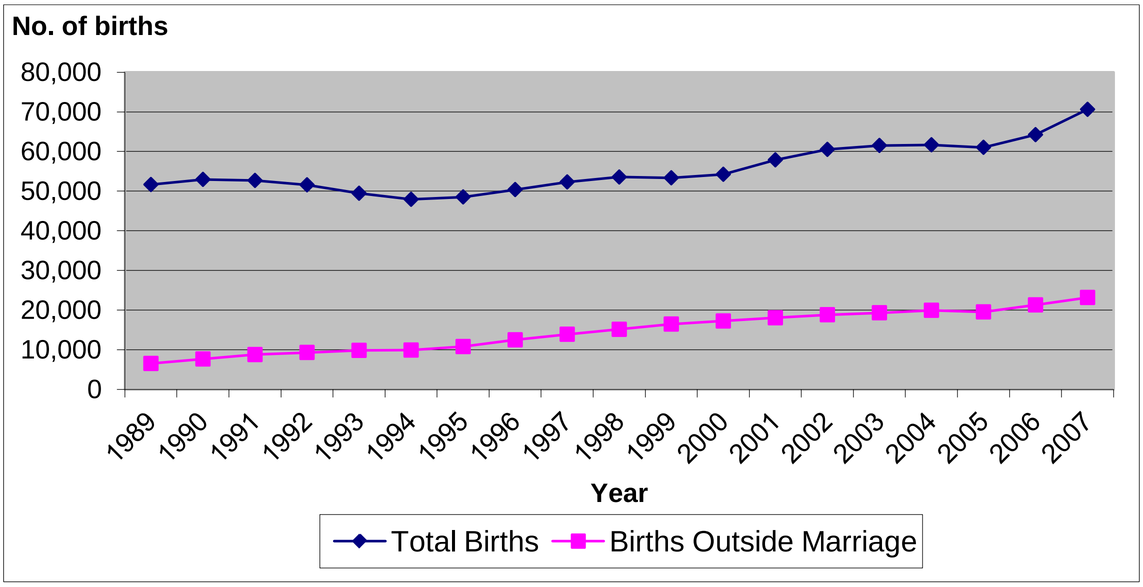
2.1 INTRODUCTION AND BACKGROUND

This chapter considers the population of infants included in the Infant Cohort. It outlines the size and characteristics of the population in question followed by a discussion of frame issues, sample design, seasonality of birth and, finally, the re-weighting or grossing of the data prior to their deposit in the Irish Social Science Data Archive (ISSDA).

2.2 POPULATION OF INFANTS

Although figures fluctuate from year to year, in 2007 there was an annual total of just over 70,000 births in Ireland. This figure has grown from 51,659 in 1989 to 70,620 in 2007.[3] Figure 2.1 shows that the total number of births fell somewhat in each year from 1989 to 1994 after which they showed an annual increase up to 2007, with minor annual dips in 1999 and 2005 (of 197 and 642 births respectively). From Figure 2.1, it is clear that an important trend in the number and characteristics of births over the last two decades has been the increasing number born to mothers in a non-marital relationship (from 6,522 in 1989 to 23,170 in 2007).

Fig. 2.1: Trends in total births and births outside of marriage, 1989 to 2007



Source: Vital Statistics, Central Statistics Office

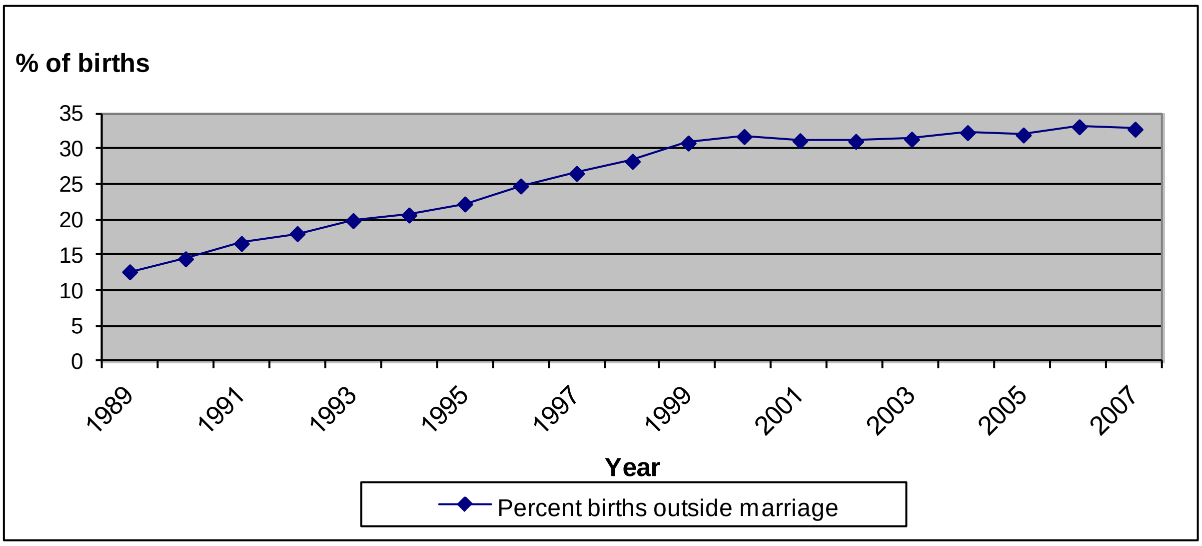
This trend is further illustrated in Figure 2.2, which shows the percentage of births accounted for by those outside marriage. One can see that the incidence rate almost tripled over the period, from 12.6 per cent in 1989 to 32.8 per cent in 2007.[4]

---

[3] See, for example, Central Statistics Office, Ireland website, data direct, at http://www.cso.ie/px/pxeirestat/Dialog/

[4] This reflects marital status at time of birth. Many of the relationships in question subsequently ‘mature’ into a married relationship.

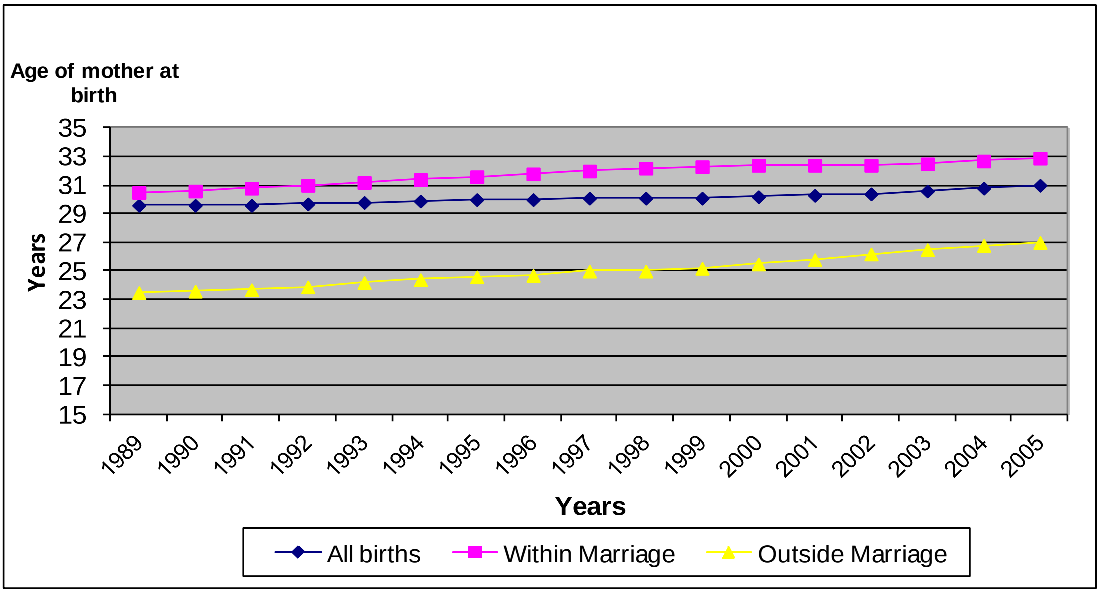
Fig. 2.2: Trends in percentage of total births outside marriage, 1989 to 2007



Source: Vital Statistics, Central Statistics Office

Figure 2.3 shows that the average age of mothers at birth has shown an upward trend over the last 20 years, rising by 1.4 years over the period, from 29.6 years in 1989 to 31.0 years in 2005. The increase in age has been somewhat greater among births outside marriage, with the average age of mothers rising by 3.5 years from 23.5 years in 1989 to 27.0 years in 2005.

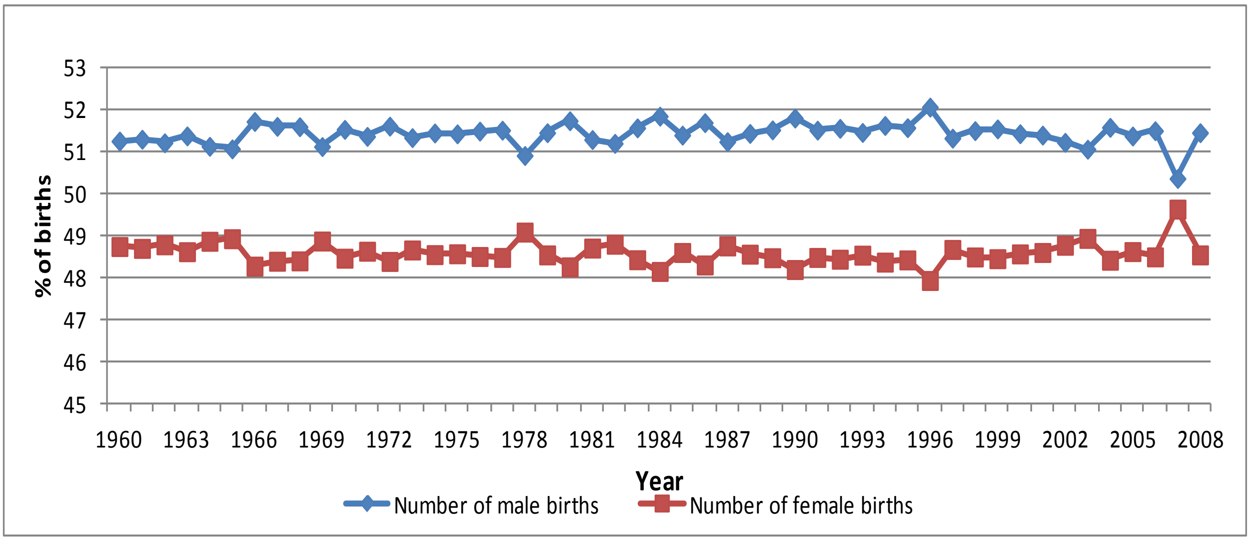
Fig. 2.3: Average age of mother at birth, 1989 to 2007



Source: Vital Statistics, Central Statistics Office

From Figure 2.4 one can see that although there has been some fluctuation in the breakdown of births by gender, the figures have remained stable since the early 1960s, with the gender split being 51.4 per cent to 48.6 per cent in favour of boys.

Fig. 2.4: Trends in percentage of total births by gender, 1969 to 2007



Source: Vital Statistics, Central Statistics Office

In implementing ***Growing Up in Ireland*** surveys were completed with the families of 11,100 infants in the relevant age category over the period September 2008 to end-April 2009. These infants were selected from the approximate 41,185 births over the period 1 December 2007 to 30 June 2008. This completed sample of 11,100 represents just over one quarter (27 per cent) of all births in the State over the field period.

2.3 THE SAMPLING FRAME

The ideal sampling frame for this statistical survey is an up-to-date and fully comprehensive listing of all nine-month-olds in the country. Each infant should appear once and once only; there should be no omissions and no duplication. In addition, the frame should not include any infants who were not validly in the population, e.g. those outside the age range.

Unidentified *duplication* of entry is obviously a statistical problem as it would affect the selection probability of those involved and potentially introduce bias to the sample. If a subset of the total population (in this case nine-month-olds) is systematically over-represented or duplicated in the sampling frame, the resulting completed sample could be biased.

O*mission* of infants from the frame is similarly a statistical problem to the extent that the omitted children are systematically different from the totality of the population. As above, if this is the case their exclusion could potentially result in the introduction of bias to the sampling frame.

Children who fall outside the valid scope of the study (nine months of age and resident within Ireland) do not adversely affect the statistical quality of the sample as they do not adversely affect selection probabilities. They do, however, pose problems in implementation and have resource implications – if, for example, interviewers call to families in which the children are not nine months of age.

With these basic issues in mind, we would ideally like to have at our disposal a list of all nine-month-old children resident in Ireland at time of interview, with good contact details, no omissions or duplication, and no children who fall outside the age range. This would ensure that each nine-month-old in the country was included in the frame once and once only with a calculable selection probability. The Child Benefit Register was identified by the Study Team as coming very close to such a frame. Child Benefit is paid each month in respect of all children under the age of 16 years.[5] The payment is made to the person caring for the child – normally (but not always) the resident mother or step-mother. Child Benefit must be claimed within six months of the child being born, in the six months after the child becomes a member of the family, or within six months of the family coming to reside in Ireland.

The Child Benefit Register contains a substantial amount of information, including:

- Payee's Personal Public Service Number (PPSN)
- Previous Child Benefit claims
- Contact details (sometimes including phone number)
- Date of birth
- Marital status of mother
- Nationality and (where relevant) previous country of residence of claimant

Because the Child Benefit Register is a payments database, it must be current and fully up-to-date. The Department of Social Protection (which maintains the database) carries out periodic postal checks of recipients and, in the case of non-contact, a follow-up check.

It is clear that there is a compelling financial reason for all parents/guardians of children in the State to ensure that their children are registered. Omissions of eligible children are therefore, in all likelihood, extremely rare. Similarly, from the Department's perspective, duplication is clearly undesirable and, given the nature of the information held on the database, can generally be identified and eliminated.

On balance, there is every reason to believe that the Child Benefit Register is possibly unique among administrative databases in the extent to which it possesses all the desirable characteristics necessary for use as a sampling frame. It contains a comprehensive up-to-date listing of eligible nine-month-olds, has a range of relevant background characteristics of claimants, and is already in an electronic form that can be technically accessed with relative ease.

To validate coverage of the Child Benefit Register, the Study Team compared the number of children recorded on the register with the number of births recorded in *Vital Statistics,* which is maintained by the Central Statistics Office (CSO). The information published in *Vital Statistics* is derived from the Registration of Births. It is a legal requirement to register births within three months. Registration takes place in the office of the Registrar of Births, Marriages and Deaths. The information is recorded on the Birth Notification Form and is completed by one of the parents. The form is given to mothers in hospital and is usually completed and returned to staff in the hospital before discharge of the mother after a birth.

The comparison[6] of Child Benefit records and *Vital Statistics* was based on detailed figures provided from both sources for the period October 2004 to June 2005. The validation exercise indicated that the figures on number of births over the period were highly consistent. Table 2.1 shows that there was an aggregate discrepancy of the order of 3 per cent between the two

---

[5] In addition, it is paid in respect of a child aged 16,17 or 18 years of age who is in full-time education; is attending a FÁS Youthreach course, or is physically or mentally disabled and dependent on a parent or parents/guardians. This age group is clearly within scope for the NLSC.

[6] See Note on 'Sampling the 9-month cohort in the National Longitudinal Study of Children, NLSCI/M006/090606, submitted to Project Team, 9th June 2006.

sources, representing an absolute difference of 1,411 children – 45,585 from *Vital Statistics* and 44,174 from the Child Benefit records.

Table 2.1: Total number of live births, first-time births and births outside marriage from *Vital Statistics* and Child Benefit Register for Q4 2004 to Q2 2005

	Aggregate, Q4 2004 to Q2 2005			
	Vital Stats	**Child Benefit**	**Abs Diff**	**% Diff**
Total births	45,585	44,174	-1,411	-3.1
First-time births	18,187	17,303	-884	-4.9
Outside marriage	14,740	14,999	259	1.8
Average age of mother	30.97	30.58	-0.39	-1.26

Although the data from *Vital Statistics* contained a slightly higher proportion of older mothers, in aggregate terms there was little difference in average age of maternity between the two data sources; mothers on the Child Benefit Register were on average 0.4 years younger than those in *Vital Statistics*. The figures suggested very little regional or spatial variation at a county level – although a relatively higher than average differential between the two data sources was apparent for Dublin and Galway. The number of births outside marriage in the period studied was marginally higher in the Child Benefit Register than in *Vital Statistics* – 14,970 compared to 14,999.

The differences identified between the two sources can be attributed to a number of factors. First, differences in leads and lags of registration and also reference periods; births must be registered within three months, while applications for Child Benefit must be made within six months of the birth. This means, for example, that a child born in January could be registered in the period January to March (and would thus appear in *Vital Statistics*) but may not appear in the Child Benefit Register until June. Secondly, neo-natal deaths (although low) will cause a discrepancy between the two sources.[7] Thirdly, net migration flows will contribute to the differences.

However, despite the differences in figures (which cannot be controlled for), the overall conclusion was that the Child Benefit Register provided a most appropriate sampling frame for the Infant Cohort in the study.

2.4 SAMPLE DESIGN

Children who would be nine months of age (in their 10th month) at time of interview (between September 2008 and end of April 2009) were selected from the Child Benefit Register, provided by the Department of Social and Family Affairs (renamed the Department of Social Protection in 2010). The dates of birth for the sample children lay between1st December 2007 and 30th June 2008. This yielded a total eligible Register population of 41,185 children.

The sample was selected on a systematic basis, with pre-stratifying by marital status, county of residence, nationality and number of children in the claim; all these characteristics were

---

[7] For example, annual total deaths of children below the age of one year were 136 for boys and 102 for girls in 2006.

available internally from the information recorded in the Register itself. A simple systematic selection procedure based on a random start and constant sampling fraction was used.

The samples for each of the seven months of fieldwork were independently selected from the relevant monthly tranches of the Child Benefit Register. Fieldwork for each of the seven birth months stretched over two months, depending on the child's date of birth within the birth month. For example, a child born on 1st December 2007 was within age scope from 1st to 30th September 2008. A child born on 25th December 2007 was not within age scope until 26th September and his/her family was eligible for interview from 26th September 2008 to 25th October 2008. Accordingly, each birth group (month) straddled two months of fieldwork, depending on day of birth within month. The reference dates of birth for each of the seven field groups were as follows:

Group 1: born 1st - 31st December 2007 – interviewed September/October 2008
Group 2: born 1st - 31st January 2008 – interviewed October/November 2008
Group 3: born 1st - 29th February 2008 – interviewed November/December 2008
Group 4: born 1st – 31st March 2008 – interviewed December 2008/January 2009
Group 5: born 1st – 30th April 2008 – interviewed January / February 2009.
Group 6: born 1st – 31st. May 2008 – interviewed February / March 2009
Group 7: born 1st – 30th. June 2008 – interviewed March/ April 2009

Table 2.2 summarises the structure of the Child Benefit Register according to marital status of recipient, broad region of nationality and age of mother on birth of child.

Table 2.2: Breakdown from Child Benefit Register for children born 1st December 2007 to 30th June 2008

Marital status	Per cent	Broad region of nationality	Per cent	Age of mother on birth of child	Per cent
Cohabiting	6.8	Ireland	61.0	less than 20	1.0
Deserted	0.2	Britain	3.5	20 – 24	9.3
Divorced	0.8	Other Western Europe	6.7	25 – 29	19.1
Legally sep.	0.1	Eastern Europe	4.2	30 – 35	39.6
Married	64.1	Africa	3.0	36 – 39	21.9
Separated	0.9	Pacific	1.2	40 – 44	8.6
Single	26.6	Middle East	0.2	45 +	0.5
Unknown	0.4	North America	0.5		
Widowed	0.1	South America	0.4		
		Indian subcontinent	1.5	Average age – all	32.3 years
		Austral/New Zealand	0.2	Average age – married	34.1 years
		China	0.8	Average age – single	28.1 years
		Other	16.7		
		Not specified	0.1		

The table confirms that just over one-third of births were non-marital. The Child Benefit figures indicate 35.9 per cent in 2008 compared with a 2005/2006 figure of 32.8 per cent (see Figure 2.2). Some of this difference may be attributable to definitional differences in marital status categories used by Child Benefit and *Vital Statistics*. There is some ambiguity on how certain non-marital categories were assigned in the figures from *Vital Statistics* (notably widowed, separated, legally separated and divorced; some co-habitees may also be legally married, others may be single, etc).

A further important point of note from the table is the relatively high percentage of nine-month-olds born to non-nationals. One can see that a total of 61.0 per cent in the Child Benefit Register are classified as ‘Irish’. However, a further 16.7 per cent are classified as ‘Other’. On the basis of child’s name (and subsequent experience in the field) the Study Team estimates that at least 50 per cent of this group is, in fact, Irish. Although the relatively large ‘Other’ group makes it somewhat difficult to assess the precise magnitude of births accounted for by ‘non-national’ mothers, the figures in the table clearly indicate that a very high percentage of children aged nine months are in non-national families. This is a relatively new phenomenon in Ireland, with a large increase following the signing of the EU’s Accession Treaty in May 2004. A very large proportion of non-nationals are East European. The trend has implications in terms of survey implementation, specifically the need for foreign-language versions of questionnaires and for translators in the field.

Response rates in the pilot and dress rehearsal phases for the Infant Cohort were lower among families in which the marital status of the Study Children’s guardian (as recorded in the Child Benefit Register) was other than ‘married’. Table 2.3 outlines response rates in the dress rehearsal classified according to marital status – the latter as recorded in the Child Benefit Register rather than in the course of the survey itself. It is clear that response in the non-marital categories was lower than in the ‘married’ group.

Table 2.3: Response rates in dress rehearsal of *Growing Up in Ireland,* May 2008

Marital status of benefit recipient	Per cent successfully participating
Cohabiting	59.1
Divorced / deserted	40.0
Legally separated	25.0
Married	69.2
Single (incl. widowed)	54.5

To address lower response in these smaller (but highly policy-relevant) sub-groups, respondents from the non-marital categories were slightly oversampled to ensure an adequate absolute number for analysis in each category. Table 2.4 summarises the percentage breakdown of the overall population of relevant births over the seven months of sampling, along with the aggregate *target* sample selected according to marital status of benefit recipient. The figures illustrate the extent of over-sampling in non-marital categories and under-sampling (to the extent of 6.1 percentage points) in the married group.

Table 2.4: Comparison of population and target sample distribution, Infant Cohort, Wave 1

Marital status of benefit recipient	Population	Target sample
	Per cent	
Cohabiting	6.6	7.7
Deserted	0.2	0.4
Divorced / legally separated	0.8	1.4
Married	65.2	59.1
Separated	0.9	1.7
Single	25.7	29.0
Unknown	0.4	0.8
Widowed	0.1	0.2

Similarly, with a view to ensuring that non-national infants and their families were represented in adequate numbers in the effective sample, there was a separate supplementary sample of 700 non-national children. The lower recruitment of non-nationals was linked to contact difficulties and language problems. Families classified as 'non-national' in the Child Benefit Register appear to have been residentially more mobile, with lower contact rates than for their domestically born counterparts.

2.5 SEASONALITY OF BIRTH

As noted above, children in the Infant Cohort were born between 1st December 2007 and 30th June 2008. The Study Team was aware of the potential seasonal effects on child outcomes linked to month of birth. This was addressed in a discussion paper prepared for the Project Team and first submitted in January 2008.[8] That paper reviewed the current national and international literature in this area and, in particular, the likely impact of seasonality of birth on child outcomes. Although research findings in this area are inconsistent, there have been suggestions of an association between seasonality of birth and many aspects of development, social adaptation, and physical, psychiatric and neurological disorders. Examples include height and weight (e.g. Henneberg & Louw, 1990; Shephard et al. 1979), left-handedness (e.g. Martin & Jones, 1999), shyness (e.g. Gortmaker, Kagan, Caspi & Silva, 1997), novelty-seeking (e.g. Chotai, Forsgren, Nilsson & Adolfsson, 2001; Chotai, Jonasson, Hagglof & Adolfsson, 2002), autism (e.g. Bolton, Pickles, Harrington, Macdonald & Rutter, 1992; Ticher, Ring, Barak, Elizur & Weizman, 1996), diabetes (e.g. Samuelsson & Ludvigsson, 2001), bipolar disorder (e.g. Torrey, Miller, Rawlings & Yoken, 1997), and schizophrenia (e.g. Davies, Welham, Chant, Torrey & McGrath, 2003; Tochigi, Okazaki, Kato & Sasaki, 2004).

The impact of birth seasonality was investigated with regard to a variety of sensorimotor, cognitive, affective and behavioural outcomes. Although exploring seasonal birth patterns could serve to clarify the etiological bases of many disorders, no hypotheses regarding the causes of observed trends are conclusive. While some studies document season-of-birth patterns and support such a link, others provide conflicting evidence or fail to replicate findings.

On balance, it was felt that seasonality is not a major determinant of child outcomes. Where significant links are noted, effect sizes are often small and other factors may have greater predictive strength. For example, although Chodick et al. (2007) found that birth season influenced birth weight, they acknowledged that the magnitude of this effect was small relative to other factors examined such as maternal diabetes.

A final point in the paper related to the usefulness of considering or examining seasonality effects in today's developed societies. Odent (2005) suggests that season-of-birth effects may be decreasing. Year-round access to supermarkets removes concerns about food variety or supply; artificial lighting interferes with photoperiod, or seasonally linked cycles of light and darkness, and heating/air-conditioning systems can override the outdoor temperature. For many people in countries like Ireland, which has seen a substantial reduction in the importance of agriculture over the last two decades, life is no longer influenced to the same extent by the seasons.

---

[8] See 'A Note on Seasonality of Birth and its Implications for Sample Design in the Infant Cohort', note submitted to Project Team, January 2008 and subsequently in re-draft.

On the basis of the literature reviewed in this area and the mixed findings from it, it was decided to sample over the reference period December 2007 to June 2008.

2.6 RE-WEIGHTING THE DATA

All sample survey data should be re-weighted or statistically adjusted prior to analysis to ensure that the structure of the completed sample along key dimensions is in line with the population from which it has been selected. By statistically re-weighting the data, one can compensate for any imbalances in sample design (differential selection probabilities) and response patterns.

The sample weights for the first phase of the nine-month cohort of ***Growing Up in Ireland*** were constructed by adjusting the distribution of the sample to known population figures. The population distributions were derived from two sources. The first was special tabulations prepared by the Central Statistics Office detailing the number and characteristics of infants (aged less than one year old) and their families. These were extracted from the 2006 Census of Population, the most up-to-date and comprehensive source of information on the distribution of children in Ireland. Given the way the information is recorded in the Census of Population, the breakdown of infants according to their characteristics is based on those aged less than one year. It is not possible to extract figures in respect of those aged nine months of age on the night of the census. There are likely to be, at most, minimal differences in the structural composition of infants aged less than one year as compared with those aged nine-months.

The second source was the Child Benefit Register from which the sample was drawn. The 73,662 children born in calendar year 2008 were taken as the population to which the sample was statistically weighted and grossed. This provided the total figure to which the grossed sample was calibrated.

The system used for generating the sample weights was based on a minimum information loss algorithm, which ensured that the distribution of cases in the completed sample matched a set of control totals for the population. It is based on an iterative approach to the fitting of column marginals from the completed sample to those of the population as a whole. The program used for generating the weights is known as GROSS. It was developed for the ESRI in 1996[9] and has been used on all survey work carried out by the ESRI since that time. Using this approach ensures that the structure of the completed sample replicated the overall population of the nine-month-olds in the country when fieldwork took place.

The child was the unit used in the weighting system. The characteristics of their family were assigned to each child in the sample. Eleven main characteristics were used in the generation of the weights and grossing factors, as outlined and defined in Table 2.5 below. Variables 1 to 8 were derived from the 2006 Census of Population, and variables 9 to 11 from the Child Benefit Register.

---

[9] This was developed by Johanna Gomulka, London School of Economics. See, for example, Gomulka, J., 1992. ‘Grossing-Up Revisited’, in R. Hancock and H. Sutherland (Eds.), *Microsimulation Models for Public Policy Analysis: New Frontiers*, STICERD Occasional Paper 17, LSE, and Gomulka, J., 1994. ‘Grossing Up: A Note on Calculating Household Weights from Family Composition Totals’. University of Cambridge, Department of Economics, Microsimulation Unit Research Note MU/RN/4, March 1994.

