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A SUMMARY GUIDE TO WAVE 3 OF THE INFANT COHORT (AT 5 YEARS) OF GROWING UP IN IRELAND

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1. Introduction

1.1 Introduction

This document provides a summary of the third wave of data collection with the Infant Cohort (at 5 years) of the ***Growing Up in Ireland*** (***GUI***) study, as well as an overview of the microdata files (Researcher and Anonymised) from that phase of the project.

Growing Up in Ireland - the National Longitudinal Study of Children – is the first project of its kind ever undertaken in Ireland and, as such, aims to explore the many and varied factors that contribute to or undermine the wellbeing of children currently living here. A two cohort longitudinal design was adopted and began with one cohort (the Infant Cohort) of 11,134 infants (aged 9 months) and a second cohort (the Child Cohort) of 8,568 9-year olds. Since the project is longitudinal in nature respondents in both cohorts are being interviewed on a number of occasions. The families of the infants were interviewed during Phase 1 of the ***GUI*** study when the children were 9 months, 3 years and subsequently 5 years of age, while the Child Cohort and their parents/guardians were interviewed at 9 and 13 years of age. Phase Two of ***GUI*** will return to the Infant Cohort at 7 years[1] and 9 years[2] of age, and to the Child Cohort at 17 years and 20 years of age.

The 11,134 children representing the Infant Cohort were born between 1st December 2007 and the 30th June 2008 and data collection for the first wave, at age 9 months, took place between September 2008 and April 2009. 9,793 of these original families participated in the second wave of data collection, at age 3 years, which took place between December 2010 and July 2011. The third wave of data collection (which is the focus of the current document) took place between March and September 2013, when the cohort were 5 years of age, resulting in a completed data file of 9,001 cases. More details of response and attrition rates can be found in Chapter Two.

This report describes the background, design, instruments and procedures used only in respect of Wave 3 of the Infant Cohort. Earlier waves of this cohort (and the Child Cohort) are the subjects of a parallel set of reports. The focus here is on the sample design and response rates in Wave 3 of the Infant Cohort, the nature and content of the questionnaires and other instrumentation, along with a broad overview of the datasets.

1.2 Background

The principal objective of ***Growing Up in Ireland*** is to increase our understanding of the determinants and drivers of children's wellbeing and its change and transformation over time, with a view to improving our understanding of children's development across a range of

[1] On a postal basis

[2] On a face-to-face basis

domains. The study provides an evidence-informed input to policy formation and design of services for families and children in 21st century Ireland.

The study began in 2006 and is fully funded by the Department of Children and Youth Affairs, in association with the Department of Social Protection and the Central Statistics Office. It is being carried out by a group of researchers led by the Economic and Social Research Institute (ESRI) and Trinity College, Dublin (TCD).

Growing Up in Ireland is designed to describe and analyse what it means to be a child or young person in Ireland today and to understand the factors associated with children's wellbeing, including those impacting on their physical health and development, social/emotional/behavioural wellbeing, and educational achievement/intellectual capacity. While current wellbeing is of immense importance, researchers are also cognisant of the future outcomes for the child and young people as they develop into adulthood. The longitudinal nature of the project allows one to record current data with a view to using them to assist in understanding future outcomes; in the case of the Infant Cohort, researchers are afforded the opportunity to track the same group of children from infancy through to five years of age. By gathering comprehensive data on childhood development the Study will provide a statistical basis for policy formation and applied research across all aspects of a child's development – currently and into the future.

The Study has 9 over-arching objectives[3].

1. To describe the lives of Irish children, to establish what is typical and normal as well as what is atypical and problematic
2. To chart the development of Irish children over time, to examine the progress and wellbeing of children at critical periods from birth to adulthood
3. To identify the key factors that, independently of others, most help or hinder children's development
4. To establish the effects of early child experiences on later life
5. To map dimensions of variation in children's lives
6. To identify the persistent adverse effects that lead to social disadvantage and exclusion, educational difficulties, ill health and deprivation
7. To obtain children's views and opinions on their lives
8. To provide a bank of data on the whole child
9. To provide evidence for the creation of effective and responsive policies and services for children and families

Full details on the underlying theorertical and conceptual framework can be found in Greene *et al.*, 2010[4].

[3] *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.

2. Sample Design

2.1 Introduction

In order to provide the reader with an overview of the sampling procedures used in ***Growing Up in Ireland* (*GUI*)**, this section provides a brief outline of the sample designs at the first and second waves of data collection with the Infant Cohort. The sample design at Wave 3, along with response and attrition rates, will be discussed in detail. The process of statistically reweighting the data to ensure that they are fully representative of the population will also be outlined.

2.2 Sample Design at Wave 1

Full details on the population, sampling frame and sample design for the Infant Cohort are given in a separate, dedicated publication entitled *Sample Design and Response in Wave 1 of the Infant Cohort (at 9 months) of* ***Growing Up in Ireland***; https://www.ucd.ie/t4cms/GUI-SampleDesignResponseInfants.pdf. This subsection provides a brief outline of the sampling at Wave 1, to provide the reader with a background to the sampling procedures used in ***GUI***.

There were just over 70,000 births in Ireland in 2007; this figure represented growth of nearly 20,000 in the number of annual births between 1989 and 2007. As well as an increase in the overall number of births, there were other notable socio-demographic changes in the Irish infant population over the previous 20 years. The number of non-marital births had more than tripled, for example, increasing from an average of 5,643 births per year in the period 1981-1990 (i.e. 9% of annual births) to over 23,640 in 2007 (i.e. 33% of annual births). Additionally, the average age of mothers increased from a mean age of 29.6 years in 1989 to 31.1 years in 2007. Furthermore, inward immigration during the 00s meant that the infant (as well as the adult) population in 2007 was probably more ethnically diverse than ever before in Ireland's history: nearly 20% of births in that year were to mothers of non-Irish nationality.