Table 2.5: Main variables used in statistically adjusting the nine-month cohort

1. **Family Structure** – 12 categories based on lone or two-parent family combined with the number of persons (not children) in the family unit. This gives a classification based on cohabiting couple, married couple and one-parent families, along with the number of persons in their family.
2. **Mother's Age** – five categories of mother’s age, ranging from ’25 years or less’ to ‘41 years or more’.
3. **Mother's Principal Economic Status (PES**) – five categories of mother’s work situation, ranging from ‘working for payment or profit’ to ‘looking after the home’.
4. **Father's Principal Economic Status (PES)** – six categories of father’s work situation, ranging from ‘working for payment or profit’ to ‘father not resident’.
5. **Family's Social Class** – seven categories of family’s social class ranging from ‘professional workers’ to ‘family validly has no class code’. Mother and father’s social class were derived from current or most recent occupation (if currently unemployed or retired). A category was included for those who validly do not have a social class classification because they have never worked outside the home. When the Social Class of father and mother have been assigned, family social class is then based on the higher of the two. This is a standard way to assign collective family social class and is referred to as the ‘dominance’ criterion.
6. **Mother's Education** – 13 categories of mother’s highest level of educational attainment ranging from ‘no formal education’ to ‘doctorate’.
7. **Household Tenure** – five categories of the household’s tenure of their accommodation, ranging from ‘owner occupier, with or without a loan’ to ‘occupied free of rent’.
8. **Region / Child's Gender** – 16 categories summarising the geographical location of the child, with separate categories for boys and girls. The region categories range from ‘border’ to ‘west’.
9. **Mother's Marital Status** – eight categories of mother’s marital status at the time of the birth of the child, ranging from ‘cohabiting’ to ‘widowed’.
10. **Mother's Nationality** – 13 categories of the mother’s nationality, ranging from ‘Ireland’ to ‘other’.
11. **Mother's Residency Status** – nine categories of mother’s residency status, ranging from ‘other’ to ‘work permit holder’.

Table 2.6 shows the breakdown of the population, the unweighted sample and the weighted sample by each of the variables used in the statistical adjustment:

- Column A gives the estimated number of children in each group for each of the 11 variables used. Each sums to 73,663, the total population.
- Column B gives the corresponding percentage breakdown of the nine-month-old population. For example, 7.7 per cent of infants aged less than one year were in families with a cohabiting couple with three persons; 4.6 per cent in families with a cohabiting couple with four persons, and so on.
- Column C gives the total number of children in each group for each of the 11 variables in the completed sample (a total of 11,134).
- Column D presents the corresponding breakdown for the unweighted sample.

Comparison of Columns D and A gives an indication of the extent to which the statistically unadjusted or unweighted sample represents the population. In general, one can see that the unweighted sample is very representative. As one would expect, the sample is underrepresented in terms of lone parents (who are characteristically more difficult to access and recruit into sample surveys) and mothers in lower educational categories (again, in line with what one would expect in a survey of this sort). Overall, however, the sample is very well balanced relative to the population across the variable domains outlined in the table.

- Column E in the table gives the percentage breakdown of the weighted or statistically adjusted sample. A comparison of this column with Column B shows that the weighting procedure has adjusted the sample to make it virtually identical with the structure of the population in respect of all 99 variables used in the re-weighting scheme.

Table 2.6: Breakdown of (i) population of nine-month-olds, (ii) unweighted sample and (ii) weighted sample, according to child and family characteristics

Characteristic variable	(i) Population		(ii) Unweighted sample		(iii) Weighted sample
	No of Children	% of Children	No of Children	% of Children	% of Children
	A	B	C	D	E
1. Family Structure					
Cohabiting couple with children, 3 persons	5,701	7.7	1,014	9.1	7.9
Cohabiting couple with children, 4 persons	3,378	4.6	674	6.1	4.7
Cohabiting couple with children, 5 persons	1,181	1.6	301	2.7	1.6
Cohabiting couple with children, 6 persons	410	0.6	122	1.1	0.6
Cohabiting couple with children, 7 persons	198	0.3	84	0.8	0.3
Husband and wife with children, 3 Persons	16,552	22.5	2,396	21.5	22.7
Husband and wife with children, 4 persons	18,021	24.5	2,673	24.0	24.7
Husband and wife with children, 5 persons	10,942	14.9	1,570	14.1	15.1
Husband and wife with children, 6 persons	3,933	5.3	665	6.0	5.4
Husband and wife with children, 7 persons	1,706	2.3	277	2.5	2.4
Lone parent with children, 2 or 3 or 4 persons	10,686	14.5	969	8.7	13.4
Lone parent with children, 5 or 6 or 7 persons	953	1.3	389	3.5	1.3
2. Mother's Age					
Mother, 25 yrs or less	11,629	15.8	1,598	14.4	15.2
Mother, 26-30 years	17,320	23.5	2,678	24.1	23.6
Mother, 31-35 yrs	26,619	36.1	3,961	35.6	36.4
Mother, 36-40 yrs	15,036	20.4	2,448	22.0	20.6
Mother, 41 yrs or more	3,058	4.2	449	4.0	4.2
3. Mother's Principal Economic Status (PES)					
Mother, working for payment or profit	41,151	55.9	6,381	57.3	56.1
Mother, looking for first regular job or unemployed	4,592	6.2	365	3.3	5.5
Mother, student or pupil	1,124	1.5	227	2.0	1.6
Mother, looking after home/family	24,617	33.4	4,042	36.3	35.8
Mother, other PES	2,178	3.0	119	1.1	1.1
4.Father's Principal Economic Status (PES)					
Father, working for payment or profit	55,875	75.9	8,500	76.3	76.8

Father, looking for first regular job or unemployed	3,829	5.2	885	7.9	5.3
Father, student or pupil	449	0.6	84	0.8	0.6
Father, looking after home/family	905	1.2	75	0.7	1.2
Father, other PES	1,482	2.0	232	2.1	1.3
Father, other (lone mothers – father not resident)	11,121	15.1	1,358	12.2	14.8
5.Family's Social Class					
Family, professional workers	9,498	12.9	2,036	18.3	13.1
Family, managerial and technical	25,612	34.8	3,394	30.5	34.9
Family, non-manual	13,606	18.5	1,843	16.6	18.2
Family, skilled manual	11,115	15.1	1,580	14.2	15.1
Family, semi-skilled	5,711	7.8	828	7.4	7.6
Family, unskilled	1,592	2.2	191	1.7	2.1
Family, family validly has no class code	6,528	8.9	1,262	11.3	9.0
6. Mother's Education					
Mother, no formal education	142	0.2	37	0.3	0.2
Mother, primary education	2,647	3.6	244	2.2	3.4
Mother, lower secondary	10,677	14.5	1,023	9.2	14.0
Mother, Leaving Cert.	18,686	25.4	2,142	19.2	25.3
Mother, technical or vocational	2,931	4.0	989	8.9	4.1
Mother, technical, vocational and Leaving Cert.	2,943	4.0	509	4.6	4.1
Mother, non-degree	14,469	19.6	2,159	19.4	19.9
Mother, primary degree	6,208	8.4	1,516	13.6	8.6
Mother, professional qualification (degree status)	2,424	3.3	448	4.0	3.3
Mother, both degree and professional qualification	4,052	5.5	570	5.1	5.6
Mother, postgraduate certificate or diploma	4,994	6.8	640	5.7	6.9
Mother, postgraduate degree	3,080	4.2	768	6.9	4.2
Mother, Doctorate (PhD)	409	0.6	89	0.8	0.6
7. Household Tenure					
Owner occupied with or without loan	52,979	71.9	7,427	66.7	72.5
Being purchased from a local authority	888	1.2	48	0.4	1.0
Rented from a local authority	6,274	8.5	763	6.9	8.2
Rented from a voluntary body or private market	12,683	17.2	2,695	24.2	17.2
Occupied free of rent	839	1.1	201	1.8	1.1
8. Region / Child's Gender					
Border – boys	4,355	5.9	614	5.5	5.9
Dublin – boys	10,021	13.6	1,328	11.9	13.6
Mid-East – boys	4,917	6.7	784	7.0	6.7
Midland – boys	2,386	3.2	382	3.4	3.2
Mid-West – boys	3,177	4.3	597	5.4	4.4
South-East – boys	4,158	5.6	589	5.3	5.6
South-West – boys	5,180	7.0	810	7.3	7.1
West – boys	3,538	4.8	575	5.2	4.9
Border – girls	3,970	5.4	589	5.3	5.3
Dublin – girls	9,603	13.0	1,279	11.5	12.8
Mid-East – girls	4,787	6.5	737	6.6	6.5
Midland – girls	2,207	3.0	355	3.2	3.0
Mid-West – girls	2,973	4.0	534	4.8	4.1

South-East – girls	3,920	5.3	580	5.2	5.3
South-West – girls	5,104	6.9	833	7.5	7.0
West – girls	3,365	4.6	548	4.9	4.6
9. Mother's Marital Status					
Mother, cohabiting	5,161	7.0	706	6.3	6.9
Mother, deserted	148	0.2	19	0.2	0.2
Mother, divorced	546	0.7	104	0.9	0.7
Mother, married	48,932	66.4	7,556	67.9	66.6
Mother, separated	789	1.1	90	0.8	1.1
Mother, single	17,673	24.0	2,593	23.3	24.0
Mother, unknown	285	0.4	53	0.5	0.4
Mother, widowed	128	0.2	13	0.1	0.2
10. Mother's Nationality					
Mother, Ireland	55,029	74.7	8,156	73.3	74.5
Mother, Britain	2,653	3.6	429	3.9	3.7
Mother, Western Europe	5,604	7.6	920	8.3	7.7
Mother, Eastern Europe	3,113	4.2	492	4.4	4.3
Mother, Africa	2,196	3.0	366	3.3	3.0
Mother, Pacific	836	1.1	126	1.1	1.1
Mother, Middle East	120	0.2	22	0.2	0.2
Mother, North America	348	0.5	64	0.6	0.5
Mother, South America	229	0.3	51	0.5	0.3
Mother, India	1,203	1.6	160	1.4	1.6
Mother, Australia / New Zealand	146	0.2	31	0.3	0.2
Mother, China	425	0.6	98	0.9	0.6
Mother, Other	1,760	2.4	219	2.0	2.4
11. Mother's Residency Status					
Mother, other	3,146	4.3	530	4.8	4.3
Mother, asylum seeker	1,059	1.4	191	1.7	1.5
Mother, EU – other	180	0.2	26	0.2	0.2
Mother, EU national	3,816	5.2	537	4.8	5.2
Mother, EU resident	6,727	9.1	1,131	10.2	9.2
Mother, Irish national	51,863	70.4	7,601	68.3	70.2
Mother, residency granted	2,885	3.9	443	4.0	3.9
Mother, unverified	2,981	4.0	506	4.5	4.1
Mother, work permit holder	1,005	1.4	169	1.5	1.4

Chapter 3

INPUT TO INSTRUMENTS

In this chapter we describe the various groups of experts and others who have contributed to the development of the instruments and procedures used in the Infant Cohort of ***Growing Up in Ireland***, and the processes by which that input was received. The groups involved include the Scientific and Policy Advisory Committee (SPAC), members of the Delphi process panel, the expert panels and the stakeholder groups. We also consider the other longitudinal studies from which various items have been drawn. This input, and particularly that obtained from the Scientific and Policy Advisory Committee, was important to ensure that relevant policy-oriented issues would be adequately covered in the instrumentation for the study.

3.1 SCIENTIFIC AND POLICY ADVISORY COMMITTEE (SPAC)

The SPAC is a non-executive group that provided scientific and policy advice on the content and best practice of the design, implementation and roll-out of the study. Its 10 members were selected from a broad range of backgrounds in areas related to children and large-scale national longitudinal surveys – both substantive and technical. Members were selected on the basis of their expertise in:

- Policy and policy formation as it affects children and families in Ireland
- The substantive area of childhood and research into issues relating to childhood and children
- Technical and statistical areas of particular relevance to the operation of a complex longitudinal study comparable to ***Growing Up in Ireland***

Committee members have been drawn from a number of specialist areas, as follows:

- Policy specialist, Department of Social Protection (formerly Social and Family Affairs)
- Policy specialist, Department of Education and Skills (formerly Education and Science)
- Policy specialist, Department of Health and Children
- Senior policy analyst, National Economic and Social Forum
- Senior methodologist, quantitative surveys
- Senior legal expert, child and family issues, and academic
- Senior epidemiologist, public health specialist and academic
- Senior health promotion researcher and academic
- Senior social policy analyst and academic
- Senior educational researcher and academic
- Senior researcher, child and family support, and academic

The committee is chaired by the Co-Directors of the Study Team, with other members of the Study Team Management Group in attendance. The composition of SPAC reflects its primary objective of providing independent policy, methodological and substantive input to the development and implementation of the project.

The SPAC meets approximately three to four times per year and has the following terms of reference:

- Review and advise on protocols and procedures in the context of best international practice for large-scale longitudinal projects similar to ***Growing Up in Ireland***
- Advise on relevant policy and research issues as they relate to children and their families in the changing Ireland of the 21st century

- Review and advise on draft questionnaires and other instruments to ensure that these reflect the policy and substantive issues identified as being of importance to the study
- Review summary results and their interpretation (in policy and substantive terms) as they emerge from the study

The SPAC gave extensive feedback on the instrumentation for the Infant Cohort, the experience of the pilot for that cohort, and the qualitative work to be carried out with the children and their families.

3.2 DELPHI PROCESS

A further layer of consultation in the development of the design and instrumentation used for the nine-month cohort involved a Delphi process.

A two-round Delphi process was rolled out as part of the first wave of data collection. A total of 95 experts were included in the panel for the first round, which secured a 73 per cent response rate. All of the respondents to the first wave were included in the second wave of the study, which secured an 81 per cent response rate. Valuable information on the relative importance of questions in the domains of pregnancy, labour and delivery, child's health and development, parenting/family context, childcare, community/neighbourhood and socio-demographic characteristics was collected from the Delphi panel.

Topics listed in the questionnaire sent to the members of the Delphi panel were included after a review of the relevant literature and an examination of other questionnaires used in similar child studies. All topics deemed to be of importance by Delphi respondents were incorporated in the questionnaires. Some of the most important topics identified in the Delphi process were:

- Parental attachment with infant
- Measures of household deprivation
- Chronic illness (child)
- Maternal postnatal depression
- House conditions; crowding; tenure, etc
- Developmental milestones
- Aspirations of parents re. child's education – importance of participation at different levels; retention to senior cycle 2nd level; third level, etc
- Type, nature, history of childcare (e.g. hours in-home, hours centre-based, relationship to carer, etc)
- Total household income from all sources
- Breastfeeding – child breastfed or not, when bottled milk introduced, when stopped breastfeeding, problems encountered, etc
- Current parental stress and mental health
- Healthcare utilisation, GP visits, medication (current and past), vaccination history, special therapies (speech, occupational, physical), hospital stays since birth
- Parental work-life balance
- Measures of family cohesion

A number of other topics were spontaneously raised by Delphi respondents in Round One of the process. These topics were summarised and fed back to all respondents in Round Two, with respondents being asked to rate the importance of these additional topics. The highly rated topics included:

- Mother's mental/emotional health during pregnancy
- Health of baby at birth
- Developmental play
- Immunisation history
- Access to health services
- Literacy level of parents
- Family history of involvement with social work/child protection services
- Non-resident parent: access, custody

These additional topics were also incorporated in the questionnaire.

3.3 EXPERT PANELS

Four expert panels assembled by the Study Team contributed to the design and instrumentation used in ***Growing Up in Ireland***. The four panels are headed by members of the Study Management Team in the position of Theme Director(s). At the time these individuals were as follows:

- Health & Health Policy – Prof. Tom O'Dowd (TCD) and Prof. Richard Layte (ESRI)
- Child Development and Education – Prof. Sheila Greene (TCD)
- Social Context & Social Institutions – Prof. Chris Whelan (ESRI)
- Methodology & Design – Prof. James Williams (ESRI)

The panels of experts are made up of specialists drawn from a wide range of backgrounds, including the following:

Table 3.1: Specialist areas of experts

- Public health and primary care
- Psychology – all aspects
- Poverty, social exclusion and health economics
- Sampling and survey methodology
- Tax, benefits, poverty and deprivation
- Youth research and policy
- Social development and social policy
- Family, gender and the labour market
- Social policy
- Early childhood development
- Educational development
- Family and gender
- Social mobility and the labour market
- Social mobility and educational disadvantage
- Ethics in research – particularly with respect to research with children

- Social economics
- Epidemiology – health behaviours
- Smoking and alcohol consumption
- Diet and nutrition
- Oral health
- Paediatrics
- Child psychiatry
- Exercise and health
- Health psychology
- Diet and nutrition
- Genetic psychiatry
- Family, gender and demography
- Criminology and social psychology
- Health statistics

The expert panels were consulted throughout the development phase of the project and on an ongoing basis. They were initially requested to suggest domains, topics and questions of particular relevance to their specific area of expertise. They were also asked to provide references to other studies that had previously explored these areas or for justification for the inclusion of innovative questions or topics. Draft versions of the questionnaires were sent to the panel members for comment. Based on the experience and results of the infant pilot, the panels of experts were asked for feedback in terms of streamlining the excessively long draft instruments used in the pilot phase.

3.4 STAKEHOLDER GROUPS

Members of the Study Team also met with stakeholder groups. Feedback from these meetings was also incorporated into the development of the instrumentation and the design of the project in general. The Study Team worked closely with the funding bodies and associated Government departments, which include:

- Department (formerly Office of the Minister) of Children and Youth Affairs
- Central Statistics Office
- Department of Education and Skills (formerly Education and Science)
- Department of Social Protection (formerly Social and Family Affairs)

Representatives from these government departments and agencies sit on the Project Team that oversees ***Growing Up in Ireland***. An extremely important part of that group consists of two international advisors who were instrumental in the design, development and implementation of the Longitudinal Study of Australian Children (LSAC) and the National Longitudinal Study of Children and Youth (NLSCY) in Canada.

The interdepartmental Project Team is chaired by the Department of Children and Youth Affairs. The Co-Directors of the study meet on a monthly basis with the full Project Team.

The overall Steering Group for the project involves a further interdepartmental group of senior officials from the Department of Children and Youth Affairs, the Department of Social Protection, the Department of Education and Skills, and the Central Statistics Office. The Co-Directors of the project meet with the Steering Group approximately each quarter, principally for sign-off on significant milestones such as instrument development, pilot and/or dress rehearsal stages. The Steering Group is chaired by the Director of the Department of Children and Youth Affairs.

The input from the funding stakeholders and Project Team was in addition to consultations with other stakeholder groups who gave advice on their own particular areas of interest and expertise. The main objective in meeting with these groups was to secure their overall support for the study and to leverage this support through outreach to their membership bases. These groups included:

- the Health Services Executive (HSE)
- Childminding Ireland
- the Irish Preschool Playgroup Association (IPPA)
- the National Children's Nurseries Association (NCNA)
- the Institute of Community Health Nursing (ICHN)

Contact with the HSE enabled the Study Team to access a nationwide network of relevant local health clinics and health centres as well as public health nurses. An email was sent from head office to all Local Health Managers (LHMs) and Public Health Nurses. Included in this was an overview of the study, with a note highlighting HSE support for it, followed by a request that any assistance needed by the Study Team be considered. This correspondence was also forwarded to other appropriate personnel in relevant disciplines in order to maximise support. Copies of the ***Growing Up in Ireland*** poster were sent to all LHMs for distribution to relevant health clinics and centres in their area.

Meetings with the other groups – Childminding Ireland, the Irish Preschool Playgroup Association (IPPA), the National Children's Nurseries Association (NCNA) and the Institute of Community Health Nursing (ICHN) – were also successful in terms of securing their support for the study. Subsequent to these meetings all four organisations carried articles in their regular members' newsletters and also distributed copies of the ***Growing Up in Ireland*** poster to their members. In terms of input to the study instrumentation, the stakeholder groups made detailed comments on various aspects of the questionnaires – especially with regard to childcare issues that they felt were current and needed to be examined, such as lack of policy commitment to after-school care, lengths of time children spend in childcare, and the lack of regulation in the childcare area in general.

3.5 OTHER LONGITUDINAL STUDIES

In developing the instrumentation, the Study Team tried to synchronise with contemporary longitudinal child cohort studies, both to enable later comparison and to draw on the benefits of including items previously used in other studies. Where items for ***Growing Up in Ireland*** were based on questions used in other studies, sources have been indicated in the text.[10] Some background information on a selection of the main studies is now presented.

3.5.1 MILLENNIUM COHORT STUDY (MCS)

The Millennium Cohort Study is a longitudinal study of 18,819 children born in the UK over 12 months from 1st September 2000 in England and Wales and 1st December 2000 in Scotland and Northern Ireland. The first sweep took place when the children were nine months old, the second at age three years, and further sweeps continue as the children get older.

The study looks at a broad range of issues such as poverty and wealth, and quality of family life. Much of the questionnaire material in ***Growing Up in Ireland*** was modelled on the MCS to allow all-island comparisons. The MCS is implemented by a consortium headed by the Centre for Longitudinal Studies at the University of London.

3.5.2 GROWING UP IN AUSTRALIA (LSAC)

Growing Up in Australia (Longitudinal Study of Australian Children) is a longitudinal study of children, with two nationally representative cohorts of 5,000 children each, one aged under 12 months in 2003/4 and the other aged four years in the same year. The younger cohort will be followed until age 14 years and the older cohort until age 18 years. The study has a wide multi-disciplinary brief, with a heavy emphasis on policy relevance. Biennial personal visits to households are interspersed with mailings of self-complete questionnaires (0.5 waves). Growing Up in Australia is co-ordinated by the Australian Institute of Family Studies in Melbourne.

3.5.3 NATIONAL LONGITUDINAL SURVEY OF CHILDREN AND YOUTH (NLSCY)

The National Longitudinal Survey of Children and Youth (NLSCY) is a longitudinal study of Canadian children from birth to early adulthood. The study's brief is to collect information on factors affecting a child's social, emotional and behavioural development and to monitor the impact of these factors over time. Data are collected every two years, starting in 1994 with a national sample of children aged 0-11 years. Further cohorts have been added at certain cycles. The study is run by Statistics Canada.

---

[10] We would point out that many items and questions have been adapted by numerous child cohort studies. Throughout Chapters 6 and 7, we generally cite the main source of each item. The Study Team is aware that in many instances the cohort study quoted may not have been the original developer of the item. Contact was established with all of the main sources to discuss our use of items from the relevant questionnaires.

3.5.4 EARLY CHILDHOOD LONGITUDINAL STUDY (ECLS)

The Early Childhood Longitudinal Study is an American study of the early years of child development, with two cohorts. The birth cohort has a nationally representative sample of 14,000 born in 2001, who were followed until they entered kindergarten. It was "designed to provide decision-makers, researchers, child care providers, teachers, and parents with detailed information about children's early life experiences". Data were first collected from these children at nine months.

The kindergarten cohort focuses on the kindergarten class of 1998/9 and followed these 21,000 children until they reached middle-school (8th grade) in 2007. The study focuses on early school experiences and interaction with individual, family, school and community influences. The study is run by the National Centre of Education Statistics, Institute of Education Sciences at the US Department of Education.

3.5.5 AVON LONGITUDINAL STUDY OF PARENTS AND CHILDREN (ALSPAC)

The Avon Longitudinal Study of Parents and Children focuses mainly on health and development. The stated main goal is "to understand the ways in which the physical and social environments interact over time with the genetic inheritance to affect the child's health, behaviour and development". Data collection from questionnaires is supplemented with biological samples (hair, etc), DNA samples, access to medical records and direct assessments. From an initial sample of 14,541 pregnancies, there were 13,971 infants at age 12 months. All pregnant mothers were resident in the Avon area of south-west England, with an expected delivery date between 1 April 1991 and 31 December 1992. Self-complete questionnaires were sent to mothers every few months in the early years, and additional questionnaires to the child him/herself, starting in the 65th month. In later childhood, questionnaires were sent quarterly and children were asked to present for assessment every year. The study plans to continue with the children into adulthood. ALSPAC is run by a dedicated team based at the University of Bristol.

3.5.6 GROWING UP IN SCOTLAND (GUS)

Growing Up in Scotland (GUS) is a longitudinal study of children in Scotland that grew out of a longitudinal scoping study commissioned by the then Scottish Executive Education Department (SEED) in 2000, which highlighted a lack of data relating to two important developmental phases in children's lives – the early years and the transition into adolescence.

To accommodate a representative random sample of children, 130 areas across Scotland were selected at random. Each area was controlled to give an average of 57 births. A total of 8,000 children were enrolled into the study in 2005-06 (5,000 babies ~10 months and 3,000 toddlers ~34 months). The focus of interest in the study is the characteristics, circumstances and experiences of Scotland's children in their early years and subsequently through to adolescence. The main areas being monitored and evaluated are: childcare, education, social work, health, and social inclusion.

Chapter 4

ETHICAL CONSIDERATIONS

The importance of ethics in research is receiving wider acknowledgement than ever before. In a study of children and families, it is even more of a priority. The Study Team identified a number of ethical issues and put procedures in place to deal with them. The Study Team also had to be mindful of its obligations under the relevant Acts in Irish legislation. The current chapter summarises the pertinent parts of legislation and describes the way in which our ethical guidelines were put into practice. We finish with a short description of the role of the Research Ethics Committee. The primary concern at all times was the protection of child participants in the study. Procedures relating to child protection were informed by the *Children First Guidelines* (Department of Health and Children, 1999). All interviewers, as well as other staff working on ***Growing Up in Ireland***, were security-vetted by An Garda Síochána (the Irish police service). A full module on ethics was included in the interviewers' training course.

4.1 RELEVANT ACTS

Three Acts are of particular relevance to this study: the Data Protection Acts 1988 and 2003, and the Statistics Act 1993.

4.1.1 DATA PROTECTION ACTS 1988, 2003

Data protection concerns the integrity, protection, storage and use of information collected from and about individuals. Under the Data Protection Acts 1988 and 2003, the Study Team undertook the following obligations:

1. *Fair obtaining and processing:* Respondents must be fully aware of the identity of the persons who are collecting the information, the use to which it will be put, and the purpose for which or bodies to which it will be disclosed. (For further discussion, see Section 4.2.1 on informed consent.).
2. *Specifying the purpose:* Information may not be kept about people unless it is held for a specific, lawful and clearly stated purpose.
3. *Further processing of personal information:* If personal information is obtained for a particular purpose, the data may not be used for any other purpose or divulged to a third party, except in ways that are compatible with the specified purpose.
4. *Security of personal data:* Stringent procedures are implemented in both the ESRI and TCD to ensure that the security of computers and data is preserved at all times.
5. *Accurate and up to date*: Personal information which is kept must be accurate and up to date.
6. *Adequate, relevant and not excessive*: The data shall be adequate, relevant and not excessive in relation to the purpose or purposes for which they were collected or are processed.
7. *Protection of personal data*: The data shall not be kept for longer than is necessary for that purpose or purposes. (For further discussion, see Section 4.2.4 on confidentiality.)
8. *Right of access to personal data*: Any individual about whom information is kept has a right to see a copy of the data, a description of the purposes for which the data are being held, and a description of those to whom the data may be disclosed. (For further discussion, see Section 4.2.4 on confidentiality).

4.1.2 STATISTICS ACT 1993

Growing Up in Ireland is being conducted within the framework of the Statistics Act 1993, the legislation underpinning the work of the Central Statistics Office (CSO). The study has been brought under the scope of the Act in accordance with Section 11, whereby the CSO is permitted to make arrangements with other public authorities for the conduct of statistical inquiries. While the Act facilitates access to certain data sources for the purposes of the study, the most important implication is that it provides a strong legal basis for the protection of *all* information collected against unlawful disclosure. Under the Act, all information collected must be treated as strictly confidential and used for statistical purposes only. All persons working on the study are appointed Officers of Statistics. As such they are legally obliged not to disclose, except for the purposes of the study, any matter which comes to their knowledge relating to any person, family, household or undertaking in the course of their statistical work.

Results of the study will be published in aggregate form and all necessary steps will be taken to ensure that details relating to an identifiable person are not inadvertently divulged.

4.2 PRACTICAL APPLICATION OF ETHICAL CONSIDERATIONS

4.2.1 INFORMED CONSENT

Detailed information sheets were prepared for all potential participants in the study, including parents, non-resident parents, and regular carers. These sheets described the type of information that would be gathered, what would be involved for participants, the longitudinal nature of the study, as well as details on the researchers and funding bodies. All participants were informed of the voluntary nature of participation in the study and of their right to refuse to answer any questions that they did not wish to answer. Signed consent was obtained from a parent/guardian before any data were collected.

4.2.2 REPORTING CONCERNS

Interviewers were instructed to report to the Study Team – on an Incident Report Form – all events or observations that caused them concern during the course of their work, especially with regard to the protection of children or other vulnerable persons. All reported incidents were considered by, and acted upon as necessary, by the Project Directors. Interviewers were provided with an out-of-hours emergency phone number to contact a Project Director if they had serious concerns.

4.2.3 INTERVIEWERS BEING ALONE WITH CHILDREN

It was stressed to interviewers during training that they must not be alone with the Study Child or any other child while conducting the fieldwork, even for a few minutes. This guideline was also clearly stated in the information sheet provided to parents in advance of their consent to take part in the study. Interviewers were encouraged to suspend an interview and return at a later date or time if a parent/guardian or other adult found it necessary to leave an interviewer alone with a child – even for a short period. Interviewers were allowed limited physical contact with the infant; for example, to facilitate the main caregiver when carrying out the length, weight and head circumference measurements.

4.2.4 CONFIDENTIALITY

All interviewers and other staff working on the project were appointed as Officers of Statistics by the Central Statistics Office. This imposed a legal obligation to maintain the confidentiality of all information they received in the course of the study. Under the Statistics Act 1993 (see Section 4.1.2 above), a breach of confidentiality is a criminal offence. At interviewer training it was emphasised that not all breaches of confidentiality may be malicious in nature. Many can arise through thoughtless or careless comments made to third parties after the interview has been completed. In situations in which an interviewer was known to the study family, the family was re-allocated to an alternative member of the field staff working on the project.

Access to the non-anonymised datasets is severely restricted and great care will be taken to remove any identifying information from the anonymised dataset. No government department or agency will have access to identifiable information. The following steps have been taken to ensure the confidentiality of information given as part of ***Growing Up in Ireland***:

- Use of numerical codes on all electronic and paper questionnaires
- Use of passwords and user names on laptops
- 'Strip-down' of laptops to prevent inadvertent connection to a wireless network
- Encryption of all electronic information transferred by interviewers to a dedicated secure server in the ESRI
- Separate mailings of paper questionnaires and Work Assignment Sheets – the latter containing contact information
- Operation under the Statistics Act (1993) to ensure that the information obtained can only be used for purposes of statistical compilation and analysis
- Restricting the access of respondents to only the information that they themselves have provided – no individual is allowed to see another person's answers, even if that person has recorded details in respect of the individual in question; for example, neither Study Children nor their parents have access to what a teacher has recorded about a pupil

4.2.5 AVOIDANCE OF EMBARRASSMENT OR DISTRESS

Proactively avoiding the possibility of causing embarrassment or distress is intrinsically linked to the maintenance of confidentiality both within and outside the home. Within the home, sensitive questions concerning the marital/parental relationship, etc were self-completed by the respondents on computer rather than being asked aloud by an interviewer (unless requested). Interviewers were prohibited from getting involved in any family issues or giving advice, regardless of any qualifications or experience they had in such matters. Interviewers were, however, provided with a list of helpline numbers for a variety of agencies, which they could pass on to respondents if asked.

4.3 ETHICS COMMITTEE

The quantitative phase of the nine-month cohort was carried out under ethical approval granted by a dedicated Research Ethics Committee set up by the Department of Health and Children. The pilot and main studies underwent separate review procedures. Reports on the pilot study were submitted promptly to the committee. The committee was very active in its consideration of all of the materials and procedures used in ***Growing Up in Ireland***. For example, they made substantial contributions to the content and layout of information sheets, as well as making recommendations for the instruments themselves. The Study Team met with the Ethics Committee to discuss the project on several occasions, and all recommendations were acted upon before a final version of all materials and procedures was agreed and implemented.

Chapter 5

OVERVIEW OF INSTRUMENTS AND PROCEDURES

This chapter provides an overview of general procedures, instruments and respondents. Fieldwork in the home is summarised in Section 5.1, while procedures for laptop administration are discussed in Sections 5.2 and 5.3. Special procedures to facilitate participation by respondents with physical or learning disability, literacy or language issues are described in Sections 5.4 and 5.5. Minimal details on instruments are provided in this chapter as its purpose is to provide a broad overview of the various levels of instrumentation and their administration before details of substantive content are given in subsequent chapters; cross-references are provided to more detailed descriptions elsewhere in this report, where relevant.

5.1 HOUSEHOLD-BASED FIELDWORK AND PARTICIPATION OF THE FAMILY

A letter of introduction was sent to the family by the interviewer a few days in advance of their first personal contact with the family. Telephone numbers were not provided to interviewers, who were instructed to make initial visits to households in person.

The informants in the home were in all cases the Primary Caregiver (usually the mother) and, where relevant, the resident spouse/partner of the Primary Caregiver – who was, most often but not necessarily, the father of the Study Child. The main interviews with all household respondents were administered by Computer-Assisted Personal Interview (CAPI). More sensitive questions were administered to respondents on a CASI (Computer-Assisted Self Interview) basis. These are discussed further in Sections 5.4 and 5.5.

Interviewer training emphasised the need to establish good rapport with the respondents. Interviewers were instructed to try to gain the confidence of the Study Child's main caregiver in the first instance, and develop a rapport with her/him before commencing the formal interview process. Interviewers were also instructed to be as accurate as possible in the estimated length of time of their interview with respondents when recruiting them into the project.

The following is a complete list of all instruments associated with the household:

1* Primary Caregiver Questionnaire – main and supplementary sections
2 Secondary Caregiver Questionnaire – main and supplementary sections
3 Questionnaire modules for Twins and Triplets
4* Follow-up information
5* Height and weight of Primary and Secondary Caregiver (where relevant)
6* Length, weight and head circumference of infant
7* GPS co-ordinates
8* Work Assignment Sheet
9^ Non-resident parent questionnaire
10.1^ Carer (home-based) questionnaire
10.2^ Carer (centre-based) questionnaire

** Core item, completed for all households.*
^ Items 9, 10.1 and 10.2 were issued by Study Team on a postal basis and self-completed by non-resident parent/regular carer, where relevant.

Detailed descriptions of all instruments are provided in the following chapters:

Chapter 6 – Primary and Secondary Caregiver Instruments
Chapter 7 – Other Instruments
Chapter 8 – Scales and Standard Measures

5.2 COMPUTER-ASSISTED PERSONAL INTERVIEW (CAPI) PROCEDURE

Interviewers administered the main questionnaires using a laptop (Model: IBM Thinkpad, Lenovo X60). Each question appeared on the computer screen for the interviewer to read out, with space for an answer option to be recorded. Answers are principally recorded by keying in the number associated with the selected option. Answers can also be recorded using an integral mouse or by entering free text where appropriate. All questionnaires were programmed using Blaise software. This program facilitated the routing of questions (skipping non-applicable questions, etc) and the inclusion of hard and soft cross-variable and range checks to alert interviewers to improbable or impossible answers or conflicts between answers.

Respondents were shown an extensive range of prompt cards with the available answer options. These were particularly important for longer lists of options or items in a scale. Interviews could be suspended and returned to at a later time according to the requirements of the respondent (for example, if an unexpected visitor called to the house during the interview). Completed interviews were outputted as ASCII files from Blaise, encrypted and uploaded to a dedicated server in the ESRI by the interviewers across the phone line. They were then de-crypted and rebuilt to produce an SPSS file for preliminary analysis of the data. As well as encryption of the data in transfer, all the laptops were protected with 256-bit encryption.

5.3 COMPUTER-ASSISTED SELF INTERVIEW (CASI) PROCEDURE

A major change from the first phase of the nine-year cohort in ***Growing Up in Ireland*** was the use of a CASI format for completing the adult sensitive supplements. This involved respondents self-completing the questionnaire on the laptop rather than on paper.[11] Self-administered questionnaires (or parts of questionnaires) can be particularly helpful in collecting data about sensitive subjects, and CASI interview techniques afford a number of potential benefits over traditional paper-and-pencil ones. For complex surveys, computerised assessment can reduce respondent burden through the use of automatic branching, range rules and consistency checks (Schroder, Carey & Vanable, 2003). Compared to pencil and paper, the use of CASI questionnaires can enhance the perception that information remains confidential, because individual responses are not easily viewed by interviewers. As a result, CASI may also reduce participants' embarrassment and increase their willingness to disclose sensitive information (Kurth et al. 2001).

In ***Growing Up in Ireland*** the interviewer handed the computer to the respondent for the specific section in question and assisted the respondent in completing a number of example questions. Respondents then took control of the laptop, read the questions on screen, and recorded their answers, thus maintaining the confidentiality of their data. Once they were finished, there was a function enabling them to ‘lock down’ this section of the questionnaire so that it could not be accessed by anyone other than the Study Team in Head Office. The interviewer did not have access to the completed sensitive sections of the questionnaire. The interviewer remained available at all times throughout the survey to give instructions and assistance.

---

[11] A detailed discussion of the pilot work involved in developing the sensitive questionnaires on a CASI basis is available in a separate publication – see www.growingup.ie

5.4 SPECIAL PROCEDURES

Growing Up in Ireland aims to be as inclusive as possible. Putting special procedures in place to achieve a high level of inclusion was important to achieve the study objectives relating to the description of the lives of Irish children (Objective 1), mapping variation in children’s lives (Objective 5) and providing an evidence base for the creation of policies and services (Objective 9).

5.4.1 DISABILITY

Adults with vision problems were interviewed using CAPI for the main interview and for the sensitive supplement, subject to their agreement. Deaf adults self-completed all questionnaires; their main questionnaires with pen and paper, and their sensitive supplements through CASI.

Every effort was made to maximise the participation of families with learning-disabled or special-needs infants.

5.4.2 LITERACY

Adults with literacy problems were given the option of having the self-complete questionnaire administered by the interviewer. There were two questions on literacy in the main interview for both the Primary and Secondary Caregivers; the responses in some cases alerted the interviewers that they might need to administer the sensitive questionnaire to certain respondents.

5.4.3 OTHER LANGUAGES

Information sheets and questionnaires were available in English and Irish as well as Romanian, Latvian, Lithuanian, Chinese, French and Polish. A translator was provided to households on request. Information sheets were also available in Braille and large font formats.

5.4.4 TWINS AND TRIPLETS

In households where there were nine-month-old twins or triplets, the adult respondents completed one main Primary and Secondary Caregiver interview on CAPI as well as a CAPI interview in respect of one of the twins. They then completed a ‘Twin Module’ for the second child on a Pencil and Paper Interview (PAPI) basis; in the case of triplets, questions relating to the third child were also completed on paper. The latter modules repeated only the child-related questions, this time to be answered in relation to the second twin or triplet, etc. The modules also contained some specific questions on parenting twins, such as identical/fraternal status, age at which differences were noticed, and so on.

The interviewer was instructed to administer the twin modules in all households with nine-month-old twins or triplets, even when their presence was unknown to the Study Team interviewers prior to the visit to the household, subject to agreement from the main caregiver.

5.5 GIFTS TO RESPONDENTS

Small gifts were given as tokens of appreciation for participation in ***Growing Up in Ireland***. For the infant, a soft ball with a rattle and three bibs were given. Interviewers were also provided with a supply of crayons and colouring pencils to give to any siblings who might be upset at being left out of the interview process. Parents/guardians were asked for permission to offer the gifts before they were presented to children. Gifts were offered only after the interviews had been completed.

Chapter 6

PRIMARY AND SECONDARY CAREGIVER INSTRUMENTS

The home component of the study involved personally administered interviews with the parent(s) or guardian(s) of the Study Child. Further information was sought at this stage on contact details for a non-resident parent and/or a carer, for postal contact, if appropriate. The questionnaire used with the Primary Caregiver (usually the mother or lone father of the Study Child) is discussed in detail in this chapter. The questionnaire used with the resident Secondary Caregiver (usually the father and partner of the Study Child's Primary Caregiver) is also described (in brief, as most of the questions are already described in the context of the Primary Caregiver questionnaire). Where no question sources are specified, the questions were developed by ***Growing Up in Ireland***, typically in conjunction with the expert panels (Section 3.3). As noted previously, the main questionnaire was completed using CAPI for both respondents, with sensitive questions being self-completed on a CASI basis.

6.1 PRIMARY CAREGIVER QUESTIONNAIRE

The Primary Caregiver questionnaire consisted of 11 sections, each of which was broken down into modules of questions, covering broad areas of interest. These are described below. The questionnaire is provided in Appendix B.

6.1.1 SECTION A – BACKGROUND INFORMATION

This section captured personal or descriptive demographic and related information in relation to the household.

X1a–X1c Baby's name, gender and date of birth

X1d Presence of a resident spouse or partner

A1–A3 Relationship of respondent to the Study Child – whether the respondent was the legal guardian of the baby and what their relationship to him/her was (e.g. biological, adoptive, step-parent, etc)

A4–A5 Household Composition – This table recorded personal details about each person resident in the household. This information was important for ascertaining family composition and structure, since research suggests different outcomes for children raised in different family forms. For example, children raised in one-parent families or step-families have been shown to have more behavioural problems on average than children raised in intact families with two biological parents (Carlson & Corcoran, 2001; O'Connor & Jenkins, 2000). However, it is also important that these data be explored in conjunction with other relevant information, such as current and previous marital status of the main caregiver and intra-familial relationships (discussed below), to obtain a more accurate view of the family structural variables that influence the child.

A6/A6a/A6b Existence of other biological children living outside the household (full or half siblings of the Study Child) – If there were any, we asked how many and for information on their age(s) and date(s) of birth. This was mostly to establish a more accurate picture of the size of the family as well as the birth order of the Study Child. This is important in the light of research showing that children in larger families often have lower levels of education and that there is, in addition, a separate negative birth-order effect (e.g. Booth & Kee, 2005).

6.1.2 SECTION B – PARENTING, CHILD'S FUNCTIONING AND RELATIONSHIPS

This section focused on the parent or guardian's relationship with the Study Child as well as some aspects of the infant's temperament. It contained two scales: the Quality of Attachment sub-scale from the Maternal Postnatal Attachment Scale (Condon & Corkindale, 1998) and the Infant Characteristics Questionnaire (Bates, Freeland & Lounsbury, 1979).

B1 & B2 **Reaction to separation** – These questions asked about infant behaviours associated with separation anxiety. Reactions to separation and subsequent reunion are often part of assessments on the security of attachment between infant and caregiver. Even though infants a few days old show a preference for their mother's smell over that of other women in experimental conditions, infants do not normally show a marked preference for particular caregivers until they are seven to nine months old (Boris, Aoki & Zeanah, 1999). Between two and seven months, they may interact differently with particular caregivers but do not usually display the marked preference for – or 'separation protest' when parted from – a limited group of caregivers that is seen from the age of nine months onwards.

B3 **Quality of Attachment sub-scale from the Maternal Postnatal Attachment Scale** (Condon & Corkindale, 1998)[12] – This sub-scale (as defined by the scale authors) comprised nine items from the 19 on the full scale. Mothers are asked about their feelings towards their infant and about themselves as parents, such as patience in dealing with the baby and strength of affection for him/her. The number of response categories varies between three and five but all are re-scored to range between one and five, before a total score is calculated. Most mothers report strong feelings of affection for the child even before birth (Boris et al, 1991). A parent must be both willing and able to form an emotional attachment to the child: circumstances such as mental-health problems or dire economic circumstances may impede this ability. Increased quality of mother-infant bonding has been associated with a longer duration of exclusive breastfeeding (Ceriani Cernadas, Noceda, Barrera, Martinez & Garsd, 2003). Quality of attachment in infancy has also been associated with later outcomes in a number of studies. It has been suggested, for example, that disorders in the mother's bonding to her infant may occasionally lead to child abuse and neglect (Brockington, 1996).

B4a & b **Age at which a child knows right from wrong** – This question on whether or not caregivers feel that one-year-olds in general would know right from wrong is based on an item used in the Early Childhood Longitudinal Study. This is an attempt to ascertain whether the parent has an accurate understanding of child development in terms of believing that the young child misbehaves on purpose. Attributions as to the hostile intent of a child's negative behaviour may influence the parent's choice of disciplinary strategy. High-risk and abusive parents are "thought to be more likely to view negative behaviour as being motivated by hostile intent" (Milner, 2003, p. 10).

B4c **Reaction to infant crying** – This question on whether the infant's crying 'gets on the parent's nerves' was adapted from Growing Up in Australia. It was one of a number of questions throughout the questionnaire that related to parenting stress and the Primary Caregiver's reaction to that stress (see also D13, D14 and K1).

B5a–x **Infant Characteristics Questionnaire (ICQ)** (Bates, Freeland & Lounsbury, 1979) – This scale measures the parent/guardian's perception of the child's temperament, especially as to whether the child has an 'easy' or 'difficult' temperament. The ICQ, also used in the National Longitudinal Study of Children and Youth (NLSCY), is discussed in further detail in Section 8.4.1.

---

[12] Secondary Caregivers completed the Quality of Attachment sub-scale in the paternal version of the same measure.

6.1.3 SECTION C – BABY'S DEVELOPMENT

This section focused on the infant's development. It mainly comprised the Ages and Stages Questionnaire.

C1–C70 **Ages and Stages Questionnaire (ASQ)** (Squires, Potter & Bricker, 1999) – An adapted version of the ASQ was used to measure the infant's developmental status. This scale provides one of the key measures of child outcomes at this age. The standardised test covers five domains of ability: communication, gross motor, fine motor, problem-solving and personal-social. See Section 8.4.2 for further details.

CX1 **Talking to baby** – This question was adapted from the Avon Longitudinal Study of Parents and Children (ALSPAC). Mothers' speech with and to the child encourages the acquisition of vocabulary (e.g. Hoff & Naigles, 2002). Hoff (2003) found that observed socio-economic status differences in the growth of two-year-olds' vocabularies were accounted for by the enhanced speech properties of mothers of high socio-economic status (SES) relative to mid-SES mothers.

CX2a & b **Concerns about development** – Parents/guardians were asked an open-ended question on concerns they had about various aspects of their baby's development. A similar question was asked in Growing Up in Australia. A number of papers over the years have supported the validity of parental reports on child development (e.g. Knobloch, Stevens, Malone, Ellison & Risemberg, 1979; Bodnarchuk & Eaton, 2004; Yu, Hey, Doyle, et al.2007), although parental reports for screening should not be considered a replacement for a full assessment by a trained practitioner (Rydz, Srour, Oskoui, Marget, Shiller, Birnbaum, Majnemer & Shevell, 2006).

6.1.4 SECTION D – BABY'S HABITS

This section focused on the infant's sleeping patterns and arrangements. There were also questions on crying and soother use.

D1–D8, D14, D15 **Amount and scheduling of infant's sleep, including amount of sleep achieved by Primary Caregiver** – By nine months, most infants have moved from a sleep pattern where sleep is distributed evenly between day and night to a more adult pattern where most sleep is taken at night. According to a review by Thiedke (2001), the typical nine-month-old sleeps 11 hours at night and three hours during the day. The most common sleep disorders in this age group are night waking and demand for night-time feeding. The age of nine months has been identified as a peak age for night waking (DeLeon & Karraker, 2007, citing Anders, 1994; Nover et al, 1984; Paret, 1983). Coping with infant sleeping problems can have serious negative effects on parents. Research from Growing Up in Australia found that 17 per cent of infants were reported to have moderate or severe sleep problems. Infant sleep problems were associated with increased risk of severe psychological distress and poor general health for both mothers and fathers (Martin, Hiscock, Hardy, Davey & Wake, 2007). Questions D2 to D6 were adapted from ALSPAC; D14 was based on a question from Growing Up in Australia.

D9 **Infant sleeping position** – Sleeping in the prone position (face down) is now a recognised risk factor for Sudden Infant Death Syndrome (SIDS), otherwise known as cot death. For example, in a New Zealand study, sleeping in the prone position was found to increase the risk of SIDS by nearly four times (Mitchell, Taylor, Ford et al, 1992). Similarly, a study in the Australian state of Tasmania observed an increase in risk of nearly 4.5 times for sleeping in the prone position (Ponsonby, Dwyer, Gibbons et al, 1993). There is some evidence that the recent move towards positioning babies to sleep on their back rather than on their stomachs to reduce the risk of SIDS may be having a negative impact on gross motor development (e.g. Majnemar & Barr, 2005). This question could indicate if there are particular groups of parents who are not following advised best practice in relation to sleeping position for their babies. It may also help to explain any changes in expected levels of gross motor development for the cohort.

D10–D12 **Infant's sleeping arrangements** – These questions record details on where baby sleeps, with whom, and how often he/she sleeps in the parental bed. The issue of co-sleeping with parents is contentious. In Western cultures the tendency is towards encouraging the child to sleep independently from a young age, but co-sleeping is considered normal in many other cultures (see reviews by Mosko, McKenna, Dickel & Hunt, 1993; Thiedke, 2001). A review of American records for an eight-year period in the 1990s indicated that 64 American infants died per year as a result of sleeping in an adult bed (Nakamura, Wind & Danello, 1999). However, there is also evidence that co-sleeping may benefit the child in terms of facilitating breastfeeding (McKenna, Mosko & Richard, 1997). This type of information will allow an analysis of variation in sleeping arrangement according to characteristics of parents (e.g. anxious, first-time parents) as well as links to mother-child attachment, the child's later development (including sleeping problems) and parenting style. Question D11 was adapted from ALSPAC

D13 **Problematic crying** – Respondents were asked whether the infant's crying was a problem for them or not. Excessive crying that persists beyond the fourth month may identify a child at risk for adverse developmental outcomes (Stifter, 2005; Barr, 2006). In a prospective study of infants referred for persistent crying (ascribed to colic), it was found that by age 8-10 years, such children were at a greater risk of externalising behaviours as compared to classroom controls (Wolke, Rizzo & Woods, 2002). Barr argues that "the clinical significance of crying is largely a function of how the crying behaviour is perceived and responded to by the caregiver" (2006, p. 2). Prolonged infant crying can be extremely aversive for families exposed to it, and inability to placate an excessively crying infant can precipitate a transactional series of negative parent-child interactions. A large study of infants and parents in the Netherlands found that 5.6 per cent of parents reported having responded to crying with smothering, slapping or shaking at least once by the age of six months (Reijneveld, van der Wal, Brugman et al, 2004). Parents' judgment of the infant's crying as excessive was a significant risk factor for reactions of this type. This question has been used previously in ALSPAC.

6.1.5 SECTION E – CHILDCARE ARRANGEMENTS

This section focused on the infant's current childcare arrangements and future intentions for childcare when the child is three years old.

E1–E7 **Childcare** – These questions recorded information on the nature of childcare arrangements, including who provided the care and their relationship to the infant, how much time per week the infant spent in childcare, how much it cost, at what age the infant started in the main form of childcare, and how many children were looked after in the main form of childcare.

It is important to record these details on childcare so that the effects on the child's cognitive development, social-emotional and behavioural development and health outcomes can be assessed. Recent findings from the Millennium Cohort Study (Hansen & Hawkes, 2009) found that children cared for by grandparents at the age of nine months were more likely to have behavioural problems at age three and more likely to have difficulties relating to peers than those in almost any other type of childcare. On the other hand, children with highly educated mothers were more likely to have extensive vocabularies if they had been looked after by a grandparent. These questions (along with the specific home-based carer questionnaire sent to the childcare provider) will provide valuable information on the developmental implications of this type of childcare.

E8a–E8f Childcare arrangements (outside the home) – For infants minded outside their own home, information was recorded on travel distance and time from home to the childcare, and what time the child left home for and returned home from the childcare. This information, combined with information on parents' commuting time to and from work, will allow us to assess the impact of commuting times on parents in terms of work-life balance and time available for family and children. These questions also give an insight into the convenience or otherwise of the chosen childcare arrangement.

E9–E12 Reason for choosing childcare and satisfaction with arrangements; Future intentions with regard to childcare – Respondents were asked for the most important reason for choosing their main type of childcare, how satisfied they were with their arrangements, and how much they were influenced in their choice of childcare by factors such as cost, availability, convenience, etc. As maternity leave entitlements have been increased to up to 42 weeks in Ireland, some mothers may still have been on maternity leave at the time of interview, so they were asked about future intentions for childcare. These questions were asked because previous research has found a positive and strong relationship between cognitive development and, in particular, school readiness, and participation in centre-based childcare (compared to children looked after by relatives) (Loeb & Fuller et al, 2004), while other research has shown that children who attend higher-quality childcare centres demonstrate better cognitive and social skills from preschool into the early primary school years (Glantz & Layzer, 2000).

E13 **Difficulty in arranging childcare** – This question, adapted from the Quarterly National Household Survey 2002 Childcare Module (carried out by the Central Statistics Office) asked if difficulty in arranging childcare had ever prevented the respondent from doing a number of things, such as looking for a job or engaging in social activities. This will provide useful information on which to build childcare policies.

6.1.6 SECTION F – SIBLINGS AND TWINS

This section asked about the existence of siblings in the household and whether the child was a twin or triplet, etc, and some related questions.

F0 **Existence of siblings in the household** – including step, foster or adoptive siblings. This, along with information obtained in the household grid, helps to build a more complete picture of the household composition.

F1 **Reaction of other children to the new baby** – asked about jealousy or unhappiness in sibling reaction to the baby.

F2a–F6 **Whether baby was a single birth, twin or triplet** – followed by a series of questions about whether the twin lived in the household, whether the twins were fraternal or identical, whether or not this had been confirmed by a medical professional and how the baby reacted to his/her twin. Twin status is important in terms of child outcomes for a number of reasons. For example, early development in the womb takes place in a more crowded environment; twins are born, on average, three weeks earlier than singletons; and they are generally born at a lower birth-weight. They are also at greater risk of congenital abnormalities than singletons (Bornstein, 1995). On the other hand, having a twin can be positive for aspects of social development. The current study will enable researchers to compare the two groups and explore whether being a twin (or triplet) has any discernible impact on developmental outcomes.

6.1.7 SECTION G – PRENATAL CARE

This section addressed aspects of prenatal care, including choice of healthcare provider, weight gain, vitamin supplementation, and whether there were any complications during the pregnancy.

G1/G4 **Provision of antenatal care** – these basic descriptive questions, adapted from the Growing Up in Australia study, were designed to capture information relating to the provision of antenatal care. In Ireland, all expectant mothers are entitled to free medical care, but the nature of public and private provision in the Irish context means that there is likely to be wide variation in the type and quality of antenatal care provided. A survey for the *Irish Examiner* newspaper found that those with private healthcare insurance were not only more likely to have their first antenatal booking appointment earlier, but also tended to be more satisfied with the information provided to them about birthing options (e.g. birthing position) and pain relief during labour (O'Doherty, *Irish Examiner*, 25 October 2006). To date, this issue has attracted very little by way of systematic investigation, and it is unclear to what extent the different models of maternity care available in Ireland affect perinatal and later outcomes.

G2/G3 **Awareness of pregnancy and timing of first antenatal visit** – early awareness of pregnancy and earlier presentation for antenatal care may lead to better maternal and infant outcomes through the modification of health risky behaviours that are deleterious to foetal development, and the promotion of salutogenic behaviours that encourage optimal growth (e.g. folic acid supplementation). A retrospective cohort study of 13,000 birth records in the UK found that delayed antenatal attendance (i.e. later than 28 weeks) was associated with adverse pregnancy outcomes (Lavender, Downe, Finnlayson & Walsh, 2007). Factors associated with delayed access to antenatal care include unmarried status, low SES, low level of education, minority status and young maternal age (Rowe & Garcia, 2003).

G5 **Frequency of ultrasound scans** – this question was designed by the Study Team to determine whether there is variation in the frequency of ultrasound scans by type of healthcare provision. Prenatal ultrasound is vital for the efficient provision of preventive care, even in health centres where physicians are often not the delivering physicians (Dresang et al, 2006).

G6 **Mother's prenatal knowledge of the Study Child's gender** – this question asks whether the mother knew the sex of the infant prior to delivery and is important because research indicates that there may be a preference for male children, especially among fathers, and this can affect marital status and family structure. For example, Dahl and Moretti (2004), based on their analysis of US data, found that parents are significantly more likely to have never lived together, be unmarried or be divorced if their first-born child was a girl. They also reported that, among those who undergo an ultrasound during pregnancy, mothers who are carrying a boy are more likely to be married at delivery. A Canadian study reported that women with two sons were more likely to use contraception than those with two daughters, which can be construed as a preference for male children (Krishnan, 1993).

G7 **Weight gain during pregnancy** – international research has shown that, for those with a healthy pre-pregnancy weight, an average weight gain of 12.5 kg (range 10-14 kg) is generally associated with the lowest risk of complications during pregnancy and labour, and with optimal perinatal outcomes (Williamson, 2006). Poor maternal weight gain by contrast is linked to increased risk for delivery of a pre-term or low birth-weight baby, while excessive weight gain is associated with birthing complications and obesity in the mother post-partum (Abrams, Altman & Pickett, 2000).

G8–G10 Complications during pregnancy – these questions were designed to ascertain whether the mother had experienced any complications in the course of her pregnancy and to examine the later health impact of these conditions for mother and infant. Question G8, developed in consultation with the expert health panel, consisted of a 14-item list of common conditions experienced during pregnancy. The latter two questions assessed the severity of the risk posed by asking whether it necessitated hospitalisation (G9) and the number of separate hospital admissions (G10). These questions will allow for an investigation of how medical (e.g. timing of first screening), demographic (age) and lifestyle-related factors moderate the risk of pregnancy-related complications. Previous studies have shown that smoking, for example, increases the risk of placental abruption and foetal growth retardation, while maternal overweight increases the risk for a constellation of conditions including gestational diabetes, pre-eclampsia and caesarean delivery (Cnattingius & Lambe, 2002). Maternal smoking during pregnancy is a major public health concern, with clearly established consequences for both mother and newborn (e.g. low birth-weight, altered cardiorespiratory responses), and has also been associated with higher rates of poor cognitive and behavioural outcomes in children, including attention deficit hyperactivity disorder (ADHD), conduct disorder, impaired learning and memory, and cognitive dysfunction (Knopik, 2009).

G11a–G11c Mineral supplementation during pregnancy – the first two questions were designed by the Study Team to determine whether the mother took folic acid supplementation (a) during the peri-conceptional period and (b) during the first trimester of pregnancy. Although the protective effect of folic acid against neural-tube defects is maximised if women take it prior to conception and continue up until 12 weeks of pregnancy (Goldberg, 2003), an Irish study of 300 women attending their first antenatal visit in the Eastern Health Board region found poor adherence to guidelines, with only 18 per cent taking peri-conceptional folic acid. The same study pointed to a steep socio-economic gradient, with medical card holders (a proxy for income) being less aware of its benefit to the developing infant. Question G11c asked whether the mother took iron at any stage during her pregnancy. Although there is substantial evidence that maternal iron deficiency anaemia increases risk of delivery complications and low birth-weight (Lapido, 2000), the advisability of routine iron supplementation has been heavily debated in the US (Allen, 2000). As summarised in Allen (2000), surprisingly little is known about the beneficial effects of maternal iron supplementation for mother and infant during pregnancy and in the post-partum period.

G12 **Exposure to prenatal environmental tobacco smoke** – this item, taken from the NLSCY, asked about the number of household members (including the mother) who smoked during pregnancy, which served as a proxy for the level of *in utero* environmental tobacco exposure. A growing body of scientific evidence indicates that environmental smoke leads to diminished respiratory function (Li et al, 2000) and lower birth-weight even in the babies of non-smoking mothers (Dejmek, Solansky, Podrazilova & Sram, 2002).

6.1.8 SECTION H – CHILD'S HEALTH

This module captured information about the birth of the child, including mode of delivery, gestation period, infant anthropometry and birthing complications. In addition to assessing infant health status and healthcare utilisation, it also included a series of items designed to tap infant feeding practices.

H1–H2b Where the baby was born – Question H1, adapted from ALSPAC, asked whether the birth had been a planned home birth or a hospital birth, while questions H2a/H2b asked for the name and address of the maternity hospital/unit where the baby was born, which will be important for linking to information contained in the National Perinatal Reporting System (NPRS) database if permission to access archived medical records is obtained.

H3 **Obstetric pain relief** – this question, taken from ALSPAC, asked whether the biological mother had received any form of pain relief during labour. There is some tentative evidence adduced from two cohort studies in the US and the UK that obstetric pain medication may operate as a risk factor for drug addiction in later life (Nyberg, Buka & Lipsitt, 2000; Jacobsen, Edelstein & Hofmann, 1994).

H4 **Mode of delivery** – this question, adapted from the Growing up in Australia study, enquired about the primary mode of delivery. The original question on the caesarean option was decomposed into *Elective Caesarean* and *Emergency Caesarean* as there is evidence to suggest that elective methods are associated with increased risk for neonatal respiratory morbidity (Levine, Ghai, Barton & Strom, 2001; Zanardo, Simbi, Franzoi et al, 2004), specifically if performed prior to 39 weeks' gestation (Morrison, Rennie & Milton, 2005; Zanardo et al, 2004). This is of research interest because the number of children in Ireland being delivered by caesarean methods has increased rapidly in recent years, from 20.4 per cent in 1999 to 25.9 per cent in 2005 (National Perinatal Reporting System, 2005). The *Breech delivery* category was dropped as it was deemed to constitute a birthing complication rather than a method of delivery.

H5a–H7 **Infant weight, length and gestational age at time of birth** – these questions, adapted from the Growing up in Australia study, sought details in the form of parental recall information about the infant's weight, supine length and gestational age at time of birth. Weight and length are commonly used as indices of foetal growth and development, and are positively associated with adult height and weight (Eide, Oyen, Skjoerven, Bjerkedal & Tell, 2005). Calibrating relative to gestational age is important as a study of 400,000 US children found that smallness for gestational age rather than prematurity was associated with smaller stature and lower weight in childhood (Pietilainen et al, 2001).

These measures, taken in conjunction with the direct anthropometric measurements of the infants obtained at time of interview, will facilitate the modelling of growth trajectories and how these are affected by a range of other variables in early infancy. They will also be useful for establishing Irish standards for normative physical development. There is strong support from a number of studies that parental recall of birth-weight is a good proxy for measured birth-weight (Walton et al, 2000; O'Sullivan, Pearce & Parker, 2000), even when the recall period is as much as 57 years after delivery (Catov et al, 2006). The Millennium Cohort Study at wave one reported that 92 per cent of respondents recalled birth-weight to within 100 grams of the registration rate (Dezateux et al, 2005).

H8–H12 **Birth complications and neonatal intensive-care unit (NICU) care** – item H8, adapted from the Millennium Cohort Study, was designed to ascertain whether there were any complications associated with the birth of the Study Child. Question H9 and H10, which were used in the Growing up in Australia study, asked whether the child had been admitted to a neonatal intensive-care unit (NICU) or special-care nursery after he/she was born, and the length of hospitalisation (H12). These questions will allow for investigation of the lifestyle and medical factors associated with obstetric complications, and the extent to which early adverse health affects later health outcomes. They are also important for contextualising the growth trajectory of the infant at the first wave.

H13a–H15b **Incidence, duration and exclusivity of breastfeeding** – these questions were designed to gain information about infant feeding, an issue that is given special attention at Wave 1 given the timeliness of the information being collected and the growing literature, informed by a number of longitudinal studies, which links breastfeeding to reduced risk of atopic manifestations (Fewtrell, 2004), reduced blood pressure in childhood (Wilson et al, 1998), higher bone density (Jones, Riley & Dwyer, 2000) and improved cognitive development in early life (Anderson, Johnstone & Remley, 1999). Despite the strong evidence supporting a salutogenic effect of breastfeeding on infant health and development, Irish breastfeeding rates rank among the lowest in Europe (Food Safety Authority, 1999), with an initiation rate of 44.1 per cent according to published figures from the National Perinatal Reporting System (NPRS) (Bonham, 2005). This topic has enormous public health implications. Both the national (Tarrant & Kearney, 2008) and international research literature (Donath & Amir, 2001; Heck, Braveman, Cubbin et al, 2006) shows that breastfeeding is strongly socially patterned and that children from disadvantaged backgrounds are less likely to enjoy the benefits of breastfeeding. This effect is even apparent in Scandinavian countries, which have a strong tradition of breastfeeding (Flacking, Nyqvist & Ewald, 2007).

Question H13a was derived from Growing up in Australia, while H13b, which asked whether the infant was still being breastfed at time of discharge from hospital, was added to facilitate direct comparison with figures provided by the NPRS. Questions H14a to H15b were designed by the Study Team to derive estimates of breastfeeding duration independently for both exclusive and complementary methods (as this distinction is often obscured in the literature), and to facilitate an analysis of whether there is any dose-response relationship between exposure and outcomes (see, for example, Raisler, Alexander & O'Campo, 1999; Dee, Li, Li-Ching & Grummer-Strawn, 2007).

H15c/d **Reasons for discontinuing or never initiating breastfeeding** – these questions, adapted from the NLSCY, were designed to ascertain the reasons for (a) discontinuation of breastfeeding among those who had completely stopped by time of interview and (b) reasons for not breastfeeding among those who had never initiated it. The 13 original NLSCY answer categories were supplemented with one additional category, *Embarrassment/Social Stigma,* which research in the Irish context indicates is an important barrier to initiation (Tarrant & Kearney, 2008). Although the World Health Organisation recommends exclusive breastfeeding for the first six months of life, a cross-sectional study of 561 women attending a Dublin hospital reported an initiation rate of 47 per cent, while only 24 per cent were still offering ‘any’ breast-milk at six weeks of age (Tarrant & Kearney, 2008). Understanding the reasons for both low levels of initiation and high levels of attrition in the early postnatal period will, it is hoped, help to promote efforts to increase breastfeeding rates, especially among those in lower socio-economic groups.

H18/H19 **Age of transition to solid foods** – these questions were designed to measure the age at which the infant graduated to different types of milk (i.e. non-breast milk) and solid foods. Although, as noted above, the World Health Organisation recommends exclusive breastfeeding for the first six months of life, there is ongoing dispute within the research community concerning the optimal timing of the transition to solid foods (e.g. Reilly & Wells, 2005). It has been suggested that early exposure to solid foods may result in allergic sensitisation because the infant’s gut-mucosal barrier is not sufficiently mature and this may trigger an immune response, but at present there is insufficient evidence to support this assertion (see Snijders, Thijs, van Ree & van den Brandt, 2008). Two British cohort studies have found that those who graduate to solid foods prior to four months of age may be less capable of regulating their energy intake, as evidenced by greater weight gain and higher BMI at a variety of time points between one and five years of age (Ong et al, 2006) and higher percentage body fat at seven years of age (Wilson et al, 1998). According to a recent position paper by the European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN), the complementary feeding period remains an under-researched issue, and at present it is unclear whether this period of significant dietary change influences later health and development (Agostoni et al, 2008; ESPGHAN, 2008). Question H16 was taken from the Millennium Cohort Study while questions H17 to H19 were taken from the Growing up in Australia study.

H20a–H20b General health status of the infant – this question, derived from the European Community Household Panel Survey (ECHP), was designed to measure parent-reported infant health status at two time points: (a) the early perinatal period (i.e. the first two weeks after birth) and (b) at nine months of age. Responses were indicated on a four-point Likert scale, ranging from *very healthy* to *almost always unwell*. Many national health surveys – e.g. the US National Health Interview Survey (http://www.cdc.gov/nchs/nhis.htm), US National Health and Nutrition Examination Survey (http://www.cdc.gov.nchs/nhanes.htm) – use a general health-related quality-of-life measure (HRQoL), because these are quick to administer and have been found to be valid and reliable indicators of other objectively obtained measures of health status (Bowling, 2005). Although endorsements of fair or poor health tend to be uncommon, there is evidence – summarised in Krause and Jay (1994) and Montgomery, Kiely and Pappas (1996) – that they are associated with many indicators of poor health and heavier healthcare use, while Haas (2007) has demonstrated the predictive validity of this type of question as a longitudinal indicator of adult health outcomes.

H28–H29 Healthcare access – these questions, adapted from the National Survey of Children's Health 2003, were used to gauge whether at any time since birth the infant had not received the medical treatment he/she needed, along with perceived barriers to access. This issue is important from a public policy and planning perspective, particularly where socio-economic, cultural or geographic factors limit access, as a delay in seeking or receiving healthcare is associated with more complications from and sequelae to illness (Starfield & Budetti, 1985).

H30–H32 Healthcare insurance – these questions recorded information about the family's medical insurance cover, including private health insurance. They were adapted from numerous Irish studies, including the Living in Ireland survey 1994-2001 and Watson and Williams (2001). They may provide some valuable explanatory power in the analysis of variation in access to and utilisation of health services, as well as variation in health status.

6.1.9 SECTION J – RESPONDENT'S HEALTH

This section contained a series of questions relating to the respondent's health and lifestyle. Women's poor physical health and smoking have been shown to have graded associations with children's physical health and behaviour problems, while women's depressive symptoms have been associated with children's delayed language and behaviour problems. Research on the relation between the health of women and that of their children has traditionally focused on health conditions that arise in pregnancy and the early perinatal period; however, emerging research highlights the additional role of women's health both before and after pregnancy as a determinant of child health and well-being (Kahn et al, 2002).

J1 **General health status of respondent** – this item was derived from the Short Form 12 Health Survey which measured generic health concepts and health-related quality of life. It tapped the general health status of the parent on a five-point Likert scale ranging from *excellent* to *poor.* There is good evidence, summarised in Blaxter (1989), that such measures are close analogues of clinically assessed health status.

J2–J8 **Chronic physical or mental health problems, illness or disability** – these questions, derived from the Living in Ireland survey(1994-2001), explored the nature, duration and impact of the illness/disability on the respondent and the extent to which this compromised their ability to care for the infant. Armistead et al (1995) have proposed a number of pathways by which the experience of parental chronic illness can affect child functioning; parental illness may disrupt aspects of parenting (e.g. support, reinforcement, discipline) by reducing capacity to provide care, or indirectly through the emotional distress of parents (e.g. depression). However, the extent to which the experience of parental illness affects child outcomes remains an under-researched phenomenon relative to the extensive literature that addresses families' adjustment to child illness (Pedersen & Revenson, 2005).

J9–J12 **Respondent's current and historic smoking patterns** – J9–J11, taken from the Living in Ireland survey (1994-2001), asked about current and historic smoking and the extent of smoking, while J12 asked about the number of household members who smoke. In addition to the socialising effects of parental modelling in influencing children's health-risky behaviours (Flay, Hu, Siddiqui et al, 1994), parental smoking is of interest in so far as it exposes children to environmental tobacco smoke (ETS). J9–J12, taken in conjunction with question S8 on the sensitive questionnaire administered to the Primary Caregiver (which asked whether anyone smoked in the same room as the Study Child) will serve as a proxy for ETS exposure in the postnatal environment. There is strong evidence (summarised in Jaakkola & Jaakkola, 2002 and Hofhuis, Jongste & Merkus, 2003) that environmental tobacco smoke is deleterious to child health and development and increases risk for asthma and other related respiratory conditions.

However, as noted in Jaakkola & Jaakkola (2002), most studies of ETS tend to be cross-sectional in nature, which obscures identification of the susceptible age periods for different respiratory effects. Moreover, the few studies which have attempted to differentiate the independent effects of prenatal versus postnatal exposure have yielded inconsistent findings (see Cook & Strachan, 1999). These questions will enable an investigation of whether developmental outcomes vary by the timing and frequency of tobacco exposure and whether the effects are dose-dependent. They will also facilitate analysis of whether there are differential outcomes for the infants of mothers who smoked during the prenatal (see questions S31–S32 on the mother's sensitive supplementary questionnaire) and postnatal periods, compared to those who discontinued smoking during pregnancy, or those who never smoked (see also Section 6.3).

Although the validity of self-reported smoking has been challenged on the grounds that smokers are inclined to underestimate the amount that they smoke, or deny their smoking status, studies have found that misclassification rates tend to be small in the general population (in Studts, Ghate, Gill et al, 2006). Moreover, Patrick, Cheadle, Thompson et al's (1994) meta-analysis of 51 studies comparing self-reported smoking with direct biochemical measures found high levels of sensitivity (87 per cent) and specificity (89 per cent) for self-report averaged across studies. This reinforces the validity of self-reports, given that alternative techniques (e.g. analysis of urinary cotinine) are not operationally feasible.

J13–J14 **Respondent's current alcohol consumption** – these items, adapted from the Millennium Cohort Study, were designed to measure the frequency of drinking as well as the quantity of consumption of wine, beer and spirits in an average week. It is well established that problem drinking among parents is associated with greater risk for emotional and behavioural problems in children but very few studies have examined causal pathways within well-articulated longitudinal frameworks (Keller, Cummings, Davies & Mitchell, 2008). There is evidence, summarised in Gruenewald and Johnson (2006), that self-reports of drinking quantity and frequency show good concordance with other methods (e.g. timeline followback procedures) while test-retest reliabilities for wine, beer and spirit consumption ranged from 0.59 to 0.99 one year after initial assessment.

J15–J16 **Respondent's self-reported height and weight** – previous studies examining the validity of self-reported anthropometric data indicate that both men and women tend to over-estimate their height and under-estimate their weight (Spencer, Appleby et al, 2002), and these errors are compounded in the derived BMI variable. Research shows that misclassification rates for standard categories of BMI (normal, overweight, obese) derived used self-reported data tend to be highest among people who rank in the obese category as per their measured data (Spencer, Appleby, Davey & Key, 2002). These questions are important in the context of child development because children who live in an environment where their peers and parents are overweight are more likely to misperceive their own weight status (Maximova et al, 2008).

6.1.10 SECTION K – FAMILY CONTEXT

This section dealt with the family context in which the Study Child lives, and focused on parental stress, support from family and friends, situation with regard to work, including work prior to becoming pregnant and future intentions, and work-life balance.

K1 **Parental stress** – these questions related to the Primary Caregiver's perception of how things were for them and the baby currently. K1 was a standardised measure called the Parental Stress Scale (Berry & Jones, 1995). It contained 18 statements on positive themes of parenthood such as emotional benefits, self-enrichment and personal development, and negative themes such as demands on resources, opportunity costs and restrictions. The scale is described further in Section 8.2.3.

K2 **Perceived social support** – this question, used in the Growing Up in Australia study, was a general question about how much perceived support was received by the respondent from family or friends outside the household. Social support has been highlighted in a number of studies as affecting mother-child interactions. For example, Cochran (1993) summarised a number of studies that reported more positive mother-child interactions for those mothers enjoying strong social support. Hashima and Amato (1994) also found that perceived social support was negatively related to parent's reports of punitive behaviour, particularly when income was low. Analysis will give some idea of whether parents perceive current levels of support from family or friends to be adequate and will enable researchers to explore associations with other variables, including parental stress and family relationships, as well as links to social, emotional and behavioural outcomes for the child.

K3–K4 **Contact with and support received from baby's grandparents** – these questions were about contact with grandparents, including a series of questions about different types of support, and how often they were received. Researchers have found that the relationship between adult children and their parents can often play a strategic role in helping the individual over the life-course (Eggebeen & Hogan, 1990; Rossi & Rossi, 1990). Because of the financial and emotional stress often experienced by new parents, kin networks may be especially important at this time given that they often provide a wide range of assistance, including financial and childcare assistance, along with emotional support. Furthermore, Kanaiaupuni et al (2005) found important implications for child well-being, in that extended family networks are associated with better child health outcomes. Additionally, perceptions of available support have positive relationships with economic well-being (Henly et al, 2005). An integrated social systems framework put forward by Dunst and Trivette (1988) and drawing on social network theory, human ecology, help-seeking theory and adaptational theory, emphasises the importance of informal support systems such as parents, relatives and friends for promoting positive functioning and buffering negative reactions.

K5–K20 **Work-related questions** – this section recorded information on the mother's labour-force participation prior to becoming pregnant with the Study Child. Details included number of hours worked (K6); how long before giving birth did she stop working (K7); whether she was currently working and, if relevant, the age of the baby when she returned to work (K9); different types of leave availed of, and reasons for returning to work (K11). If the Study Child's mother was not currently working at the time of interview, she was asked about her intentions with regard to returning to work (K12), including age of baby, types of leave and reasons for returning to work (K13–K15). There was a similar set of questions pertaining to previous employment (K17), and if appropriate, intentions and reasons for returning to work (K18–K20).

Parental leave and the working patterns of parents with small children are contentious issues, especially in a changing social environment where women make up an increasing part of the workforce. In US research, Berger et al (2004) indicated that some of the mechanisms by which maternity leave is linked to child health may be that children of mothers who take leave of more than 12 weeks are more likely to be breastfed, be breastfed for longer, are more likely to be immunised, and more likely to receive preventative baby care. Findings from the National Institute for Child and Human Development (NICHD) suggest that maternal employment in children's first year of life may have different effects to maternal employment later in a child's life in relation to cognitive outcomes (Brooks-Gunn et al, 2002). In the UK, Gregg et al (2003) found that full-time maternal employment in the first 18 months was linked with poorer child cognitive outcomes. There is also a common perception that children of dual-earner couples enjoy less time, attention, and commitment from their parents, although this has been disputed by some of the empirical evidence (e.g. Galinsky, 1999). Rather, *how* mothers allocate their time may be more important; positive or neutral effects in terms of development have been found when mothers reduce time spent on activities that do not involve their child (Huston & Aronson, 2005).

Since 1997 maternal leave policy in Ireland has extended maternity leave for up to 42 weeks. With this lengthening of leave, fewer depressive symptoms and longer breastfeeding duration might be expected, while benefits regarding other health outcomes would demand longer leaves.

K21 **Work-life balance** – much recent focus has turned to the actual quality of the work experience for parents, and the bidirectional influence between this and family life, including the division of household and caregiving duties. Rather than focus on the fact that parents work, researchers have begun to focus instead on how they work (Galinsky, 1999). This issue has been spurred by research indicating that, even when job characteristics and other factors were controlled for, work-family tension was higher among those with young children and among women (O'Connell & Russell, 2005). That said, results from the Growing Up in Australia study, where the questions were developed, showed that it was fathers who had the higher levels of work-to-family spillover, taking account of the effect of work on family as well as the effect of family responsibilities on work. Considering other factors such as family context and work patterns, for example, researchers will be able to compare the findings from the Irish study with those from Australia. It is also likely that any discernible impact on child outcomes will have important implications for employment policies.

6.1.11 SECTION L – SOCIO-DEMOGRAPHICS

This section recorded details on the background characteristics of the household and/or Primary Caregiver, including information on household income. Previous research has concluded that children from low-income families generally experience worse outcomes than other children, such as delayed vocabulary development (Ross & Roberts, 1999). Work by Phipps and Lethbridge (2006) suggests a link between household income and child outcomes, whereby the well-being of children appears to increase with increasing socio-economic status. The strongest relationships appear to be in the cognitive and behavioural domains, while the social and emotional domains suggest that lower-income children are worse off to some extent.

L7–L8	**Nature of accommodation and status of tenure** – these questions recorded whether the household was located in a house, apartment, etc, and whether owner-occupied, rented, etc. Tenure status has been widely used in ESRI and other surveys over several decades and adds variance explanation to measures of well-being independently of covariates.
L9	**Number of bedrooms** – details were recorded on the number of bedrooms in the accommodation. This information can be used to derive an objective measure of space available in households given their size and composition. The international ‘bedroom standard’ (ODPM, 1998) can be used as a measure of crowding and bedroom density, etc.
L10–L21	**Principal economic status and related variables** – depending on whether or not they were currently working (either as an employee, self-employed or farmer) outside the home, the respondent provided information on current or historic occupation and supervisory/managerial functions within the workplace. This information was recorded to allow a social class classification to be assigned to each household. This section also recorded details on the number of hours worked outside the home (L13 or L22b depending on economic status). This information is of direct relevance to issues of parental work-life balance, childcare, time spent with the Study Child, and their impact on the Study Child’s outcomes, accounting for other covariates.
L21d	**Reason for not working in a full-time job** – this was asked of those who did not work outside the home full-time (i.e. less than 25 hours per week). A choice of nine options was provided, including ‘cannot find a job’, and ‘prefer to look after children oneself’.
L22	**Occupation of spouse/partner** – this was asked where a spouse or partner was currently living in the household.
L23–L27	**Household income** – L23 and L24 recorded the main sources of income received by the household, and L25–L27 recorded details on the level of household income. The concept is: total household income from all sources and all household members, net of the statutory deductions of income tax and social insurance contributions (PRSI). This is a measure of the household’s total disposable income. L25 offered the respondent the opportunity to record an exact figure per week/month/year. If this was not known or otherwise not forthcoming, L26 and L27 were used to record the information using a series of rolling categories: the respondent was first asked to select which of the 10 categories his/her household fell into; this category was then broken into sub-categories in an attempt to record the information on the most disaggregated basis possible. This approach to recording household income was adopted in the Living in Ireland and other surveys. A major aim of that survey was to provide an up-to-date and comparable data source on personal incomes. Numerous publications are based on the income data from this survey,

particularly in the area of poverty and anti-poverty strategies (see for example Whelan, Layte, Maitre & Nolan, 2003).

L28–L32	**Receipt of social welfare payments in the household** – all welfare schemes were listed (L28 to L31b). The household's estimate of its social welfare dependency was also recorded (L32). This section was included as a cross-check on the welfare dependency level that can be derived from the household income and receipt of welfare payments under various schemes. The details on social welfare receipts and dependency are interesting in a longitudinal as well as a cross-sectional perspective. Longitudinally they enable analysis of welfare receipt and transitions over time and the effects on child development.
L33	**Other income to the household** – asked whether anyone other than the Primary Caregiver and her spouse/partner had any income of any sort.
L33b–L33f	**Material deprivation –** these questions recorded details on a number of aspects of material deprivation, which have been used in Ireland and elsewhere to provide indicators of non-monetary deprivation at the household level. The questions have also been used as input to a scaled variable of basic deprivation. When combined with indicators of relative income poverty, the scale can be used to devise a measure of consistent poverty. These measures were derived from those used in the National Anti-Poverty Strategy (NAPS) (see, for example, Maitre, Nolan & Whelan, 2006). See Section 8.2.4 for further information on this scale.
L34	**Highest level of educational attainment** – this is a basic classificatory variable that is essential for analysis. The effects of maternal education levels on a child's development have been associated across a wide range of domains, including accessing information in relation to child physical development (Thomas, Strauss & Henriques, 1991), and an enriched home learning environment in relation to child educational achievement (Christian, Morrison & Bryant, 1998).
L34x	**Age of leaving full-time education for the first time** – education is an important form of human capital and therefore the number of years of education accrued by parents is likely to affect the outcomes for their children.
L35–L39	**Competence in English and other languages** – information was collected on the languages spoken to the Study Child in the house. This section also recorded details on the respondent's functional and other literacy in English, and in their native language if not English or Irish.
L40	**Basic numeracy** – respondents were asked whether or not they could usually tell if they had the correct change in shops from a five- or 10-euro note. The questions (or derivatives) have been successfully used in other longitudinal child cohort studies such as the Millennium Cohort Study and give a broad indicator of basic numeracy.
L41–L50	**Citizenship and length of time resident in Ireland** – information was recorded on citizenship, country of birth, and residency in Ireland for both respondent and Study Child.
L51	**Ethnicity** – this question, taken directly from the most recent Irish Census of Population, was also asked in the Secondary Caregiver and Non-Resident Parent questionnaires so that we have recorded ethnicity for both parents. Ethnicity may be related to a number of child-related outcomes and parental practices, including, for example, breastfeeding.
L52–L53	**Religiosity** – these questions collected information on the denomination and religiosity of the main caregiver and the Study Child. Such questions provide

important information to enable examination of levels of religiosity in contemporary Ireland, one aspect of which is frequency of worship. This is also important for understanding differences between children who are engendered with some form of religious upbringing and those who are not. Questions L52 and L53 were adapted from a range of surveys including the European Values Survey.

L54–L56 **Receipt of regular care outside the home** – this information provides the contact details necessary to administer the Home-Based and Centre-Based Carer Questionnaire (where relevant).

6.1.12 SECTION M – NEIGHBOURHOOD AND COMMUNITY

In this section we recorded some background details on the characteristics of the neighbourhood or community of the Study Family. We also recorded some measures of their links with the community and participation in local social networks.

Neighbourhood and community factors can influence development in different ways. The quality of neighbourhood (e.g. safety, accessibility, cohesion), the resources available (e.g. library, parks), the ability to secure benefits and social relations (social capital), and the collective experiences of involvement in socio-cultural institutions (e.g. health club, church) can all affect child well-being by providing enrichment and stimulation Facilities may be of higher quality in affluent or cohesive neighbourhoods where parents may be better at obtaining resources for their children. The structural characteristics of a neighbourhood, such as its residents' income and stability, may be important because these characteristics can support or hinder social organisation. For instance, in poor, residentially unstable neighbourhoods, social organisation is often low, leading to the proliferation of problem behaviours such as public drinking and drug use, destruction of property and other crimes. In such neighbourhoods, children's emotional and behavioural development may be threatened by living in the midst of physical and social disorder, and by being exposed to community crime (Hertzman & Cohen, 2003).

M1 **Respondent's involvement in local voluntary organisations** – this item, derived from the NLSCY, is related to participation in the wider community as well as potential access to social networks.

M2–M3 **Perception of neighbourhood as a place to live** – M2 and M3 were designed to measure the respondent's perception of their local area including subjective judgments of cleanliness, safety, public provision of play-spaces, etc. M2 was adapted from the ECHP (2000) and M3 from the NLSCY.

M4 **Access to community and related services** – this question addressed the availability of a range of eight different types of services in the local community, including schools, clinics and recreational facilities for children.

M5 **Family living in the area** – this information relates to the potential for personal support. Personal social networks, of both family and non-family members, can be an important support for parents. A personal social network can be a source of information (e.g. tips on child-rearing), practical assistance (e.g. child-minding) and emotional support. In a recent Irish study, 74 per cent of parents identified their own family as a source of parenting influence and knowledge (Riordan, 2001).

M6 **Geographical situation of household** – this question has been used in numerous ESRI surveys over many years and is used in analysis according to area type. The respondent was asked to describe the area where the household was located. Options included open country, village, towns of various sizes, major cities or Dublin county.

6.2 SECONDARY CAREGIVER QUESTIONNAIRE

The Secondary Caregiver questionnaire was administered to the resident spouse or partner of the Primary Caregiver – usually the male parental figure in the household (generally the father of the Study Child). In situations where the father of the infant clearly stated that he was the child's Primary Caregiver, he completed the longer, more detailed Primary Caregiver questionnaire discussed in Section 6.1 above.

The main sections of the Secondary Caregiver questionnaire are briefly outlined below. As this is almost exclusively a sub-set of the sections and questions from the Primary Caregiver questionnaire, we do not discuss it in detail, except for items that were not included in the Primary Caregiver instrument. The Secondary Caregiver questionnaire enabled further insight into the life of the child, this time from the (usually) father's perspective. This is an important aspect of the study in that it allows researchers to explore, for example, the Secondary Caregiver's relationship with the child, so that we may explore not only differences between this and the Primary Caregiver relationship but also so that we may explore, over time, possible buffering effects of a positive relationship with this parent where it is negative with the other, or additive, effects where it is positive with both. Cross-referencing is provided to fuller discussions of items elsewhere in this report. The Secondary Caregiver questionnaire is shown in Appendix D.

6.2.1 SECTION A – INTRODUCTION

A1 **Gender and date of birth of respondent**

A2 **Relationship of respondent to the Study Child**

6.2.2 SECTION B – PARENTING, CHILD'S FUNCTIONING AND RELATIONSHIPS

This section focused on the quality of the Secondary Caregiver's attachment to the child.

B1 **Quality of Attachment sub-scale from the Paternal Postnatal Attachment Scale (Condon, Corkindale & Boyce 2008)** – this sub-scale is the father's version of the Quality of Attachment sub-scale for mothers as described in B3 of the Primary Caregiver questionnaire. The father's scale contains five items.

6.2.3 SECTION C – BABY'S DEVELOPMENT

This section mainly asked about the father's role as a parent.

C1 **Father's presence at birth** – this question asked whether the father was present at the birth of the child or not, or whether they wanted to be, and missed it. The quality of mothering provided to an infant has been linked with supports the mother receives from her partner; and the quality of the relationship between the parents has been shown to predict how both mother and father nurture and respond to their children's needs (e.g. Guterman & Lee, 2005), and is likely to affect the future parent-child relationship and hence the child's development.

C2 **Perception of father role** – this was a ranking question in which the parent was asked to indicate the top three roles, in order, that he/she considered important to fulfil as a parent. A list, including 'showing my child love and affection' and 'taking care of my child financially', was provided, and there was also an option to specify an open-ended 'other' option. This question was intended to elicit how fathers/partners see their role and was also asked of non-resident fathers to facilitate comparison. This question was adapted from an item used by the Early Childhood Longitudinal Study, in which it was reported that 64 per cent of fathers ranked 'showing my child love and affection' as the most important thing for a father to do (Avenilla, Rosenthal & Tice, 2006).

C3 **Responsibility for caregiving tasks** – the tasks included basic care tasks such as feeding and bathing and other activities such as playing and singing. Respondents indicated who performed the various tasks on a scale from 'always the respondent' to 'always spouse/partner', or 'someone else does this' or 'no-one does this'. Research suggests that mothers and fathers differ in their interactions with children: fathers spend proportionately more of their interaction time in play rather than caregiving and engage in more physical play, but overall spend less time interacting with the child than mothers, according to a review by Parke and Buriel (2006). There is also some evidence that fathers spend more time interacting with their infant sons than their infant daughters, in terms of both play and more routine caregiving (Lundberg et al, 2005).

Research also suggests that fathers contribute to their child's healthy development in ways that are distinct from mothers. For example, one study found that fathers promoted their child's intellectual development and social competence through physical play, whereas mothers were more likely to promote these skills through verbal expressions and teaching activities (Clarke-Stewart, 1978).

C4 **Infant's sleeping patterns** – see D14 on the Primary Caregiver questionnaire**.**

C5 **Infant crying** – see D13 on the Primary Caregiver questionnaire.

6.2.4 SECTION D – RESPONDENT'S HEALTH AND LIFESTYLE

D1 **Current health status of respondent** – see Section 6.1.9, J1.

D2–D6 **Chronic physical or mental health problems, illness or disability** – including nature, duration and constraints of current problem(s). See Section 6.1.9, J2-J8

D7–D9 **Respondent's current and historic smoking patterns** – see Section 6.1.9, J9-J12

D10-D11 **Respondent's current alcohol consumption** – see Section 6.1.9, J13-J14

D12-D13 **Respondent's self-reported height and weight** see per Section 6.1.9, J15-J16

6.2.5 SECTION E – FAMILY CONTEXT

E1 **Parental stress** – see Section 6.1.10, K1**.** Also see section 8.2.3 for a description of this scale.

E2 **Work-life balance** – see Section 6.1.10, K21

E3 **Parental leave** – asked whether the Secondary Caregiver was currently taking or intended to take unpaid parental leave. If so, they were asked how long they would take and whether this would be taken in a block or spread over time. This is an important issue in terms of possible associations with quality of parenting and the parent-child relationship and hence with child outcomes. Parental leave is relatively uncommon among fathers in Ireland. This information will be of particular interest to policy-makers since it has not previously been collated in this context.

6.2.6 SECTION F – SOCIO-DEMOGRAPHICS

F1-F12	**Principal economic status and related variables** – see Section 6.1.11, L10-L21
F11d	**Reason for not working in a full-time job** – see Section 6.1.11, L21d
F13	**Highest level of educational attainment and age of leaving full-time education** – see Section 6.1.11, L34, L34x
F14–F19	**Competence in English and other languages** – see Section 6.1.11, L35-L39
F20	**Basic numeracy –** see Section 6.1.11, L40
F21–E25	**Citizenship and length of time resident in Ireland** – see Section 6.1.11, L41-L50
F26	**Ethnic or cultural background** - see Section 6.1.11, L51
F27	**Religiosity** – see Section 6.1.11, L52–L53

6.3 SENSITIVE SUPPLEMENTARY QUESTIONNAIRE

A common sensitive supplementary questionnaire was completed by both Primary and Secondary Caregivers. As the questions were the same for both individuals, with the exception of fertility and pregnancy-related questions asked only of the biological mother, both questionnaires are covered below.

The questions in the supplementary questionnaire were considered more sensitive than those in the main questionnaire and were included in a separate module for the respondent to self-complete on a Computer-Assisted Self-Completion Interview (CASI) basis. The questions covered issues on the nature of the marital relationship, marital conflict, experience of depression, feelings over the last week, use of drugs, and questions about a non-resident parent (if appropriate).

A1–A2	**Respondent's date of birth and gender**
S1–S11	**Relationship to Study Child** – asked about the respondent's relationship to the Study Child and whether he/she was the biological, adoptive or foster parent.
S12–S15, S25–S26	**Current and previous marital status** – the current study obtains both retrospective information on the number of previous relationships perceived to have had an influence on the child, as well as mapping changes in family structure between nine months and three years of age. Although retrospective and self-reported, the information collected will enable researchers to partially explore the dynamic nature of the child's family structure, within the confines of limited data-collection points. The link between family structure, changes in structure and child outcomes has repeatedly been highlighted in the literature. Parental separation has been linked to an increase in emotional and behavioural problems for the child even when demographic and other variables, such as marital quality, maternal depression, and socio-economic circumstances, were accounted for (Cheng, Dunn & Golding, 2006). Questions on current marital status have been used in a wide range of ESRI surveys, most notably in the Living in Ireland Survey (1994-2001).
S16–S24	**Couple relationship** – these questions recorded details on length of time living together, frequency of arguments, and strength of relationship based on the

DAS marital relationship scale (discussed in detail in Section 8.2.5). Taking account of the information gleaned from both parents, analysis will highlight links between the couple relationship and outcomes for the Study Child. Marital conflict in particular can lead to an affective change in the quality of the parent-child relationship, which in turn has been shown to affect cognitive outcomes in young children, and social competence and work skills later in older children (Walsh, Clerkin & Nic Gabhainn, 2004). Research has also shown the spousal relationship to be the most important source of support for competent parenting (Belsky, 1984). Questions S18–S22 were adapted from questions developed by researchers at Queen's University, Belfast.

Questions S27a to S35a (below) were asked only of the biological mother:

S27a–S27b Questions pertaining to fertility treatment – these questions asked about fertility treatment received in respect of the current pregnancy, including IVF, ICSI and donors. Children conceived through the use of one of these methods can then be compared on the same outcome measures to natural-conception children in assessing their developmental progress both at nine months and in later years. The Report of the Commission of Assisted Human Reproduction (2005, p.xv) recommended the use of a longitudinal study to monitor the development of Irish children born with the aid of ARTs (Assisted Reproductive Technologies); while ***Growing Up in Ireland*** is not specifically sampling ART children, it will be following those children who come up in the random sample.

S28a–S28c Age at first pregnancy, current pregnancy status and age of menarche – age of menarche is associated with faster growth, often characterised by rapid weight gain and growth, particularly during infancy. This can lead to taller childhood stature, increasing the likelihood of earlier maturation and hence shorter stature. This type of growth pattern often characterises increased childhood and obesity risks (Ong et al, 2007). The current study offers a good opportunity to explore this issue with regard to an Irish cohort. Age at menarche and age at first full-term birth (as opposed to those who did not carry to full term) are also two well-established risk factors for breast cancer (e.g. Kelsey et al, 1993) which may also be highlighted in the course of the current study.

Current pregnancy status was also asked to contextualise the current weight of the mother.

S29 **Intentions with regard to becoming pregnant with the Study Child** – this question asked whether the respondent had intended to become pregnant with the Study Child 'at that time', 'much later', 'somewhat later', 'earlier', had 'no intention of becoming pregnant' or were 'unsure/didn't mind'. This issue has important repercussions for quality of parenting and presumably future outcomes for the child. For example, preliminary findings from a Japanese study showed a notable association between pregnancy intention and parenting difficulty (Goto et al, 2005). It found that unintended pregnancy was associated with having feelings about situational abusive behaviour, which in turn may lead to actual maltreatment. Unintended pregnancy can also place a strain on the parental relationship and have a negative impact on the father's ability to contribute to childcare (Brown & Eisenberg, 1995).

S30a–S30c Stress during pregnancy – the mother of the Study Child was asked whether or not she had suffered from stress during the pregnancy, and if yes, whether this was during the first, second and/or third trimester. She was also asked whether the stress was related to the pregnancy itself or some other extraneous factor such as bereavement, work, etc. Some of the implications for high levels of stress are highlighted in the literature. For example, in some studies prenatal maternal anxiety (O'Connor et al, 2002; Van den Bergh & Marcoen, 2004) is associated with children who are more withdrawn, anxious and depressed.

Findings from the ALSPAC longitudinal study indicated that, even after controlling for potential confounding factors, higher levels of anxiety experienced by the mother at weeks 12–22 of pregnancy significantly predicted more severe attention problems in the children at 18 and 32 months of age (O'Connor et al, 2002). It is believed that stress hormones may cross the placenta and affect the baby in the womb in a way that may have long-term implications (Sarkar et al, 2007).

S31–S34 **Smoking behaviour and alcohol use during pregnancy** – antenatal smoking and alcohol behaviours were recorded in terms of timing (first, second, and/or third trimester) and quantity. Maternal use of substances during the gestational period has been linked to child development in that children born to mothers who use these substances during pregnancy have an increased risk for a number of physical, neurological and behavioural deficits (Faden & Graubard, 2000). For example, work by Buttigieg et al (2007) indicated that an infant's ability to respond to oxygen deprivation after birth is severely compromised by exposure to nicotine in the womb and this in turn may have implications for increased risk of SIDS (Sudden Infant Death Syndrome). Research in Ireland indicates that smoking and drinking during pregnancy are a major public health problem (Barry et al, 2006), making this a pertinent issue for the current study.

S35a–S35b **Parental drug use** – this question asked about the incidence and frequency of parental use of various drugs both during pregnancy and currently. The list included prescription drugs as well as illicit drugs such as cannabis, amphetamines, heroin and cocaine. Research indicates that the effects of prenatal drug use on infant outcome may be dose-related, such that heavier amounts of prenatal drug exposure are associated with more negative developmental outcomes (Brooks-Gunn et al, 1996). Griffith et al (1994) found that drug-exposed children raised in homes with ongoing maternal drug use have lower cognitive scores than drug-exposed children raised in drug-free homes, and more recently, negative impacts on the quality of parenting provided for the child have also been found (Dawe et al, 2007). Research has also begun to focus on the child's competencies and resiliency (Pilowsky et al, 2004). Similar questions about drug use have been asked in other studies (e.g. NLSCY) and will enable comparisons of the effects of parental drug use on child outcomes.

S36–S37 **Alcohol-related problems** – two questions aimed specifically at identifying problematic alcohol use, modified versions of questions in the AUDIT (Alcohol Use Disorders Identification Test) tapping into hazardous alcohol use and symptoms of dependence. Parental problematic alcohol use has a number of negative associations for child outcomes. For example, research on early childhood trajectories has indicated that infants of parents with alcohol problems, especially where two parents have a problem, deviate from more normative trajectories for externalising behaviour problems (Edwards et al, 2006). Parents' alcohol problems are also significantly associated with lower positive involvement and sensitivity, and higher negative longitudinal effect; fathers with alcohol problems when the infant was 12 months behaved more negatively with their children at 24 months, as did their partners (Eiden et al, 2004). This information will be collated with information about current drinking patterns (J13 and J14), as well as patterns of parental stress and parental involvement with the child at both nine months and three years to enable researchers to gain a better insight into the impact on the child.

S38 **Smoking in the same room as baby** – an important question because of the potentially serious implications for the baby's health. Australian researchers investigated the risk of respiratory tract infection in the first 12 months of life and found that risk of hospitalisation was significantly higher if mothers smoked in the same room as the infant than if they never smoked in the same room (Blizzard et al, 2003). Ross and Roberts (1999) also found that children exposed to environmental tobacco smoke had a greater likelihood of experiencing acute and chronic respiratory illnesses, including asthma, pneumonia and bronchitis; they were also at a greater risk of having impaired lung functioning, and were more than three times as likely to suffer chronic middle-ear infections than other children. The information from this question should be used in conjunction with other questions on smoking behaviour during pregnancy (S31–32 above) and J9–J12 in the main questionnaire.

S39–40 **Treatment for clinical depression, anxiety or nerves** – if treated by a medical professional for depression anxiety or nerves, the respondent was asked whether this had occurred before pregnancy, during pregnancy, and/or since the baby was born. The mental health of parents is particularly important as mental health problems can compromise a parent's ability to adequately or consistently meet the developmental needs of the child (SAMHSA, 2002). Economic and social disadvantage may also contribute to mental health problems and make it less likely that parents will receive appropriate treatment. This information will be used in conjunction with that obtained in S41 on current depression.

S41 **Current parental depression** – current depression (of both parents) was measured using the CES-D eight-item scale and related to feelings over the week preceding the survey. Both maternal and paternal depression has been linked to various child outcomes, including children's socio-emotional and cognitive development (Beardslee et al, 1996). Although evidence for the link between parental mental health and child outcomes is unequivocal, many writers note that it often interacts with, or is associated with, other variables that can either generate resilience, such as a well-functioning family (Dickstein, 2006), or increase risk, such as poverty (Eamon & Zuehl, 2001). The CES-D eight-item scale is discussed in more detail in Section 8.2.6.

S42–S43 **Parental contact with the criminal justice system** – these questions asked whether parents had been in trouble with the Garda Síochána (the Irish police service) or ever been to prison. While incarceration places great stress on the marital bond and the ability to parent, it can also negatively affect the parent-child bond (Parke & Clarke-Stewart, 2001), leading to insecure attachment and diminished cognitive abilities. Infants require that their caregivers be consistently present in order to form attachment relationships with them (Belsky & Rovine 1987). However, it should also be recognised that positive relationships with other caregivers can protect children from negative outcomes (Parke & Clarke-Stewart, 2001). Furthermore, it is important to remember that children of parents involved with the criminal justice system are not a homogenous group. While the overriding problem in some households may be extreme poverty, for others there may be a multitude of problems (Phillips & Gleeson, 2007), all of which need to be considered within the boundaries of the current study.

S44–S57 **Non-resident parent** – if there was a non-resident parent, the respondent was asked a series of questions about his/her relationship with that person, when they split, the nature of the relationship when pregnancy occurred, custody and parenting arrangements, financial contributions (of the non-resident parent), and contact with the Study Child. These questions were also asked of the non-resident parent. The logic behind them is outlined in Section 7.1 (non-resident parent questionnaire). Asking the Primary Caregiver these questions enables comparisons in the information given by both parents, while also ensuring that the information is gleaned from at least one source, especially where contact details are not available for, or it is not possible to contact, a non-resident parent.

Questions S35–S36 and S42–44 were derived from the Growing up in Australia study and S48 from the Millennium Cohort Study.

.

Chapter 7

OTHER INSTRUMENTS

This section details the other instruments used to collect data. They contribute to objective #8, to provide a data bank on the whole child. In the first two sections we describe the three types of postal self-completion questionnaires that were used: the Non-Resident Parent Questionnaire and the two versions of the regular carer questionnaire. Where no question sources are specified, these questions were developed by ***Growing Up in Ireland***, typically in conjunction with the expert panels (Section 3.3). The latter part of the chapter deals with the physical measurements, interviewer observations and other information recorded by the interviewer.

7.1 NON-RESIDENT PARENT QUESTIONNAIRE

If applicable and if the Primary Caregiver gave permission, the interviewer recorded the contact details of the biological non-resident parent for the purpose of sending out a self-completion questionnaire to that parent. There follows a detailed description of the questions contained in the Non-Resident Parent Questionnaire. An almost identical questionnaire was sent to non-resident fathers and mothers, but without the questions relating to naming on the birth certificate and guardianship. The Non-Resident Parent Questionnaire (father's version) is included in Appendix H.

Q1–8	**Contact visits with Study Child** – these questions collected information about the parent's personal visits with the child including length, timing and location of visits, satisfaction with amount of contact, reasons for dissatisfaction and how visits were determined. These questions will help to describe the time non-resident parents spend with their children and allow examination of how this affects current and future child well-being. The opportunity for overnight stays has been highlighted as affording greater opportunities for engagement in a parenting role (Parkinson & Smyth, 2003). Q1 was previously used by the Early Childhood Longitudinal Study and Q 2, 3 and 5 by Living in Australia (HILDA).
Q9	**Perception of parental role** – see question C2 on Secondary Caregiver Main Questionnaire.
Q10	**Rating of quality of time spent with the Study Child** – parents were asked to rate the perceived quality of time they spent with the Study Child on a Likert scale of 1-5 where 1 = excellent and 5 = very poor. This information may be considered in relation to effects on child development and outcomes.
Q11	**Non-resident parent's performance of routine caring tasks** – this item asked how often the parent performed routine care tasks for the Study Child such as preparing food and taking the child to childcare. Studies show that positive paternal involvement on the part of non-resident parents, for boys and girls, is closely associated with a lower incidence of disruptive behaviour, more responsible behaviour, and thus more pro-social, positive moral behaviour overall (Mosley & Thompson, 1995).
Q12–16	**Amount of financial and other support provided to the Study Child** – the answer to this question may be used in examining the resources available to the Study Child. Q12, Q15 and Q16 were based on questions used by the Early Childhood Longitudinal Study and Q14 was adapted from Living in Australia.
Q17	**Status of relationship with Study Child's mother/father at pregnancy** – this question asked the parent to describe the status of his/her relationship with the other parent at the time of conceiving the Study Child. This status may affect subsequent contact between non-resident parent and Study Child. Many studies suggest that a father will be more likely to maintain contact if he has been married to, or at least cohabiting with, the mother (e.g. Argys, Peters, Cook,

Garasky, Nepomnyaschy, Sorensen & Waller, 2003; Clarke, Cooksey & Verropoulou, 1998; Skevik, 2006), although some variation as to the relative effect of marriage versus co-habitation has been observed between cultures. This question was adapted from the Millennium Cohort Study.

Q18 **Age of Study Child when parents split up** – information on the timing of the parental separation is important for considering the potential timing effects of separation on child outcomes, such as before or after the birth. This question was based on an item from Growing Up in Australia.

Q19 **Father's name on birth certificate (not asked of non-resident mothers as not applicable)** – this question asked fathers only if they were named on the Study Child's birth certificate with a view to considering how this status might affect subsequent contact. An American study of 'fragile families' by Lundberg et al (2005) found that fathers were more likely to maintain contact with their children if they were named on the birth certificate. This question was adapted from the Millennium Cohort Study.

Q20–21 **Application for guardianship status (not asked of non-resident mothers as not applicable)** – this question asked fathers who were not married to the Study Child's mother if they had applied for guardianship status, if this application was through the mother or the courts, and if the application was successful. It will provide useful information indicating the number of fathers who take up this option and whether the status affects their involvement with their children (see previous discussion on potential impact of being named on the birth certificate).

Q22–24 **Current contact with the Study Child's mother/father** – these questions asked about current contact with the child's other biological parent, including frequency of contact, tone of relationship and influence on decisions concerning the Study Child, with a view to examining how these aspects of the parental relationship affect the child. Amato and Rezac (1994) reported that contact with non-resident fathers is related to positive outcomes for the child when the parents have a co-operative relationship but not when they are in conflict. Q22 and Q24 were based on questions used in the Early Childhood Longitudinal Study, and Q23 came from the Millennium Cohort Study *(Q19–Q21 on Non-Resident Mother's Questionnaire)*

Q25 **Desire for future involvement** – this question, taken from the Early Childhood Longitudinal Study, simply asked if the non-resident parent wished to be involved in raising the Study Child in the coming years. Intentions as to future involvement in this wave may be contrasted with actual involvement at subsequent data-collection waves. Vogel, Bradley, Raikes, Boller and Shears (2006) reported that young children with involved, rather than transient, non-resident fathers had better self-regulation and lower levels of aggression.

Q26 **Indicators of delight in child** – non-resident parents were asked a series of questions relating to positive feelings about fatherhood such as whether they talked a lot about their child to friends and family. In the Early Childhood Longitudinal Study (ECLS), from which this item was taken, 69 per cent of resident fathers reported talking about their child all the time and 74 per cent said they found themselves thinking about the child all the time (Avenilla et al, 2006). The ECLS item was itself an extract from a longer scale called the Parental Investment in the Child Questionnaire (Bradley, Whiteside-Mansell, Brisby & Caldwell, 1997).

Q27–28 **Parent's date of birth and age at which he/she first became a parent** – these questions were asked with a view to examining if a particular age group of fathers/mothers is more or less likely to maintain contact as the child grows up. Research from the Fragile Families and Child Well-being Study indicates that first-time fathers may be more likely to maintain contact and to have had paternity formally established (Lundberg et al, 2005). This question was also asked in the Early Childhood Longitudinal Study. *(Q24–Q25 on Non-Resident Mother's Questionnaire)*

Q29–31 **Socio-economic status** – these items provide a means of estimating the non-resident parent's socio-economic status, including employment and occupation. Socio-economic status is likely to affect the resources and/or time the parent has available to give to the Study Child. Parents of lesser means may be less able to afford the cost of either maintaining accommodation suitable for keeping a child overnight or travelling some distance to visit their children. Similar questions have been asked in many surveys undertaken by the ESRI. *(Q26–Q28 on Non-Resident Mother's Questionnaire)*

Q32–35 **Current family/relationship status** – these questions about current marital status and the presence of a new partner and other children were asked with a view to indicating how commitment to other families affects contact with and resources available to the Study Child. The findings on the impact of a 'new' family on contact with the 'old' are conflicting, with some suggesting that contact remains steady (Skevik, 2006), and others that it decreases (e.g. Parkinson & Smyth, 2003). *(Q29–Q32 on Non-Resident Mother's Questionnaire)*

Q36–37 **Parent's nationality and residence in Ireland** – this question provided important information on the ethnic origins of parent and child, and the length of parent's residence in Ireland. *(Q33–Q34 on Non-Resident Mother's Questionnaire)*

Q38 **Parent's state of health** – as for maternal and resident father health. *(Q35 on Non-Resident Mother's Questionnaire)*

7.2 CARER QUESTIONNAIRES

If another person provided care to the Study Child for eight or more hours a week on a regular basis, the interviewer asked the Primary Caregiver for permission to send out a questionnaire, and recorded the contact details if permission was given. There were two different questionnaires, one for carers based in a home situation, and one for carers employed at a care-centre such as a crèche. The Carer Questionnaires are shown in Appendices J and K.

7.2.1 HOME-BASED CARER QUESTIONNAIRE

Q1–2 **Relationship of carer to Study Child** – these questions asked the carer to describe their relationship to the Study Child (relative, non-relative, childminder) and if he/she lived with the Study Child. Findings in Ireland from the Quarterly National Household Survey (CSO, 2005) found that nearly 12 per cent of families with pre-school children used childcare provided by unpaid relatives as their main type of care, 4 per cent used a paid relative and 12 per cent used a paid carer. Q1 and Q2 were previously used in Growing Up in Australia and the Early Childhood Longitudinal Study respectively.

Q3–6 **Details of care provision** – these questions collected information on the location, hours, days and duration of care, to see how variations in these might affect child development. As well as providing descriptive information, these details are of interest in considering the effects of long periods of time in non-parental care. Using data from the Avon Longitudinal Study of Parents and Children, Fergusson, Maughan and Golding (2008) found that children who were cared for by grandparents at all three time points of eight, 15 and 24 months had significantly higher hyperactivity scores at age four years as measured by the Strengths and Difficulties Questionnaire. Q3 and Q6 were

	similar to items used in the Early Childhood Longitudinal Study and Q4 was used in Growing Up in Australia.
Q7	**Carer's perception of relationship with Study Child** – this question from Growing Up in Australia asked how easy or difficult the carer found getting on with the child. This information may be contrasted with information on infant temperament provided by the Primary Caregiver.
Q8–9	**Other children in care situation** – these questions asked about other children being looked after by the home-based carer, including number and ages of these children, were intended to examine how time spent with other children might affect the Study Child's socialisation. There are also issues surrounding transmission of infections between children in a care facility: the National Institute of Child Health and Development (NICHD) Study of Early Child Care (USA) found that children in either centre- or home-based care settings were at a greater risk of ear infections and upper respiratory tract infections, particularly one- and two-year-olds (NICHD, 2001; 2003). These questions were based on similar items used in Growing Up in Australia.
Q10–12,14	**Questions related to the learning environment** – these questions collected information on the types of stimuli available to the child in terms of both toys, books, TV and one-to-one interaction with the caregiver. Play is an important aspect of the social interaction and development of communication between infants and adults, and is essential for encouraging the tools needed to develop social, emotional, communicative and language skills in infancy. The nine-month-old baby is at the sensori-motor stage of development, which extends from birth to two years (Piaget, 1952). At this age, because they have limited language, babies learn through their senses and their movements. Their formation of concepts develops through doing things such as reaching, touching, kicking and pulling at objects. Q14 was used in Growing Up in Australia.
Q13	**Number of hours spent sleeping while in care** – the information collected here complements that collected through the Primary Caregiver questionnaire at D1–-D4.
Q15	**Looking after Study Child when sick** – this question asked about caring for the Study Child when sick, looking at the potential for exposure to infections in childcare situations, and how many carers facilitate parents when children are sick (see commentary for Q8–9 above). A similar question was asked by the Early Childhood Longitudinal Study.
Q16–18	**Demographic characteristics of carer** – providing basic information on the carer including date of birth, gender and nationality.
Q19–21	**Occupational/employment status of carer** – asked about the carer's main occupation if not childcare. The details will be used mostly as descriptive information.
Q22–24	**Education and training of carer** – these questions asked about the carer's education including childcare qualifications, other related training and highest educational level achieved. The information was sought with a view to considering how training affects quality of childcare as seen in child outcomes. Research from the USA suggests that more highly educated home-based carers provide richer learning environments and better-quality care (Clarke-Stewart, Vandell, Burchinal, O'Brien & McCartney, 2002).
Q25	**Carer's experience working in childcare** – this item recorded the carer's childcare experience (not including experience raising their own children), which may affect the quality of care received by the Study Child.

7.2.2 CENTRE-BASED CARER QUESTIONNAIRE

Q1–3	**Details of care provision –** as for Home-Based Carer Q4–Q6. Recent data from the ECLS indicate that centre-based care has a negative effect on socio-behavioural measures relative to parental care (Loeb, Bridges, Bassock, Fuller & Rumberger, 2007). The negative effect was greater for children entering care at a younger age, and for those who spent more than 30 hours per week there.
Q4–5	**Carer's perception of personality of Study Child** – carers were asked to describe the Study Child's temperament relative to other children and the ease of their personal relationship with the child. This information supplements the data on temperament from the Primary Caregiver questionnaire. These questions were previously used by Growing Up in Australia.
Q6	**Is centre registered with HSE?** – this item provides descriptive information, with a view to indicating how many care centres for older children are registered with the Health Service Executive (national regulatory body in Ireland).
Q7–11	**Other children in care situation** – these questions asked for details including number and ages of these children, non-national children, and children with disabilities, with a view to examining how these variables might affect the Study Child's socialisation and quality of care. They overlap with Q8 and Q9 on the Home-Based Carer's questionnaire but with additional questions on children with disabilities and children of other nationalities. These questions were based on items used in Growing Up in Australia.
Q12–14,16	**Questions related to the learning environment** – as Home-Based Carer Questionnaire Q10–Q12, Q14.
Q15	**Infant sleeping** – as Home-Based Carer Q13.
Q16–19	**Details of centre staff** – these items collected information on centre staff including total number, those with childcare qualifications and number of staff whose first language was Irish or English, with a view to considering how differences in training affect quality of care. Studies with younger children find that centre-based care provision is better when staff-child ratios are lower and when staff are better trained (e.g. NICHD Early Child Care Research Network, 2002). These questions were adapted from Growing Up in Australia.
Q20	**Looking after Study Child when sick** – as for Home-Based Carer Q15.
Q21	**Position of respondent in the care setting** (director or employee) – this classification allows the information supplied by the respondent to be put in context.
Q22–24	**Demographic characteristics of carer** – as for Home-Based Carer, Q16–18.
Q25	**Type of care provided by centre** – the respondent described the type of care provided in the centre. Some centres are essentially supervision facilities whereas others have a particular educational philosophy such as Montessori. As well as contributing descriptive information, this item facilitates the possibility of looking at the differing effects of different types of care.
Q26–29	**Education and training of carer** – these questions sought details on the qualifications and training of the respondent carer. See commentary in Q16–19 on effect of staff training.
Q30–31	**Occupational/employment status of carer** – as for Home-Based Carer Q19–21.

Q32-33	**Carer's experience working in childcare overall and time in this particular centre** – these questions recorded information on the carer's experience and settlement in the particular centre.
Q34	**Carer's job satisfaction** – the respondent was asked to rate how happy they were working in childcare, with a view to assessing the possible impact on quality of care and subsequent child outcomes.

7.3 OTHER INSTRUMENTS

7.3.1 FOLLOW-UP INFORMATION

At the time of the household interview, the Primary Caregiver was asked if he/she would be willing to provide a Personal Public Service Number (PPSN) and/or an alternative (possibly more stable) contact address for another person who would be likely to know the family's location at the time of the follow-up survey when the Study Child would be three years old, should the Study Family have moved between surveys. These details were filled out on a separate follow-up information sheet. The Primary Caregiver was also asked to indicate their consent or otherwise to be contacted in the future about possible participation in the qualitative or nested studies (Appendix A).

7.3.2 MEASUREMENTS OF STUDY PARTICIPANTS

In each household, the interviewer took weight and height measurements of the adult respondents and the weight, length and head circumference measurements of the Study Child. Height and weight are necessary to derive a BMI score (Body Mass Index). A Leicester portable height measure was used to record height. The Leicester measuring stick, which has a range of 0–2.07m, gives height in imperial and metric units; the interviewer recorded height to the nearest millimetre.

SECA 761 flat mechanical scales were used for recording adult weight. They are Class IIII medically approved scales. The scales give weight on a metric scale only and have a capacity of 150kg with 1kg graduations.

SECA 835 portable electronic scales were used to measure the infant's weight. They have a capacity of 50kg and are graduated by 20g up to 20kg and by 50g over 20kg. They are Class IIII medically approved.

The SECA 210 measuring mat for babies and small children was used to record the length of the infant. Interviewers were asked to record the length to the nearest millimetre.

The head circumference of the infant was measured using a 70cm / 30 inch disposable paper tape measure. Interviewers were instructed to record the head circumference to the nearest millimetre. Three independent measurements of the head circumference were recorded by the interviewer in the course of the visit to the family home. In keeping with standard practice, the maximum of the three is used for analysis purposes. All of the people responsible for training interviewers had been themselves trained by paediatricians and nursing staff in taking head measurements.

All measurements were recorded on the laptop during the course of the interview.

7.3.3 GPS CO-ORDINATES

The interviewer recorded the GPS co-ordinates of each household on the Work Assignment Sheet. GPS co-ordinates were recorded using a Garmin eTrex handheld GPS receiver. The receiver has 12 differential-ready parallel channels with a GPS accuracy of <15metres RMS.

Latitude and longitude co-ordinates were recorded from the device by the interviewer and then converted by the Study Team to ITM (Irish Transverse Mercator/IRENET95) co-ordinates to facilitate mapping using Grid In Quest software available from Ordnance Survey Ireland.

7.3.4 WORK ASSIGNMENT SHEET

A Work Assignment Sheet was issued to the interviewer for each household. It provided the interviewer with contact details for the family and was used to record response outcomes for each household, GPS and contact details for non-resident parents and regular carers, where relevant.

7.3.5 LINKAGE TO NATIONAL PERINATAL RECORDING SYSTEM AND NATIONAL IMMUNISATION DATABASE

Biological mothers were asked for permission to access the records relating to the birth of the Study Child held as part of the National Perinatal Recording System (NPRS). These records, collected on all births in Ireland, include information on gestation age, birth-weight, delivery and health of mother and infant at birth. The mother was asked to sign an NPRS Access Form; a duplicate form was given to the respondent for her records (see Appendix A for a copy of the consent form).

Separate consent was also sought to link to information relating to the child’s history on the National Immunisation Database.

7.3.6 PERSONAL PUBLIC SERVICE NUMBER (PPSN)

As the PPSN of the Child Benefit recipient (usually the mother) is already available from the Child Benefit Register, the Study Team asked for permission to obtain the PPSN from the Department of Social and Family Affairs (renamed the Department of Social Protection in 2010) in lieu of asking for the actual number. Respondents were asked to sign a consent form to use their PPSN, first for inter-wave tracing and, secondly, for statistical linkage purposes. Respondents could give permission for one use but not the other if that was their preference. Secondary Caregivers were asked for consent in a similar manner, except they were still asked to provide the actual PPSN as this may not always be available from the Child Benefit Register.

Chapter 8

SCALES AND OTHER STANDARDISED MEASURES

In this chapter we discuss the scales and other standardised measures used in ***Growing Up in Ireland***. First, we discuss briefly why it is sometimes preferable to use scales rather than single questions, along with some of the concepts important in the development of scales, namely reliability and validity. A description of the scales and standardised measures will then be outlined.

8.1 SCALES

Some survey questions are designed to address a bigger phenomenon than could be achieved by a single question. One such example in the current study is 'child development', where the Ages and Stages Questionnaire (ASQ) (Squires, Potter & Bricker, 1999) is used to investigate different aspects or dimensions of child development, such as physical, social and cognitive development. By asking just one or two questions, it would be difficult to capture the complexity of these constructs, and it is often deemed that assessment of such concepts is most appropriately done through the use of a scale – simply, a group of questions that, put together, measures a particular concept or concepts. Single-item measures are often not as reliable as multiple-item scales because the latter can average out measurement error in a construct when summed to obtain a total score; the measurement error that often occurs in single items is typically not assessed. Furthermore, a scale with multiple items will generally be better able to differentiate degrees of an attribute than will one single item. Therefore, choosing a scale for a survey instrument is an important decision that shapes the information collected. While the concepts of validity and reliability also apply to single items, these concepts are described here as an introduction to the multi-item standardised measures used in ***Growing Up in Ireland***.

Scales in ***Growing Up in Ireland*** were chosen with regard to their appropriateness to the objectives of the study, and also to previous findings of reliability and validity. Reliability and validity are essential for a good psychological measure. A brief consideration of these concepts is given here before the scales themselves are discussed in detail.

8.1.1 RELIABILITY

Reliability is concerned with the extent to which a scale should consistently reflect the construct it is measuring. In practice, this means that an individual should have similar scores at two different time points or that two people who are at a similar level of a construct should receive similar scores (Field, 2005). Scores should be relatively free of measurement error rather than true variance in the psychological construct being assessed. The reliability of a test is considered one of its most basic psychometric properties, and is necessary before assessment of the validity can even begin, although its existence does not guarantee validity.

8.1.1.1 INTERNAL CONSISTENCY

Internal consistency is based on the correlations between different items on the same test (or sub-scale), i.e. the *extent* to which the items in the tests or sub-scales assess the same characteristic, skill or quality. In internal consistency reliability estimation, a single measurement instrument is administered to a group of people on one occasion to estimate reliability. This type of reliability can enable researchers to interpret data and predict the value of scores and the limits of the relationship among variables. The primary indexes of internal consistency are coefficient alpha (Cronbach, 1988), or, if the items are dichotomous, Kuder-Richardson Formula 20 (KR-20; Kuder & Richardson, 1937). A rule of thumb is that a correlation coefficient of 0.6-0.7 indicates acceptable reliability, and 0.8 or higher indicates good reliability. Extremely high reliabilities (say 0.95 or higher) are not necessarily desirable as these items may not just be consistent but actually redundant.

8.1.1.2 TEST-RETEST RELIABILITY

Test-retest reliability of an instrument is estimated by performing the same test with the same respondents at different points in time. The closer the results, the greater the test-retest reliability of the instrument. The correlation coefficient between two such sets of responses is often used as a quantitative measure of the test-retest reliability.

8.1.1.3 SPLIT HALF RELIABILITY

Split half reliability refers to a design in which a test is split in two and the scores for each half of the test are compared with the other. If the results are consistent then it is more likely that the same thing is being measured.

8.1.2 VALIDITY

Validity refers to the degree to which a measuring instrument accurately reflects or assesses the specific concept that the researcher is attempting to measure. While reliability is concerned with the accuracy of the actual measuring instrument or procedure, validity is concerned with the study's success at measuring what the researchers set out to measure.

Researchers should be concerned with both *external* and *internal* validity. External validity refers to the extent to which the results of a study (regardless of whether it is descriptive or experimental) are generalisable or transferable. Internal validity is the extent to which account is taken of alternative explanations for any causal relationships explored and the methodological rigour with which the study is carried out. Internal validity is only relevant to the specific study in question and the results of the study are therefore non-generalisable. Note that where validity coefficients are calculated, they will range between 0 (low) and 1 (high).

8.1.2.1 CONTENT VALIDITY

Content validity is based on the extent to which a measurement reflects the specific intended domain of content. For socio-cultural studies, content validity forces the researchers to define the domains they are attempting to study.

8.1.2.2 CONSTRUCT VALIDITY

Construct validity seeks agreement between a theoretical concept and a specific measuring device or procedure. It can be broken down into two sub-categories: *convergent validity* and *discriminate (or discriminant) validity*. Convergent validity is the actual general agreement between the instrument of interest and other instruments that purport to measure the same construct or concept, gathered independently of one another, where measures should be theoretically related. Discriminate validity is the lack of a relationship among measures that theoretically should not be related. For example, a new measure of anxiety should show similar results to another existing measure of anxiety but not to a measure of depression. In clinical settings, the term discriminate validity is sometimes used to describe the ability of an instrument to discriminate between groups; for example, clinical and normal samples.

8.1.2.3 PREDICTIVE VALIDITY

Predictive validity refers to the level of agreement between the instrument of interest and some other more direct assessment of the construct, usually at some future point. It is the ability of the instrument to predict something it should theoretically be able to predict. For example, academic tests may be used to predict the ability of a potential student to complete a course in a given discipline.

In the remainder of the chapter we consider some of the characteristics of the scaled items used in ***Growing Up in Ireland***.

8.2 MEASURES USED IN THE HOME

8.2.1 INFANT CHARACTERISTICS QUESTIONNAIRE

Description and rationale

The Infant Characteristics Questionnaire (Bates et al, 1979) is a 24-item parent report instrument on infant temperament. There are versions for six, 13 and 24 months of age, of which the six-month version is the most psychometrically developed, and the version used in ***Growing Up in Ireland***. The 24 items have responses that are rated on a seven-point Likert scale. A value of 1 describes an optimal temperamental trait and a value of 7 indicates a more difficult temperamental trait. It was presented as question B5 on the Primary Caregiver Questionnaire.

The instrument produces scores for each of four sub-scales and these composite scores are obtained by adding the raw scores of items which had discriminating loadings in factor analysis: *Fussy/Difficult* (items 1, 5, 6, 13, 22, 24), *Unadaptable* (items 9, 10, 11, 20), *Dull* (items 16 + 23 – 15), *Unpredictable* (items 2, 3, 4). A child's temperament influences their interactions with their parents; for example, young children who are better able to control their emotions and attention are more likely to have positive interactions with their parents (Raver, 1996). Temperament may affect the development of attachment. Putnam, Sanson and Rothbart (2002) summarise the attributes that have been related to later security of attachment as (maternal ratings of) easy temperament, sociability with strangers, orientation to people rather than objects, distress proneness and reactivity.

Table 8.1: Summary information for the Infant Characteristics Questionnaire

Title: Infant Characteristics Questionnaire
Authors: Bates, Freeland & Lounsbury (1979)
Concept measured: Parent's perception of the infant temperament
Country of origin: USA
Respondents: Primary Caregiver
Administration in *Growing Up in Ireland*: The 24 items were administered on CAPI as part of the main Primary Caregiver interview.
Technical information: *Source*: Bates et al (1979) *Internal consistency* coefficients were mixed with alphas of .79, .75, .39 and .50 found for the fussy/difficult, unadaptable, dull and unpredictable scales, respectively *Test-retest reliability* scores using Pearson product moment correlation coefficients computed over a 30-day interval were: .70 for the fussy/adaptable scale; .54 for the unadaptable scale; .57 for the dull scale; and .47 for the unpredictable scale. Convergence between mother and father ratings was moderately high and statistically significant but only the main fussy-difficult factor had a significant correlation between parent and other observer ratings. Ratings on all scales were: .61 (fussy/difficult), .40 (unadaptable),

.41 (dull), and .38 (unpredictable).

Source: Bates (personal communication, received February 2007) also compared three of the ICQ sub-scales with the Carey and McDevitt (1977) temperament scales: the highest correlation for ICQ *fussy-difficult* was .61 with mood, for ICQ *unadaptable* .43 with Approach, and for ICQ *unpredictable* .51 with rhythmicity.

Source: the ***Growing Up in Ireland*** pilot study (2008)
Reliability:
Internal consistency coefficients similar to those found by Bates et al (1979) with the possible exception of the *dull* factor. Alphas of .69, .71, .13 and .56 were found for the fussy/difficult, unadaptable, dull and unpredictable scales respectively. Albeit on a small pilot sample the alpha for *Dull* was clearly very low.

A factor analysis also confirmed the *fussy/difficult, unadaptable* and *unpredictable* factors but was more equivocal about the *dull* factor.

8.2.2 AGES AND STAGES QUESTIONNAIRE 2ND EDITION (SQUIRES, POTTER & BRICKER, 1999)

Description and rationale

The Ages and Stages Questionnaire (ASQ) was developed as a means of monitoring child development through parental report so that any indication of delay could be investigated promptly. It is intended as a screening tool rather than a diagnostic tool. It has five sub-scales in the following developmental domains: communications; gross motor; fine motor; problem solving and personal/social. The ASQ is organised as separate questionnaires for 19 age intervals ranging between four and 60 months. Each questionnaire has a two-month age 'window' for which it is suitable. The questionnaires are divided into sections reflecting the different developmental domains, and there is considerable overlap from one age interval to the next. For example, the last four questions in the communication domain of the eight-month questionnaire are also the first four questions in that domain on the 10-month questionnaire. All the questions relating to a particular domain are grouped into one section. There are six questions in each domain, 30 questions per age-specific questionnaire.

Administration in Growing Up in Ireland

For the purposes of the ***Growing Up in Ireland*** pilot, an administration procedure was adapted where parents/guardians would be asked a wider age-range of questions than would normally be the case if only one age-specific questionnaire were used. A range of questions was included within each domain so that the 6, 8, 10 and 12-month questionnaires were effectively administered to each child. This gave a much wider developmental range along which a child's development might be indicated than would be the case by choosing the questionnaire relating to one age interval. Due to the overlap between age interval questionnaires, this meant a sub-total of 14 questions per section, and 70 questions in total. Each question has three possible responses: *yes, sometimes*, and *no,* which earn 10, 5 and 0 points respectively. These points are then added to form a domain score for each age interval.

As with the original format, the questions were divided into sections according to developmental domain. The adapted procedure meant that all respondents started with the eight-month questions in each domain. If a child failed the items that children would be expected to achieve earlier than the later items on the eight-month interval questionnaire, then the interviewer also administered the questions from the six-month questionnaire. In such circumstances, because the child had failed to reach the developmental milestones of the eight-month questionnaire, he/she did not progress to the 10-month questionnaire. If, however, a child passed all the earlier items and at least one of the later items on the eight-month questionnaire, the interviewer continued with the 10-month questionnaire and, if appropriate, progressed to the 12-month questionnaire – depending on whether or not the infant had passed certain milestones on the 10-month instrument. This cycle was repeated independently for all five domains (communication, fine motor, etc). If a child was recorded as having passed the eight-month milestones in a domain, he/she was deemed to have also passed the six-month milestones in that domain. If a child's parent did not get as far as attempting more difficult items, these were coded as a *no*. In this way, by effectively completing the 6, 8 10 and 12-month questionnaires, it was possible to calculate a score for each child in each domain, in each of the four relevant questionnaires (i.e. the 6, 8, 10 and 12-month instruments). These discontinue/reversal rules were made operationally more feasible by adapting the ASQ from paper self-completion booklets to CAPI administration by the interviewer. Permission was sought and received from the test publishers for the adaptation for CAPI administration and combination of age intervals.

In addition to the information available from the ASQ User's Guide, the ASQ and its adaptations for ***Growing Up in Ireland*** were subjected to a rigorous piloting process, details of which are available in a separate publication.[13]

Table 8.2: Summary information for the Ages and Stages Questionnaire

Title: Ages and Stages Questionnaire (2nd Edition)
Authors: Squire, Potter & Bricker (1999)
Concept measured: Infant's developmental status in five skill domains: communication, gross motor, fine motor, problem-solving and personal social.
Country of origin: USA
Respondents: Primary Caregiver
Administration in *Growing Up in Ireland*: A large subset of 70 possible questions were administered on CAPI as part of the main Primary Caregiver interview.
Technical Information: For the purposes of this report, we summarise the technical information for the eight-month interval questionnaire from the ASQ User's guide (2nd Edition). ***Source:*** Squires, Potter and Bricker (1999) ***Reliability:*** *Internal consistency* measured using Pearson product moment correlation coefficients were used to compare individual domain scores with total questionnaire scores. Coefficients were .72 (Communication), .76 (Gross Motor), .79 (Fine Motor), .79 (Problem-Solving) and .79 (Personal/Social) on the eight-month interval questionnaire based on 768 cases. Cronbach's alpha coefficients were calculated for domain scores. Again, for the eight-month interval these ranged between .65 (Communication), .76 (Gross Motor), .79 (Fine Motor), .79 (Problem-Solving) and .79 (Personal/Social) based on 743 cases. *Test-retest reliability:* Percentage agreement between classifications on 175 questionnaires completed and readministered within a two-week period was 94 per cent, with a standard error of measurement of .10 (based on multiple age intervals).

---

[13] Report on the pre-pilot, pilot and dress rehearsal exercises of the Infant Cohort quantitative survey (Nov 2008). Available by email from growingup@esri.ie

Interobserver reliability: Classifications based on questionnaires completed by parents (112) were compared with those based on questionnaires completed by an examiner immediately after observation in a standardised assessment. Percentage agreement was 94 per cent and the standard error of measurement was .12.

Validity:

Concurrent validity: Classifications of children based on the ASQ were compared with classifications based on a professionally administered, standardised direct assessment. For children aged up to 30 months, the Revised Gesell and Amatruda Developmental and Neurological Examination (Knobloch, Stevens & Malone, 1980) and the Bayley Scales of Infant Development (Bayley, 1969) were used. Compared to the Bayley, sensitivity was 60 per cent and specificity was 84 per cent based on 37 children in the eight-month interval. For the same age interval, sensitivity with the Gesell was 81 per cent and specificity was 89 per cent based on 170 children.

8.2.3 PARENTAL STRESS SCALE

Description and rationale

The Parental Stress Scale is a self-report scale developed by Berry and Jones (1995) to assess both the positive and negative aspects of parenthood. It comprises four sub-scales: Parental Rewards (6 items); Parental Stressors (6 items); Lack of Control (3 items), and Parental Satisfaction (3 items). The items are rated on a five-point Likert-type scale ranging from ‘strongly disagree’ (1) to ‘strongly agree’ (5). A total stress score of between 18 and 90 is generated on the basis of the responses, higher scores relating to higher levels of stress. The scale is intended to be used for the assessment of parental stress for both mothers and fathers and for parents of children with and without clinical problems.

This is an important measure for ***Growing Up in Ireland*** since previous research has shown clear links with child outcomes. Parenting plays a crucial role in cognitive and emotional development, and parental stress may affect the infant’s developing capacity to regulate emotion. Stress contributes to anxiety, depression and other mental health problems, all of which can negatively affect child outcomes). The first three years of life are seen as especially critical for the potential impact of stress in the parenting system on a child's cognitive, emotional and behavioural development (Burke & Abidin, 1980).

Table 8.3: Summary of technical information for the Parental Stress Scale

Title: Parental Stress Scale
Authors: Berry, J. O. & Jones, W. H. (1995)
Concept measured: Parental stress
Country of origin: USA
Respondents: Primary and Secondary Caregivers
Administration in *Growing Up in Ireland*: Completed on CAPI as part of main interview
Technical Info: ***Source:*** Berry, J. O., & Jones, W. H. (1995)

Sample: 1,276 parents of both typically developing children and those with developmental and behavioural problems.
Reliability:
The Parental Stress Scale demonstrated satisfactory levels of internal reliability (.83) and test-retest reliability (.81).

Validity:
The scale demonstrated satisfactory convergent validity with various measures of stress, emotion and role satisfaction, including perceived stress, work/family stress, loneliness, anxiety, guilt, marital satisfaction, marital commitment, job satisfaction, and social support. Discriminant analyses demonstrated the ability of the scale to discriminate between parents of typically developing children and parents of children with both developmental and behavioural problems.

8.2.4 BASIC DEPRIVATION SCALE

Description and rationale

A substantial amount of research into poverty and deprivation, as well as their influence on outcomes across a very wide range of substantive research areas, has been undertaken in Ireland in recent years (for an overview see, for example, Maitre et al, 2006). Fundamental to much of this work has been the development and implementation of a Basic Deprivation Scale. This measure was developed by the Economic and Social Research Institute (ESRI) and has been used to assess the incidence, correlates and drivers of poverty and deprivation both in Ireland and, increasingly, internationally. The Basic Deprivation Scale has been extremely important in framing Ireland's National Anti-Poverty Strategy as well as in monitoring progress towards achieving national targets.

The scale was developed through work stretching back to 1987 (see Callan et al, 1993, Layte et al, 2001, Nolan et al, 2002 and Maitre et al, 2006). It has most recently been revised using data collected by the Central Statistics Office in 2003 as part of the EU-harmonised European Union Survey of Income and Living Conditions (EU-SILC).

The Basic Deprivation Scale is made up of 11 items relating to poverty in areas such as food, clothing, furniture, debt and minimal participation in social life. The index can be used on its own as a measure of non-monetary deprivation. It has also been widely combined with thresholds of relative income poverty to provide a measure of 'consistent' poverty status and changes therein over time. Using it in this way allows one to obtain a comprehensive picture of a household's command over resources – financial and otherwise.

The Basic Deprivation Scale is one of four identified in analysis of the CSO's EU-SILC data. The other three sub-scales relate to Secondary Deprivation, Housing Deprivation, and Neighbourhood/Environmental Deprivation. The dimensionality of deprivation was investigated using exploratory factor analysis on an initial set of 39 items from the EU-SILC survey. Item loadings on the Basic Deprivation dimension ranged from 0.55 for going without heating to 0.71 for being able to afford new clothes, and eating a roast joint or equivalent (Whelan, Maitre & Nolan, 2007).

Given the focus of ***Growing Up in Ireland*** and space constraints in the relevant instruments, we included only the items associated with Basic Deprivation. Experience in administering the items included in the Basic Deprivation Scale has shown that the set of items in question are relatively non-threatening for the respondent, are relatively short and are easily measured, making them appropriate for use in the current research setting.

Table 8.4: Summary of technical information for the Basic Deprivation Scale

Title: Basic Deprivation Scale
Authors: Economic and Social Research Institute, Dublin (for development and history see, for example, Maitre et al, 2006)
Concept measured: Basic deprivation and component of consistent poverty
Country of origin: Ireland
Respondents: National samples of households and adults therein
Administration in *Growing Up in Ireland*: The 11 items were recorded on the Primary Caregiver CAPI instrument
Technical information: Developmental work was carried out on the national survey of private households in the 1987 survey on Lifestyle and Usage of State Services – c. 4,000 households and related adults. Also on annual ECHP (1994-2001) – varying sample sizes ranging from c. 4,000 to 2,500 households, and, most recently, on a national survey of 3,112 private households and adults therein in the EU-SILC survey. This is carried out on behalf of Eurostat by the Irish Central Statistics Office. The 11-item Basic Scale included in ***Growing Up*** is based on this data source. ***Reliability:*** Very good internal consistency with an alpha Cronbach of 0.84. ***Validity:*** Construct validity strong. The scale exhibits high correlations with others in this area including the ECHP eight-item Basic Deprivation index.

8.2.5 SEVEN-ITEM SHORT FORM OF DYADIC ADJUSTMENT SCALE (DAS-7)

Description and rationale

The original version of the DAS, with 32 items, was developed by Spanier (1976). It provides an assessment of dyadic satisfaction based on participants' self-report and is used as a means of categorising marriages as either distressed or adjusted. Findings from several studies provide strong evidence that the shorter, seven-item DAS maintains the content coverage of the original DAS as well as retaining strong levels of reliability and validity.

Growing Up in Ireland used the seven-item DAS (Sharpley & Rogers, 1984) which comprises three sub-scales and seven questions: three items assessing *dyadic consensus*, where participants rate the degree to which they agree with their partner on several issues, including 'Philosophy of life' and 'Amount of time spent together'; three items assessing *dyadic cohesion* where participants indicate how often specific dyadic activities occur, such as 'Have a stimulating exchange of ideas' and 'Calmly discuss something together'; and one item assessing *global marital satisfaction* where participants rate their general satisfaction with their 'real life' relationship. Six of the items are rated on a six-point Likert-type scale (with endpoints *always agree* and *always disagree* or *all the time* and *never*), while the seventh item is rated on a seven-point scale ranging from *extremely unhappy* to *perfect*. A general satisfaction score is calculated as a sum of all seven items' scores.

Marital satisfaction is an important factor in family functioning, and the manner in which parents interact is crucial for child outcomes. For example, marital satisfaction has been highlighted as not only important in affecting the child's well-being, but also that of the parents, as it is seen as part of adult life satisfaction (Bradbury, Fincham & Beach, 2000). While the measure can be used as a continuous score, Hunsley et al (2001) developed some preliminary cut-off points (<18 distressed; >25 non-distressed), although they caution that further work is needed on this. While the researchers are aware that reliance solely on the DAS (seven-item) to determine marital distress might result in some classification errors, the brevity of the measure and its reliability and validity make it an ideal tool for the research purposes of a project such as ***Growing Up in Ireland***.

Table 8.5: Summary of technical information for the DAS-7

Title: Seven-item Short Form of the Dyadic Adjustment Scale (DAS-7)
Authors: Sharpley, C.F. and Rogers, H.J. (1984) Derived from the original Dyadic Adjustment Scale, Spanier (1976)
Concept measured: Marital Satisfaction
Country of origin: USA/Australia
Respondents: Primary and Secondary Caregivers
Administration in *Growing Up in Ireland*: Self-completed on CASI during sensitive part of main interview
Technical information: ***Source:*** Sharpley and Rogers (1984) ***Sample:*** 545 married, separated and divorced individuals ***Reliability:*** Scale shows acceptable internal consistency of .76 for an abbreviated screening test. ***Validity:*** The scale differentiated between married, separated and divorced couples. ***Source:*** Hunsley, Pinsent, Lefebvre, James-Tanner and Vito (1995) ***Sample:*** 196 cohabiting or married individuals ***Reliability:*** The scale yielded a coefficient alpha of .82. ***Validity:*** Moderate to high correlations of .46 and .72 were found with the Emotional Self-Disclosure Scale and the Kansas Marital Satisfaction Scale. ***Source:*** Hunsley, Best, Lefebvre and Vito (2001) ***Sample 1:*** 392 individuals - 148 from a clinical sample, 244 from a community sample ***Reliability:*** An internal consistency measure of .79 was yielded for both the clinical and community samples ***Validity:*** Criterion validity was evidenced as the scale proved effective in distinguishing couples in the community sample from those seeking marital therapy services. The measure was also successful in classifying participant marriages as distressed or adjusted ***Sample 2:*** 162 cohabiting or married individuals ***Reliability:*** The internal consistency reliability was .78 for this sample. ***Validity:*** A correlation of .69 and .43 was found with the Kansas Marital Satisfaction Scale and the Emotional Self-Disclosure Scale respectively.

8.2.6 CENTRE FOR EPIDEMIOLOGICAL STUDIES DEPRESSION SCALE (8-ITEM) (CESD-8)

Description and rationale

The CES-D is a widely used self-report measure that was developed specifically as a screening instrument for depression in the general population as opposed to being a diagnostic tool that measures the presence of clinical depression. It was originally designed as a dimensional assessment of depression in adults and has also been used to screen for depression in children and adolescents. The CES-D has been shown to discriminate children with depressive disorders from those without psychopathology (e.g. Prescott, McArdle, Hishinuma et al, 1998) and to discriminate depressive disorders from other forms of psychopathology (e.g. Roberts, Andrews, Lewinsohn & Hops, 1990), as well as correlating highly with other measures of depression, thereby supporting its validity.

Growing Up in Ireland used the short (eight-item) version of the CES-D, which correlates highly with the full 20-item version ($r = 0.93$). Sample item**s** include: "I felt that I could not shake off the blues even with help from my family and friends" and "I thought my life had been a failure", which were answered on a four-point Likert scale ranging from 0 (*<1 day*) to 3 (*5–7 days*), with reference to the previous seven-day period. A composite score is calculated by summing item responses (range: 0–24). While it will often be useful to treat scores as continuous, respondents can also be categorised according to the recommended criterion for depression, with composite scores of ≥7 being classified as depressed and scores <7 defined as not depressed. It should be noted, however, that while a score above or equal to 7 suggests a clinically significant level of psychological distress, it does not necessarily mean that the participant has a clinical diagnosis of depression. In a general population, about 20 per cent would be expected to score in this range. It is incorporated into ***Growing Up in Ireland*** on a self-complete basis because of its sensitivity and also to minimise report bias.

Although several studies have reported only a modest relationship between the CES-D and a diagnosis of depression from a structured clinical interview, it is still likely that there will be important psychological differences between those scoring above and below the cut-off points on the scale.

The eight-item CES-D has the advantage of being a short measure (administered in 2-3 minutes) that has been used in many studies. Short depressive symptom indices such as this are generally regarded as acceptable in instances where a brief assessment is needed for broad screening or research purposes, although there is also a conversion formula for projecting the full 20-item CES-D from the eight-item version in order to compare results. Access to information on experience of depression is particularly important in light of research showing that not only is depression a prevalent condition but that depression in a parent can also affect child outcomes (e.g. Beardslee, Keller, Seifer et al, 1996).

Table 8.6: Summary of technical information for the CES-D

Title: Center for Epidemiological Studies Depression Scale (8 items)
Authors: Melchior, L.A., Huba, G.J., Brown, B. and Reback, C.J. (1993) Derived from the Center for Epidemiological Studies Depression Scale (20 items) – NIMH
Concept measured: Depression
Country of origin: USA
Respondents: Self-completed by Primary and Secondary Caregivers
Administration in *Growing Up in Ireland*: Self-completed by Primary and Secondary Caregivers on a laptop (CASI)
Technical information: ***Source:*** Melchior, Huba, Brown and Reback (1993) ***Sample 1:*** Heterogeneous community sample of 411 women ***Reliability:*** Scale shows high internal consistency .86. ***Validity:*** The scale correlates highly (.93) with the original 20-item version CES-D scale. ***Sample 2:*** 83 women in a residential drug abuse programme ***Validity:*** The scale correlates with the BPI depression scale (.54). ***Source:*** DiClemente et al (2005) ***Sample:*** 460 black female adolescents ***Reliability:*** Test-retest reliability of .83 and .87 respectively was found for the six- and 12-month follow-up assessments. ***Source:*** Huba, Melchior, Panter (1998-2001) ***Sample:*** 683 clients with HIV/AIDS ***Reliability:*** Internal consistency reliability was acceptable (0.88) for an abbreviated screening test.

Chapter 9

SUMMARY

9.1 SUMMARY

The objective of this report was to describe in detail the design, instruments and procedures used for the Infant Cohort (at nine months) of ***Growing Up in Ireland***. The focus throughout was on operational issues as well as the content, structure and format of the instrumentation and related documentation.

Growing Up in Ireland has a key role in the implementation of the National Children's Strategy (2000). The project has nine key objectives relating to the development of a comprehensive data bank on the whole child and all the variations encompassed by that concept. This data bank will be of immense use in informing and managing policy and service provision in years to come.

Growing Up in Ireland has been informed by the Bronfenbrenner bioecological framework which ensures that critical aspects of a child's development and influences on development are assessed. This conceptual framework (described in detail in Chapter One) will allow analysis of child outcomes and outcome trajectories.

The sample design for the study, outlined in Chapter Two, was based on a random sample of children selected from the Child Benefit Register so as to be nine months of age (in their 10th month) at time of interview, and the project has successfully recorded information from 11,100 children and their families.

The background to the development and design of procedures has been discussed in full. Important expert inputs were outlined, especially those from various advisory committees. We discussed the work of the Scientific and Policy Advisory Committee (SPAC), the Panel of Expert Advisors, the Delphi process used in questionnaire development, the Children's Advisory Forum, and the various stakeholder groups and key groups in the overall governance structure of the project – the Project Team and Steering Groups (Chapter Three).

The Study Team was very aware of its responsibilities in implementing the project to the highest international standards of ethical and scientific rigour. The overall study substantially benefits from a multi-layered and interlocking governance structure – the overarching element of which is a high-level Inter-Departmental Steering Group and Working Group (the latter referred to as the Project Team). A particularly important aspect of the monitoring structure is the Research Ethics Committee. The importance of rigorous ethical protocols in research is assuming an ever-increasing priority, all the more so in a study of children and families. Procedures and protocols to ensure that the study is carried out to the highest ethical standards were put in place. The fact that the project is being carried out under the Statistics Act (1993) has been extremely important for the conduct of the study. This is the legislation that underpins the work of the Central Statistics Office (CSO). While the Statistics Act facilitates access to certain data sources, its most important implication is that it provides a particularly strong legal basis for the protection of all information collected from all informants. Under the Act, the information collected must be treated as strictly confidential and used only for statistical purposes. The protection of the data against unlawful disclosure greatly strengthened the Study Team's guarantee of confidentiality (Chapter Four).

Procedures and Instruments were described in Chapters Five to Seven. Initial consent was sought from the parents of the infants, and, once this was secured, intensive interviews were carried out with the Primary and Secondary Caregivers (where relevant) of the nine-month-old. The instruments used contained a number of standardised measures, with information being recorded on a broad range of issues in order to describe as comprehensively as possible the life of a nine-month-old child in contemporary Ireland. These areas included health, parenting, family context, pastimes and activities, cognitive outcomes, temperament, income, and community. In addition, an attempt was made to record details from non-resident parents and non-cohort caregivers.

Growing Up in Ireland is wholly funded by the Irish Government, with a primary aim of addressing policy issues and providing a direct input to policy formation. This extremely complex, intensive, long-term project will bridge many of the gaps in data available on Irish children and childhood. It will enable the assessment, over time, of whether or not key national goals of child development and policy are being achieved – be they measured in terms of individual outcomes of the child and his/her family or in terms of access to services aimed at children and families. The project will enable us to identify children who are most at risk of less than optimal development and poor outcomes and, by identifying the early antecedents of poor outcomes, will substantially assist in developing preventative strategies and measures where they are most needed. Overall, of course, ***Growing Up in Ireland*** will, for the first time, allow us to develop a picture of the lives of all children in Ireland in their full diversity. In addition to a set of descriptive and analytical reports, the project will very substantially contribute to the infrastructure of research into children’s lives. All of the data included in the survey (as described in this report) will be lodged in the Irish Social Science Data Archive for use by the research and policy communities.

9.2 VALUE OF A LONGITUDINAL APPROACH

This report has described in detail all items and scaled measures used in the study, including information on their robustness and rationale for their inclusion. The richness of the data will allow many valuable analyses to be undertaken, even with only one wave of data. However, all data collection is premised on their value for longitudinal analysis. The ***Growing Up in Ireland*** instruments include variables that can be used to explain both current and future outcomes. When selecting items for the nine-month Wave 1 instruments, the Study Team endeavoured to include items that would be relevant to models for predicting outcomes at the three-year follow-up, as well as variables relevant to explaining contemporary outcomes. A design in which the original cohort is revisited at age three has considerable advantages over two separate cross-sectional studies with different individuals at each data collection. For example, it is possible to consider individual paths to outcomes, with data for the earlier age collected contemporaneously rather than relying on retrospective accounts.

A set of outcomes likely to be of particular interest when the cohort reaches three years of age will be focused on developmental aspects such as physical outcomes, cognitive outcomes, communication and language, and social outcomes. A number of variables measured at nine months could be used in a model to explain developmental outcomes at age three years. These include early developmental patterns (as measured by the ASQ), child temperament (as measured by the ICQ), parenting style, parental lifestyle (smoking and drinking), parental stress (Parental Stress Scale), family structure, and socio-economic status. It will be possible to identify not just risk factors (e.g. parent smoking) but also factors that promote resilience (e.g. parental satisfaction).

Many of the variables measured at Wave 1 will be measurable at Wave 2, facilitating investigation into how changes in one aspect of the child’s life may contribute to changes in another area, the interactions between which may be quite complex. For example, a child may move from a two-parent to a one-parent family structure, which in turn may result in a decrease in economic resources and, possibly, a negative impact on the child’s cognitive or behavioural outcomes. However, this trajectory in itself may be moderated by supportive kin relationships (e.g. grandparents), a prosocial temperament, secure attachment or a combination of all these characteristics. In ***Growing Up in Ireland***, it will be possible to look at the changes in the explanatory variables and how they might interact to influence the likelihood of a given outcome in the second wave.

REFERENCES

Abrams, B., Altman, D., & Pickett, K. (2000). Pregnancy weight gain: Still controversial. *American Journal of Clinical Nutrition*, 71, 1233-1241.

Agostoni, C., Decsi, T., Fewtrell, M., Goulet, O., Kolacek, S., Koletzko, B., Michaelsen, K. F., Moreno, L., Puntis, J., Rigo, J., Shamir, R., Szajewska, H., Turck, D., & van Goudoever, J. (2008) Complementary Feeding: A commentary by the ESPGHAN Committee on Nutrition. *Journal of Pediatric Gastroenterology and Nutrition*, 46, 99-110.

Allen, L. H. (2000). Anemia and iron deficiency: effects on pregnancy outcome. *American Journal of Clinical Nutrition* 71 (supplement), 1280s-1284s.

Amato, P.R. and S. Rezac (1994). Contact with nonresident parents, interparental conflict, and children's behavior. *Journal of Family Issues* 15, 191-207

Anderson, J. W., Johnstone, B. M., & Remley, D. T. (1999). Breastfeeding and cognitive development: a meta-analysis. *American Journal of Clinical Nutrition*, 70, 525-535.

Argys, L., Peters, E., Cook, S., Garasky, S., Nepomnyaschy, L., Sorensen, E., & Waller, M. (2003). *Nonresidential parenting: Measuring contact between children and their nonresident fathers*. In Bethesda, MD: Paper presented at Measurement Issues in Family Demography Workshop.

Armistead, L., Klein, K., & Forehand, R. (1995). Parental physical illness and child functioning. *Clinical Psychology Review*, 15, 409-422.

Avenilla, F., Rosenthal, E., and Tice, P. (2006). Fathers of U.S. Children Born in 2001: Findings from the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), E.D. Tab. (NCES 2006-002). Washington, DC: National Center for Education Statistics.

Ball, H. L., Hooker, E., & Kelly, P. J. (1999). Where will the baby sleep? Attitiudes and practices of new and experienced parents regarding cosleeping with their newborn infants. *American Anthropologist*, 101, 143-151.

Barr, R.G. (2006) Crying behaviour and its importance for psychosocial development in children. In: Tremblay RE, Barr RG, Peters RDeV, eds. *Encyclopedia on Early Childhood Development*: 1-10[online]. Montreal, Quebec: Centre of Excellence for Early Childhood Development. Available at: http://www.child-encyclopedia.com/documents/BarrANGxp.pdf. Accessed [6/12/08].

Barry, S., Kearney, A., Lawlor, E., McNamee, E., & Barry, J. (2006). *The Coombe Women's Hospital study of alcohol, smoking and illicit drug use, 1988-2005*. Unpublished.

Bates, J.E., Freeland, C. & Lounsbury, M.L. (1979). Measurement of infant difficultness. *Child Development*, 50, 794-803.

Baumrind, D. (1991). Effective parenting during the early adolescent transition. In P.A. Cowen and E.M. Hetherington (Eds.), *Advances in family research*, 2, 111-163, Hillsdale , NJ:Erlbaum.

Bayley, N. (1969) *Bayley Scales of Infant Development*. San Antonion, TX: The Psychological Corporation.

Beardslee, W. R., Keller, M. B., Seifer, R., Podorefsky, D., Staley, J., Lavori, P. W., & Shera, D. (1996). Prediction of adolescent affective disorder: Effects of prior parental affective disorders and child psychopathology*. Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 279-288

Belsky, J. (1984). The determinants of parenting: a process model. *Child Development*, 55, 83-96.

Belsky, J. & Rovine, M. (1987) Temperament and attachment security in the strange situation: An empirical rapprochement*.* *Child Development*, 58, 787-795.

Berger, L. M. & Waldfogel, J. (2004) Maternity leave and the employment of new mothers in the united states. *Journal of Population Economics*, 17, 2, 331-349.

Berry, J.O. & Jones, W.K. (1995) The Parental Stress Scale: Psychometric Evidence. *Journal of Social and Personal Relationships*, 12, 3, 463-472.

Blaxter, M. (1989). A comparison of measures of inequality in morbidity. In A.J.Fox (Ed.), *Health Inequalities in European Countries*. (pp. 199-230). Aldershot: Gower.

Blizzard, L., Ponsonby, A., Dwyer, T., Venn, A. & Cochrane, J.A. (2003) Parental smoking and infant respiratory infection: how important is not smoking in the same room with the baby? *American Journal of Public Health*, 93, 3, 482-488.

Bodnarchuk, J. L. & Eaton, W.O. (2004). Can parent reports be trusted?: Validity of daily checklists of gross motor milestone attainment. *Journal of Applied Developmental Psychology, 25*(4), 481-490.

Bohlin, G., Hagekull, B. & Rydell, A-M. (2000). Attachment and social functioning: A longitudinal study from infancy to middle childhood. *Social Development*, 9, 1, 24-39.

Bolton P., Pickles, A., Harrington, R., Macdonald, H., & Rutter, M. (1992). Season of birth: issues, approaches and findings for autism. *Journal of Child Psychology and Psychiatry, 33*, 173–185.

Bonham, S. (2005). Report on Perinatal Statistics for 2002. Dublin: HIPE and NPRS Unit, ESRI.

Booth, A.L. and Kee, H.J. (2005) Birth order matters: the effect of family size and birth order on educational attainment. *Discussion paper 1713*, Institute for the Study of Labor, Bonn.

Boris, N. W., Aoki, Y., & Zeanah, C. H. (1999). The development of infant-parent attachment: Considerations for assessment*.* *Infants and Young Children*, 11, 1-10.

Bornstein,M.H. (1995) *Handbook Of Parenting: Status And Social Conditions Of Parenting*. Mahwah, NJ, Lawrence Erlbaum Associates, Inc.

Bowling, A. (2005). Just one question: if one question works, why ask several? *Journal of Epidemiology and Community Health* 59, 342-345.

Bradbury, T. N., Fincham, F. D., & Beach, S. R. H. (2000). Research on the nature and determinants of marital satisfaction: A decade in review. *Journal of Marriage and the Family*, 62, 964-980.

Bradley, R.H., Whiteside-Mansell, L., Brisby, J.A. & Caldwell, B.M. (1997). Parents' socioemotional investment in children. *Journal of Marriage and the Family*, 59, 1, 77-90.

Brockington, I.F. (1996). *Motherhood and Mental Health*. Oxford University Press: Oxford.

Bronfenbrenner, U. & Morris, P. (2006). The bioecological model of human development. In R.M.V.Lerner, W. Damon, & R. M. S. Lerner (Eds.), *Handbook of Child Psychology, Vol. 1: Theoretical Models of Human Development* (6th ed., pp. 793-828). Hoboken, NJ: Wiley.

Bronfenbrenner, U. (1979). *The Ecology of Human Development: Experiment by Nature and Design*. Cambridge: Harvard University Press.

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

Brooks-Gunn, J., Klebanov, P.K. & Duncan, G.J. (1996) Ethnic differences in children's intelligence test scores: role of economic deprivation, home environment, and maternal characteristics. *Child Development,* 67, 396-408.

Brown, S. S., & Eisenberg, L. (Eds.). (1995) *The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families.* Washington, DC: National Academy Press.

Burke, W. T., & Abidin, R. R. (1980). Parenting Stress Index (PSI)—A system assessment approval. In R. R. Abidin (Ed.), *Parent Education and Intervention Handbook*. Springfield, IL: Thomas.

Buttigieg J., Brown, S., Zhang, M., Lowe, M., Holloway, A.C., & Nurse, C.A. (2007) *Chronic nicotine in utero selectively suppresses hypoxic sensitivity in neonatal rat adrenal chromaffin cells*. http://www.fasebj.org/cgi/rapidpdf/fj.079194comv1.pdf

Callan, T., Nolan, B. & Whelan, C.T. (1993) Resources, deprivation and the measurement of poverty. *Journal of Social Policy*, 22, 2.

Carey, W.B. & McDevitt, S.C. (1977*) Infant Temperament Questionnaire (4 To 8 Months).* Department of Educational Psychology. Temple University, Philadelphia.

Carlson, M. & Corcoran, M. (2001). Family structure and children's behavioral and cognitive outcomes*. Journal of Marriage and the Family*, 63, 779-792.

Catov, J. M., Newman, A. B., Kelsey, S. F., Roberts, J. M., Sutton-Tyrell, K. C., Garcia, M., Ayonayon, H. N., Tylavsky, F., & Ness, R. B. (2006) Accuracy and reliability of maternal recall of infant birth weight among older women*. Annals of Epidemiology* 16[6], 429-431.

Central Statistics Office (2006). *2005 Quarterly National Household Survey - Special Childcare Module Dublin*: Stationery Office.

Central Statistics Office (2006). *Quarterly National Household Survey: Childcare, Quarter 1 2005 Dublin*: Central Statistics Office.

Ceriani Cernandes, J.M., Noceda, G., Barrera, L., Martinez, A.M. & Garsd, A. (2003). Maternal and perinatal factors influencing the duration of exclusive breastfeeding during the first 6 months of life. *Journal of Human Lactation*, 19, 136-144.

Cheng, H., Dunn, J., O'Connor, T., & Golding, J. (2006). Factors moderating children's adjustment to parental separation: findings from a community study in England. *Journal of Abnormal Child Psychology*, 34, 230-241.

Chodick, G., Shalev, V., Goren, I. & Inskip, P. (2007). Seasonality in birth weight in Israel; New evidence suggests several global patterns. *Annals of Epidemiology, 17*, 440-6

Chotai, J., Forsgren, T., Nilsson, L. G., & Adolfsson, R. (2001). Season of birth variations in the temperament and character inventory of personality in a general population. *Neuropsychobiology, 44,*19–26.

Chotai, J., Jonasson, M., Hagglof, B., & Adolfsson, R. (2002). The temperament scale of novelty seeking in adolescents shows an association with season of birth opposite to that in adults. *Psychiatry Research,111,* 45–54.

Christian, K., Morrison, F.J. & Bryant, F.B. (1998). Predicting kindergarten academic skills: Interactions among child care, maternal education and family literacy environments. *Early Childhood Research Quarterly*, 13, 3, 501-521.

Clarke, E. C., Cooksey, E. C. & Verropoulou, G. (1998). Fathers and absent fathers: Sociodemographic similarities in Britain and the United States. *Demography, 35,* 217-228.

Clarke-Stewart, K. A. (1978) And Daddy makes three: the father's impact on mother and young child. *Child Development*. 49, 466-478.

Clarke-Stewart, K. A., Vandell, D. L., Burchinal, M., O'Brien, M., & McCartney, K. (2002). Do regulable features of child-care homes affect children's development? *Early Childhood Research Quarterly*, 17, 52-86.

Cnattingius, S. & Lambe, M. (2002). Trends in smoking and Overweight during Pregnancy: Prevalence, risks of pregnancy complications, and adverse pregnancy outcomes. *Seminars in Perinatology* 26[4], 286-295.

Cochran, M. (1993) Parenting and personal social networks. In Luster,T.; Okagaki,L. (Eds.) *Parenting: An Ecological Perspective*. Hillsdale, NJ, Lawrence Erlbaum Associates.

Collins, C. (2001). *Design of the National Children's Strategy Longitudinal Study of Children*. Unpublished report submitted to the Health Research Board by the consortium represented by S.Greene, A.Hyland, C.Kelleher, S.Mennell, B.Whelan and J.Wilde.

Condon, J. T. & Corkindale, C. J. (1998). The assessment of parent-to-infant attachment: Development of a self-report questionnaire instrument. *Journal of Reproductive and Infant Psychology*, 16, 57-76.

Condon, J.T., Corkindale, C.J. and Boyce, P. (2008). Assessment of postnatal paternal-infant attachment: Development of a questionnaire instrument. *Journal of Reproductive and Infant Psychology, 26,* 195-210.

Cook, D. G. & Strachan, D. P. (1999). Health effects of passive smoking 10: Summary of effects of parental smoking on the respiratory health of children and implications for research. *Thorax*, 54, 357-366.

Cronbach,L.J. (1988). Internal consistency of tests: Analyses old and new*. Psychometrika*, 53, 63-70

Dahl, G. B. & Moretti, E. (2004). *The Demand for Sons: Evidence From Divorce, Fertility, and Shotgun Marriage.* Cambridge, MA: National Bureau of Economic Research.

Davies, G., Welham, J., Chant, D., Torrey, E. F., & McGrath, J. (2003). A systematic review and meta-analysis of Northern Hemisphere season of birth studies in schizophrenia. *Schizophrenia Bulletin, 29*, 587–593.

Dawe, S., Frye, S., Best, D., Moss, D., Atkinson, J., Evans, C., & Lynch, M. H. P. (2007). *ANCD Research Paper: Drug use in the family: impacts and implications for children.* Australian National Council on Drugs.

Dee, D. L., Li, R., Li-Ching, L., & Grummer-Strawn, L. M. (2007). Associations between breastfeeding practices and young children's language and motor skill development. *Pediatrics* 119[Supplement 1], S92-S98.

Dejmek, J., Solansk'y, I., Podrazilova, K., & Sram, R. (2002). The exposure of nonsmoking and smoking mothers to environmental tobacco smoke during different gestational phases and fetal growth. *Environmental Health Perspectives* 10[6], 601-606.

DeLeon, C.W. & Karraker, K. (2007). Intrinsic and extrinsic factors associated with night waking in 9-month-old infants*. Infant Behavior & Development*, 30, 596-605.

Department of Health and Children (1999). *Children First: National Guidelines for the Protection and Welfare of Children.* Dublin: The Stationery Office.

Department of Health and Children (2000). *The National Children's Strategy: Our Children - Their Lives* Dublin: The Stationery Office.

Department of Health and Children (2006). *State of the Nation's Children - Ireland 2006*. Dublin: The Stationery Office.

Dezateux, C., Foster, L., Tate, R., Walton, S., Samad, L., Bedford, H., Bartington, S., Peckham, C., Cole, T., & Butler (2005). Children's health. In S.Dex & H. Joshi (Eds.), *Children of the 21st Century* (pp. 133-158). Bristol: The Policy Press.

Dickstein, S. (2006). *Family Mealtime Functioning, Maternal Depression, and Early Childhood Outcomes*. http://www.apa.org [On-line]. Available: http://www.apa.org/pi/cyf/fam3.html

DiClemente, R.J., Wingood, G.M., Lang, D.L., Crosby, R.A., Salazar, L.F., Harrington, K. and Hertzberg, V.S. (2005) Adverse health consequences that co-occur with depression: a longitudinal study of black adolescent females. *Pediatrics*, 116, 78-81

Donath, S. & Amir, L. H. (2001). Rates of breastfeeding in Australia by State and socio-economic status: Evidence from the 1995 National Health Survey. *Journal of Paediatrics and Child Health*., 36, 164-168.

Dresang, L.T., MacMillan Rodney, W. and MacMillan Rodney, K. (2006) Prenatal ultrasound: a tale of two cities. *Journal of the National Medical Association, 98, 2*, 167-171.

Dunst, C.J. & Trivette, C.M. (1988) A family systems model of early intervention with handicapped and developmentally at-risk children. In D. Powell (Ed.) *Parent Education As Early Childhood Intervention: Emerging Directions In Theory, Research And Practice* (pp.131-180). Norwood, NJ, Ablex.

Eamon, M.K., & Zuehl, R.M. (2001). Maternal depression and physical punishment as mediators of the effect of poverty on socioemotional problems of children in single-mother families. *American Journal of Orthopsychiatry*, 71(2), 218-226.

Edwards, E.P., Eiden, .RD. & Leonard, K.E. (2006) Behavior problems in 18- to 36-month-old children of alcoholic fathers: secure mother-infant attachment as a protective factor. *Developmental Psychopathology*, 18, 395–407.

Eggebeen, D. J., & Hogan, D. P. (1990) Giving between generations in American families. *Human Nature*, 1, 3, 211-232.

Eide, M. G., Oyen, N., Skjoerven, R., Bjerkedal, T., & Tell, G. S. (2005). Size at birth and gestational age as predictors of adult height and weight. *Epidemiology* 16, 2, 175-181.

Eiden, R.D., Edwards, E.P. & Leonard, K.E. (2004) Predictors of effortful control among children of alcoholic and nonalcoholic fathers. *J. Stud. Alcohol* 65:309–19.

Faden,V.B. & Graubard,B.I.(2000) Maternal substance use during pregancy and developmental outcome at age 3. *Journal of Substance Abuse*, 12, 329-340.

Fergusson, E., Maughan, B., & Golding, J. (2008). Which children receive grandparental care and what effect does it have?. *The Journal of Child Psychology and Psychiatry*, *49* (2), 161 - 169

Fewtrell, M. S. (2004). The long-term benefits of having been breastfed. *Current Paediatrics* 14, 97-103. 2004.

Field, A. (2005). *Discovering Statistics Using SPSS*. 2nd Ed. London: Sage.

Flacking, R., Nyqvist, K. H., & Ewald, U. (2007). Effects of socioeconomic status on breastfeeding duration in mothers of preterm and term infants. *The European Journal of Public Health*, 17, 579-584.

Flay, B. R., Hu, F. B., Siddiqui, O., Day, E., Hedeker, D., Petraitis, J., Richardson, J., & Sussman, S. (1994). Differential influence of parental smoking and friends' smoking on adolescent initiation and escalation and smoking. *Journal of Health and Social Behaviour*, 35, 248-265.

Food Safety Authority of Ireland. (1999). *Recommendations for a national infant feeding policy. Report of the Infant Feeding Sub-Committee of the Food Safety Authority*, Dublin.

Galinsky, E. (1999) *Ask The Children: What America's Children Really Think About Working Parents.* New York, William Morrow & Co.

Glantz, F. B. & Layzer, J. I. (2000). *The Cost, Quality And Child Outcomes Study: A Critique.* Cambridge, MA: Abt Associates.

Goldberg, G. (2003). Nutrition in pregnancy: the facts and the fallacies. *Nursing Standard*, 17, 39-42.

Gortmaker, S. L., Kagan. J., Caspi, A. & Silva, P. A. (1997). Daylength during pregnancy and shyness in children: results from northern and southern hemispheres. *Developmental Psychobiology, 31*, 107–114.

Goto, A., Yasumura, S., Yabe, J., Anazawa, Y., & Hashimoto, Y. (2005) Association of pregnancy intention and parenting difficulty in Fukushima, Japan*.* *Journal of Epidemiology*, 15, 6, 244-246.

Greene et al., (2010). *Background and Conceptual Framework***.** Office of the Minister for Children and Youth Affairs. The Stationery Office, Dublin.

Gregg,P.; Guiterrez-Domenech,M. & Waldfogel,J. (2003) *The Employment Of Married Mothers In Great Britain 1974-2000*. CMPO.

Griffith, D., Azuma, S. & Chasnoff, I. (1994) Three-year outcome of children exposed prenatally to drugs. *Journal of the American Academy of Child and Adolescent Psychiatry,* 33, 20-27.

Gruenewald, P. J. & Johnson, F. W. (2006). The stability and reliability of self-reported drinking measures. *Journal of Studies on Alcohol*, 67, 738-745.

Guterman, N.B., and Yookyong Lee (2005) The role of fathers in risk for physical child abuse and neglect: Possible pathways and unanswered questions. *Child Maltreatment,* 10, 2, 136-149.

Haas, S. A. (2007). The long-term effects of poor childhood health: an assessment and application of retrospective reports. *Demography*, 44[1], 113-135.

Hack, M., Klein, N. K., & Taylor, H. G. (1995). Long-term developmental outcomes of low birth infants. *Future Child*, 5, 176-196.

Hansen, K. & Hawkes, D. (2009). Early Childcare and Child Development, *Social Policy, 38*, 211-239.

Hashima,P.Y.; Amato,P.R. (1994) Poverty, social support, and parental behavior. *Child Development*, 65, 394-403.

Heck, K., Braveman, P., Cubbin, C., Chavez, G. F., & Kiely, J. L. (2006). Socioeconomic status and breastfeeding initiation among California mothers. *Public health Reports*, 121, 51-59.

Henly, J.R., Danziger, S.K. & Shira Offer, S. (2005) The contribution of social support to the material well-being of low-income families. *Journal of Marriage and the Family,* 67, 1, 122-40.

Henneberg, M., Louw, G. J. (1990). Height and weight differences among South African urban schoolchildren born in various months of the year. *American Journal of Human Biology, 2*, 227–233.

Hertzman, C., and Kohen, D. (2003) *Neighbourhoods Matter for Child Development.* The Vanier Institute of the Family.

Hoff, E. (2003). The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech*. Child Development*, 74, 5, 1368-1378.

Hoff, E. & Naigles, L. (2002). How children use input to acquire a lexicon. *Child Development*, 73, 2, 418-433.

Hofhuis, W., Jongste, J. C., & de Merkus, P. J. (2003). Adverse health effects of prenatal and postnatal tobacco smoke exposure on children. *Archives of Disease in Childhood*, 88, 1086-1090.

Huba, G. J., Melchior, L. A., and Panter, A. T. (1998 - 2001) *The Measurement Group Knowledge Base on HIV/AIDS Care*. On the World Wide Web: http://www.TheMeasurementGroup.com.

Hunsley, J., Best, M., Levebvre, M. and Vito, D. (2001) The Seven-Item Short Form of the Dyadic Adjustment Scale: Further evidence for construct validity. *The American Journal of Family Therapy, 29,* 325–335

Hunsley, J., Pinsent, C., Lefebvre, M., James-Tanner, S., & Vito, D. (1995). Construct validity of the short forms of the Dyadic Adjustment Scale. *Family Relations*, 44, 231–237.

Huston, A.C.& Aronson,S.R. (2005) Mothers' time with infant and time in employment as predictors of mother-child relationships and children's early development. *Child Development*, 76, 467-482.

Jaakkola, J.J.K. & Jaakkola, M.S. (2002) Effects of environmental tobacco smoke on the respiratory health of children. *Scandinavian Journal of Work, Environment & Health*, 28 [supplement 2], 71 – 83.

Jacobsen, T., Edelstein, W., & Hofmann, V. (1994). A longitudinal study of the relations between representations of attachment in childhood and cognitive functioning in childhood and adolescence. *Developmental Psychology*, 30, 112-124.

Jones, G., Riley, M., & Dwyer, T. (2000). Breast-feeding in early life and bone mass in prepubertal children: a longitudinal study. *Osteoporosis International* 11, 146-152.

Kahn, R.S., MD, Zuckerman, B., Bauchner, H., Homer, C.J., and Wise, P.H. (2002) Women's health after pregnancy and child outcomes at age 3 years: a prospective cohort study. *American Journal of Public Health*, 92, 8, 1312-1318.

Kanaiaupuni, S.M., Donato, K.M., Thompson-Colon, T., & Stainback, M. (2005) Counting on kin: social networks, social support, and child health status. *Social Forces,* 83, 1137-1164.

Kandel, E. & Mednick, S. A. (1991). Perinatal complications predict violent offending. *Criminology*, 29, 519-529.

Keener, M. A., Zeanah, C. H., & Anders, T. F. (1988). Infant temperament, sleep organization, and nighttime parental interventions. *Pediatrics*, 81, 762-771.

Keller, P. S., Cummings, E. M., Davies, P. T., & Mitchell, P. M. (2008). Longitudinal relations between parental drinking problems, family functioning, and child adjustment. *Development and Psychopathology*, 20, 212.

Kelly, Y. J., Nazroo, J. Y., McMunn, A., Boreham, R., & Marmot, M. (2001). Birthweight and behavioural problems in children: a modifiable effect? *International Journal of Epidemiology* 88-94.

Kelsey, J.L., Gammon, M.D. & John, E.M. (1993) Reproductive factors and breast cancer. *Epidemiological Review* 15, 36–47.

Kielty, S. (2006). Similarities and differences in the experiences of non-resident monthers and non-resident fathers. *International Journal of Law, Policy and the Family*, 20, 74-94.

Knobloch, H., Stevens, F., Malone, A., Ellison, P. & Risember, H. (1979). The validity of reporting infant development. *Pediatrics*, 63, 6, 872-878.

Knopik V.A. (2009) Maternal smoking during pregnancy and child outcomes: real or spurious effect? *Developmental Neuropsychology,* 34, 1, 1-36.

Krause, N. M. & Jay, G. M. (1994). What do global self-rated health items measure? *Medical Care*, 32, 930-942.

Krishnan, V. (1993). Gender of children and contraceptive use. *Journal of Biosocial Science*, 25, 213-221.

Kuder,G.F., & Richardson,M.W. (1937). The theory of estimation of test reliability. *Psychometrika*, 2, 151-160.

Kurth, AE; Spielberg, F; Rossini, A.; the U.A.W. Group (2001) STD/HIV risk: What should we measure, and how should we measure it? *International Journal of STD & AIDS,* 12(Suppl 2), 171.

Lapido, O. A. (2000). Nutrition in pregnancy: mineral and vitamin supplements. *American Journal of Clinical Nutrition*, 72 (supplement), 280S-290S.

Lavender, T., Downe, S., Finnlayson, K., & Walsh, D. (2007). *Access To Antenatal Care: A Systematic Review.* UCLAN.

Layte, R., Nolan, B., Whelan, C. T. (2001) Reassessing income and deprivation approaches to the measurement of poverty in Ireland. *Economic and Social Review*, 32, 3

Levine, E. M., Ghai, V., Barton, J. J., & Storm, C. M. (2001). Mode of delivery and risk of respiratory disease in newborns. *Obstetric Gynecology*, 97, 439-445.

Li, Y. F., Gilliland, F. D., Berhane, K., MCConnell, R., Gauderman, W. J., Rappaport, E. B., & Peters, J. M. (2000). Effects of *In Utero* and Environmental Tobacco Smoke Exposure on Lung Function in Boys and Girls with and without Asthma*. American Journal of Respiratory and Critical Care Medicine* 162[6],2097-2104.

Loeb, S., Bridges, M., Bassok, D., Fuller, B. & Rumberger, R. (2007). How Much is Too Much? The Influence of Preschool Centers on Children's Social and Cognitive Development. *Economics of Education Review, 26,* 52-66.

Loeb, S., Fuller, B., Kagan, S.L. & Carrol, B. (2004). Child care in poor communities: early learning effects of type, quality, and stability. *Child Development, 75*(1), 47-65.

Lundberg, S., McLanahan, S., & Rose, E. (2005). *Child gender and father involvement in fragile families*. Working Paper, Department of Economics, Cent. Res. Fam., Univ. Washington.

Maitre, B., Nolan, B, & Whelan, C.T. (2006) Reconfiguring the measurement of deprivation and consistent poverty in Ireland. *Policy Research Series*, 58.

Majnemar, A. & Barr, R.G. (2005). Influence of supine sleep positioning on early motor milestone acquisition. *Developmental Medicine & Child Neurology*, 47, 370-376.

Martin, J., Hiscock, H., Hardy, P., Davey, B. & Wake, M. (2007). Adverse associations of infant and child sleep problems and parent health: An Australian population study. *Pediatrics,* 119, 5, 947-955.

Martin, M., & Jones, G. V. (1999). Handedness and season of birth: a gender-invariant relation. *Cortex, 35*, 123–128.

Maximova, K., McGrath, J. J., Barnett, T., O'Loughlin, J., Paradis, G., & Lambert, M. (2008). Do you see what I see? Weight status misperception and exposure to obesity among children and adolescents. *International Journal of Obesity*, 32, 1008-1015.

McCormick, M. C. & Brooks-Gunn, J. (1999). Concurrent child health status and maternal recall of events in infancy. *Pediatrics*, 104, 1176-1181.

McKenna, J. J., Mosko, S. S., & Richard, C. A. (1997). Bedsharing promotes breastfeeding. *Pediatrics*, 100, 219.

McMillan, H., Smaarani, S., Walsh, T., Khawaja, N., Collins, C., Byrne, P. et al. (2006). Smoking and alcohol in pregnancy. Survey in the immediate post-partum period. *Irish Medical Journal 99,* 283

Melchior, Huba, Brown and Reback (1993) A Short Depression Index for Women. *Educational and Psychological Measurement*, 53, 1117-1125

Milner, J.S. (2003). Social information processing in high-risk and physically abusive parents. *Child Abuse and Neglect*, 27, 7-20.

Mitchell, E.A., Taylor, B.J., Ford, R.P.K., Stewart, A.W., Becroft, D.M.O., Thompson, .J.M.D., Scragg, R., Hassall, I.B., Barry, D.M.J., Allen, E.M. & Roberts, A.P. (1992). *Journal of Paediatrics and Child Health,* 28, s1, S3-S8.

Montgomery, L., Kiely, J., & Pappas, G. (1996). The effects of poverty, race and family structure on U.S. children's health: data from the NHIS, 1978 through 1980 and 1989 and 1991. *Americal Journal of Public Health*, 86, 1401-1405.

Morrison, J. J., Rennie, J. M., & Milton, P. J. (2005). Neonatal respiratory morbidity and mode of delivery at term: influence of timing of elective caesarean section. *British Journal of Obstetrics and Gynaecology* 102[2], 101-106. 2005.

Mosko, S., McKenna, J., Dickel, M. & Hunt, L. (1993) Parent-infant cosleeping: The appropriate context for the study of infant sleep and implications for Sudden Infant Death Syndrome (SIDS) research. *Journal of Behavioral Medicine*, 16, 6, 589-610.

Mosley, J., & Thompson, E. (1995) Fathering behavior and child outcomes: the role of race and poverty. In W. Marsiglio, (Ed.), *Fatherhood: Contemporary theory, research, and social policy* (pp. 148-165). Thousand Oaks, CA: Sage.

Nakamura, S., Wind, M. & Danello, M.A. (1999) Review of hazards associated with children placed in adult beds. *Archives of Pediatrics and Adolescent Medicine*, 153, 1019-1023.

National Institute of Child Health and Human Development Early Child Care Research Network (2001). Child care and communicable illnesses: Results from NICHD Study of Early Child Care. *Archives of Pediatric and Adolescent Medicine*, 155, 481-488.

National Institute of Child Health and Human Development Early Child Care Research Network (2002). Child care structure-process-outcomes: Direct and indirect effects of child care quality on young children's development. *Psychological Science*, 13, 199-206.

National Institute of Child Health and Human Development Early Child Care Research Network (2003). Child care and communicable illnesses in children aged 37 to 54 months. *Archives of Pediatric and Adolescent Medicine*, 157, 196-200.

Nolan, B., Gannon, B., Layte, R. Watson, D., Whelan, C.T. & Williams, J. (2002). *Monitoring poverty trends in Ireland: Results from the 2000 Living in Ireland survey*. Policy Research Series, 45

Nunn, J. (2006). The burden of oral ill health for children. *Archives of Disease in Childhood* 91, 251-253.

Nyberg, K., Buka, S. L., & Lipsitt, L. P. (2000). Perinatal medication as a potential risk factor for adult drug abuse in a north american cohort. *Epidemiology*, 11, 715-716.

O'Connell, P.J. & Russell,H. (2005). *Equality at Work? Workplace Equality Policies, Flexible Working Arrangements and the Quality of Work*. Equality Research Series. Dublin:Equality Authority
O'Connor, T. G. & Jenkins, J. M. (2000). *Marital transitions and children's adjustment: Understanding why families differ from one another and why children in the same family show different patterns of adjustment* Ottawa, Canada: Human Resources Development Canada.

O'Connor, T. G., Heron, J., Golding, J., Beveridge, M., & Glover, V. (2002) Maternal antenatal anxiety and children's behavioural/emotional problems at 4 years. Report from the Avon Longitudinal Study of Parents and Children. *British Journal of Psychiatry*, 180, 502-508.

Odent, M. (2005). Seasonality of birth: Is there a link between primal health research and astrology? *The Journal of Prenatal and Perinatal Psychology and Health, 20*(2), 143-155.

ODPM - Office of the Deputy Prime Minister (1998). *English House Condition Survey 1996*. London: The Statistics Office

Ong, K. K., Emmett, P. M., Noble, S., Ness, A., Dunger, D., & ALSPAC Study Team (2006). Dietary energy intake at the age of 4 months predicts postnatal weight gain and childhood body mass index. *Pediatrics* 117, 503-508.

Ong, K.K., Northstone, K., Wells, J.C., Rubin, C., Ness, A.R., and Golding, J. (2007) Earlier mother's age at menarche predicts rapid infancy growth and childhood obesity. *Public Library of Science Medicine, 4, 4*, e132.

O'Sullivan, J.J., Pearce, M.S. & Parker, L. (2000). Parental recall of birth weight: how accurate is it? *Archives of Disease in Childhood*, *82*, 202-3.

Parke, R. D., & Clarke-Stewart, K. A. (2001) Effects of parental incarceration on young children. *Prepared for the From Prison to Home: The Effect of Incarceration and Reentry on Children, Families and Communities Conference (January 30-31, 2002).* U.S. Department of Health and Human Services, The Urban Institute.

Parke, R.D. & Buriel, R. (2006). Socialization in the family: Ethnic and ecological perspectives. In (N.Eisenberg [volume editor], W.Damon & R.M. Lerner [series editors]) *Handbook of Child Psychology (6th Ed.), Volume 3*: *Social, Emotional and Personality Development*, pp. 429-504.

Parkinson, P. & Smyth, B. (2003). *When the difference is night and day: Some empirical insights into patterns of parent-child contact after separation*. In Melbourne: Paper presented at 8th Australian Institute of Family Studies Conference.

Patrick, D. L., Cheadle, A., Thompson, D., Diehr, P., Koepsell, T., & Kinne, S. (1994). The validity of self-reported smoking: a review and meta-analysis. *Americal Journal of Public Health* 84[7], 1086-1093.

Pedersen, S. & Revenson, T. A. (2005). Parental illness, family functioning, and adolescent well-being: a family ecology framework to guide research. *Journal of Family Psychology*, 19, 404-409.

Pettit, G. S., Laird, R. D., Bates, J. E., & Dodge, K. A. (1997). Patterns of after-school care in middle childhood: Risk factors and developmental outcomes. *Merrill-Palmer Quarterly*, 43, 515-538.

Phillips, S. D. & Gleeson, J. P. (2007). *What we Know Now that we Didn't Know Then about the Criminal Justice System's Involvement in Families with whom Child Welfare Agencies have Contact. Findings from a Landmark National Study*. Center for Social Policy and Research, Jane Addams College of Social Work, University of Illinois at Chicago.

Phipps, S. and Lethbridge, L. (2006). Income and the outcomes of children. *Business and Labour Market Analysis,* Statistics Canada.

Piaget, J. (1952). *The origins of intelligence in children.* New York: International Universities Press.

Pietilainen, K. H., Kaprio, J., Rasanen, M., Winter, T., Rissanen, A., & Rose, R. J. (2001). Tracking of body size from birth to late adolescence: contributions of birth length, birth weight, duration of gestation, parents' body size, and twinship. *American Journal of Epidemiology* 154[1], 21-29.

Pilowsky, D. J. & Zybert, P. A. &. Vlahov, D. (2004). Resilient children of injection drug users. *Journal of American Academy of Child and Adolescent Psychiatry*, 43, 1372-1379.

Ponsonby, A.L., Dwyer, T., Gibbons, L.E., Cochrane, J.A. & Wang, Y.G. (1993). Factors potentiating the risk of Sudden Infant Death Syndrome associated with the prone position. *The New England Journal of Medicine*, 329, 6, 377-382.

Prescott,C.A., McArdle,J.J., Hishinuma,E.S., Johnson,J.C., Miyamoto,R.H., Andrade,N.N., Edman,J.L., Makini,G.K., Nahulu,L.B., Yuen,N.Y.C., & Carlton,B.S. (1998). Prediction of major depression and dysthymia from CES-D scores among ethnic minority adolescents. *Journal of American Academy of Child Adolescent Psychiatry*, 37(5), 495-503.

Putnam, S. P., Sanson, A. V., & Rothbart, M. K. (2002). Child temperament and parenting. In M.H.Bornstein (Ed.), *Handbook of Parenting* (Vol. 1) (2nd ed., pp. 255-277). Mahwah, NJ: Lawrence Erlbaum.

Raisler, J., Alexander, C., & O'Campo, P. (1999). Breast-feeding and infant illness: a dose-response relationship. *American Journal of Public Health*, 89, 25-30.

Raver, C. C. (1996). Success at catching and keeping toddlers' attention: An examination of joint attention among low-income mothers and their 2-year olds. *Early Development and Parenting*, 5, 225-236.

Reijneveld, S.A., van der Wal, M.F., Brugman, E., Hira Sing, R.A. & Verloove-Vanhorick, P. (2004). Infant crying and abuse. *The Lancet*, 364, 9442, 1340-1342.

Reilly, J. J. & Wells, J. C. K. (2005). Duration of exclusive breast-feeding: introduction of complementary feeding may be necessary before 6 months of age. *British Journal of Nutrition*., 94, 869-872.

Riordan, S. (2001). *Supporting Parenting: A Study of Parents' Support Needs.* Dublin: Department of Social, Community and Family Affairs.

Roberts,R.E., Andrews,J.A., Lewinsohn,P.M., & Hops,H. (1990). Assessment of depression in adolescents using the Center of Epidemiologic Studies Depression Scale. *Journal of Consulting and Clinical Psychology*, 2, 122-128.

Ross, D. and P. Roberts (1999) *Income and Well-being: A new perspective on the poverty debate*. Ottawa: Canadian Council on Social Development.

Rossi, A.S. & Rossi, P.H. (1990) *Of Human Bonding: Parent-Child Relations across the Life Course*. New York.

Rowe, R.E. & Garcia, E. (2003). Social class, ethnicity and attendance for antenatal care in the United Kingdom: a systematic review. *Journal of Public Health Medicine*, 25[2], 113-119.

Rutter, M. (Ed.) (1988). *Studies Of Psychosocial Risk: The Power Of Longitudinal Data.* Cambridge : Cambridge University Press

Rydz, D., Srour, M., Oskoui, M., Marget, N., Shiller, M., Birnbaum, R., Majnemar, A. & Shevell, M.I. (2006). Screening for developmental delay in setting of a community pediatric clinic: A prospective assessment of parent-report questionnaires. *Pediatrics*, 118, 4, E1178-E1186.

SAMHSA Substance Abuse and Mental Health Administration (2002) *Critical Issues for Parents with Mental Illness and their Families*. U.S. Dept of Health and Human Services.

Samuelsson, U., & Ludvigsson, J. (2001). Seasonal variations of birth month and breastfeeding in children with diabetes mellitus. *Journal of Pediatric Endocrinology and Metabolism, 14*, 43–46.

Santrock, J. W. (1998). *Child Development* (International Edition). (8th ed.) Boston: McGraw Hill.

Sarkar, P., Bergman, K., Fisk, N.M., O'Connor, T.G. & Glover, V. (2007) Ontogeny of foetal exposure to maternal cortisol using mid- trimester amniotic fluid as a biomarker. *Clinical Endocrinology (Oxf),* 66, 5, 636-640.

Schroder, KE; Carey, MP; Vanable, PA. (2003) Methodological challenges in research on sexual risk behavior: Accuracy of self-reports. *Annals of Behavioral Medicine,* 26, 104–123.

Sharpley, C. F. and Rogers, H. J. (1984) Preliminary validation of the abbreviated Spanier Dyadic Adjustment Scale: some psychometric data regarding a screening test of marital adjustment. *Educational and Psychological Measurement*, 44, 1045-1049.

Sharpley, C. F., & Cross, D. G. (1982). A psychometric evaluation of the Spanier Dyadic Adjustment Scale. *Journal of Marriage and the Family*, 44, 739–741.

Shephard, R. J., Lavallee, H., Jequier, J. C., LaBarre, R., Volle, M., & Rajic, M. (1979). Season of birth and variations in stature, body mass, and performance. *Human Biology, 51*, 299–316.

Skevik, A. (2006). 'Absent fathers' or 'reorganized families'? Variations in father-child contact after parental break-up in Norway. *The Sociological Review*, 54, 114-132.

Snijders, B. E. P., Thijs, C., van Ree, R., & van den Brandt, P. A. (2008). Age at first introduction of cow milk products and other food products in relation to infant atopic manifestations in the first 2 years of life: The KOALA Birth Cohort Study. *Pediatrics*, 122, e115-e122.

Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing quality of marriage and similar dyads. *Journal of Marriage and the Family, 38* (1), 15-28.

Spencer, E. A., Appleby, P. N., Davey, G. K., & Key, T. J. (2002). Validity of self-reported height and weight in 4808 EPIC - Oxford participants*. Public Health Nutrition*, 5, 561-565.

Squires, J., Potter, L. & Bricker, D. (1999). *The ASQ User's Guide. 2nd Ed*. Paul H Brookes Publishing: Baltimore.

Starfield, B. & Budetti, P. P. (1985). Child health status and risk factors. *Health Services Research*, 19, 817-886.

Stifter, C.A. (2005). Crying behaviour and its impact on psychosocial child development. In: Tremblay RE, Barr RG, Peters RDeV, eds*. Encyclopedia on Early Childhood Development*, 2005: 1-7. [online]. Montreal, Quebec: Centre of Excellence for Early Childhood Development. Available at: http://www.child-encyclopedia.com/documents/StifterANGxp.pdf. Accessed [6/12/08].

Studts, J. L., Ghate, S. R., Gill, J. L., Studts, C. R., Barnes, C. N., LaJoie, A. S., Andrykowski, M. A., & LaRocca, R. V. (2006). Validity of self-reported smoking status among participants in a lung cancer screening trial. *Cancer Epidemiology Biomarkers & Prevention* 15, 1825-1828.

Tarrant, R. C. & Kearney, J. M. (2008). Public Health Nutrition: Breastfeeding practices in Ireland. *Proceedings of the Nutrition Society, 67,* 371-380.

Thiedke, C.C. (2001. Sleep disorders and sleep problems in childhood. *American Family Physician*, 63, 2, 277-284.

Thomas, D., Strauss, J. & Henriques, M-H. (1991). How does mother's education affect child height? *The Journal of Human Resources*, 27, 2, 183 -211

Ticher, A., Ring, A., Barak, Y., Elizur, A., & Weizman, A. (1996). Circannual pattern of autistic births: Re-analysis in three ethnic groups. *Human Biology, 68*, 585–592.

Tochigi, M., Okazaki, Y., Kato, N., & Sasaki, T. (2004). What causes seasonality of birth in schizophrenia. *Neuroscience Research, 48*,1–11.

Torrey, E. F., Miller, J., Rawlings, R., & Yolken, R. H. (1997). Seasonality of birth in schizophrenia and bipolar disorder: A review of the literature. *Schizophrenia Research, 28,* 1-38.

Van den Bergh, B.R.H. & Marcoen, A. (2004) High antenatal maternal anxiety is related to ADHD symptoms, externalizing problems, and anxiety in 8- and 9-year olds. *Child Development,* 75, 4, 1085–1097.

Vogel, C.A., Bradley, R.H., Raikes, H.H., Boller, K. & Shears, J.K. (2006). Relation between father connectedness and child outcomes. *Parenting: Science and Practice*, 6, 2, 189-209.

Wake, M., Sanson, A., Berthelsen, D. et al. (2008). How well are Australian infants and children aged 4 to 5 years doing? Findings from the Longitudinal Study of Australian Children Wave 1. *Social Policy Research Paper No.36*. Australian Government: Department of Families, Housing, Community Services and Indigenous Affairs. Available from http://www.dss.gov.au/sites/default/files/documents/05_2012/sprp36.pdf

Walsh, K., Clerkin, P., & Nic Gabhainn, S. (2004). *Relationship with mothers among Irish schoolchildren. Health Behaviour Survey of Children 2002* [On-line]. Available: Retrieved from http://www.nuigalway.ie/hbsc/documents/factsheet_12.pdf

Walton, K. A., Murray, L. J., Gallagher, A. M., Cran, G. W., Savage, M. J., & Boreham, C. (2000) Parental recall of birthweight: A good proxy for recorded birthweight? *European Journal of Epidemiology* 16[9], 793-796.

Watson, D. & Williams, J. (2001*). Perceptions of the Quality of Health Care in the Public and Private Sector: Report to the Centre for Insurance Studies, Graduate Business School, UCD*. Dublin: Economic and Social Research Institute

Whelan, C. T., Layte, R., Maître, B., & Nolan, B. (2003). Persistent income poverty and deprivation in the European Union: An analysis of the first three waves of the European Community Household Panel. *Journal of Social Policy*, 32, 1-32.

Whelan, C.T., Maître, B. & Nolan, B. (2007). Multiple deprivation and multiple disadvantage in Ireland: An analysis of EU-SILC. *Policy Research Series, 61.* Dublin:ESRI

Williamson, C. S. (2006). Nutrition in pregnancy*. Nutrition Bulletin*, 31, 28-59.

Wilson, A. C., Forsyth, J. S., Greene, S. A., Irvine, L., Hau, C., & Howie, P. W. (1998) Relation of infant diet to childhood health: seven year follow up of cohort in dundee infant feeding study. *British Medical Journal* 316, 21-25.

Wolke, D., Rizzo, P., & Woods, S. (2002). Persistent infant crying and hyperactivity problems in middle childhood. *Pediatrics*, 109, 1054-1060.

Yu, L.M., Hey, E., Doyle, L.W. et al. (2007). Evaluation of the Ages and Stages Questionnaires in identifying children with neurosensory disability in the Magpie Trial follow-up study. *Acta Pediatrics, 96* (12), 1803-1808.

Zanardo, V., Simbi, A. K., Franzoi, M., Solda, G., Salvador, A., & Trevisanuto, D. Neonatal respiratory morbidity risk and mode of delivery at term: influence of timing of elective caesarean delivery. *Acta Paediatrics* 93[5], 643-647. 2004.

Zeiger, R. S. (2003). Food allergen avoidance in the prevention of food allergy in infants and children. *Pediatrics*, 111, 1662-1771.

Growing Up
in Ireland
National Longitudinal
Study of Children

If you would like further information about *Growing Up in Ireland,*

please visit www.growingup.ie

email growingup@esri.ie

or freephone 1800 200 434