The Child Benefit[5] register was used as the sampling frame to select potential respondents into the project at Wave 1. This administrative database had some extremely attractive characteristics as a sampling frame. It contained a comprehensive up-to-date listing of eligible members of the relevant population; had a wide range of relevant characteristic variables which made it extremely attractive as a sampling frame and was already in an electronic form which could be accessed with relative ease.

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[4] Available at http://www.growingup.ie/fileadmin/user_upload/documents/Technical_Reports/GUI_Background_and_Conceptual_Framework.pdf

[5] Child Benefit is a near-universal regular social welfare payment to families with children. Children are to be registered within 6 months of being born or becoming part of the family (e.g. through adoption), or of the family coming to reside in the State.

There were a total of 41,185 infants registered on the Child Benefit Register as having been born between 1st December 2007 and 30th June 2008. Children for inclusion in the Study were sampled over this seven month reference period, with a view to carrying out fieldwork for Wave 1 when they were 9 months of age, between September 2008 and March/April 2009. The sample was selected on a systematic basis, pre-stratifying by marital status, county of residence and nationality of payee as well as number of children in the claim - all variables which were available from the information recorded on the Benefit Register. A simple systematic selection procedure based on a random start and constant sampling fraction was used.

The final completed Wave 1 sample was 11,134 infants and their families, and this formed the target sample for Wave 2. The Study Child is the longitudinal focus of the study. We are interested throughout the study in tracking, interviewing, measuring and testing the child, regardless of changes in his/her family composition, structure, location etc. In this respect the study is based on a pure, fixed panel of children who were nine months of age at the time of first interview.

2.3 Sample Design at Wave 2

The Wave 2 target sample comprised 11,134 Study Children who participated in the first round of interviewing. No additions[6] were made to the sample, with the only loss being through interwave non-response or attrition (including moving outside the jurisdiction) and death. Therefore the longitudinal population referred to at Wave 2 is the population of nine-month olds (and their families) who were resident in Ireland at Wave 1 and who continued to be resident in Ireland at Wave 2.

2.4 Sample Design at Wave 3

The target population for sampling at Wave 3 was made up of the children and families who participated in Wave 2, as well as most of those who participated at Wave 1 but refused or otherwise did not participate at Wave 2 due to special family circumstances at that time, for example, due to the birth of a new baby, or temporary absence from the country during the fieldwork period. Families who had moved abroad, moved within Ireland with no forwarding address , or had given a 'hard refusal' at Wave 2 were not issued at Wave 3. Thus the Wave 3 sample had two components: those children and families who participated in the two earlier waves of the study, as well as those who had participated in the first wave but who had not participated in the second[7]. As will be discussed below, just over 91 per cent of the families who had participated in Wave 2 of the study participated at Wave 3, along with approximately one-third of the children who participated at Wave 1 but not at Wave 2.

[6] Additions to membership of the Study Child's household between waves (in the form of new members residing in the household or being born into the household) are, of course, recorded on the household register in the relevant wave.

[7] A small number of families who made it clear that they did not wish to participate at Wave 2 or subsequent waves in the study were excluded from the target sample for Wave 3.

The longitudinal sample at Wave 3 is therefore made up of the children who were interviewed at nine months of age and who continue to live in Ireland when they are five years old. In the extent to which the fixed sample design means that five-year-olds who were not living in Ireland at nine months of age are excluded from the sample, there is a slight divergence between the longitudinal sample at five years and the population of five year-olds who were then living in the country at that time. The differences between the longitudinal sample and the population of five-year-olds then resident in the country are, in fact, very minor.

In Waves 1 and 2 the majority of the fieldwork took place in the home, bar the non-resident and carer postal questionnaires, where relevant. At Wave 3 some fieldwork took place in the Study Child's school, for those who had already started school at the time of interview or who were starting school in Spetember 2013. The Primary Caregiver was asked to clarify in the course of the household interview whether or not the Study Child had started Primary School in September 2012 or was intending to start in September 2013[8], as well as the name of the school in question. Signed consent was secured from the Primary Caregiver to approach the Study Child's school, with a view to asking the school to complete three paper questionnaires for postal return – Principal, Teacher-on-Self and Teacher-on-Pupil(Child). The identified schools were then contacted using a multi-mode approach. In the first instance, postal contact was made, followed by a phone-call, and finally a personal visit to the school by a survey interviewer.

2.5 Response Rates

As noted above, the Wave 1 sample was selected from the Child Benefit register and a total of 11,134 families participated at that stage of the study. These 11,134 respondent families made up the target sample for Wave 2.

Table 2.1 summarises the valid samples issued at Waves 2 and 3. Section A outlines the response rates of the valid sample at Wave 2. Of the 11,134 families who participated at Wave 1, 408 had emigrated and thus were not included in the valid sample. Thus the Wave 2 valid sample, which was used for the calculation of response rates, was 10,726. From the table one can see that 9,793 families participated at Wave 2, resulting in a response rate of 91.3 per cent. The refusal rate was 4.6 per cent (492 families). A total of 62 families were recorded as '*Moved in Ireland, no forwarding address available'*. This group was made up of families who were identified as having moved from their address at Wave 2, and for whom the Study Team could not find an alternative or new address. Many of these families may actually have moved outside the country, but were included in the target sample for calculation of response rates as it had not been definitively ascertained that they were no longer resident in Ireland. The same may apply to the 284 families with whom no contact could be made throughout fieldwork, despite repeated callbacks. The interviewer could not secure any information on these families, even to the extent that they had definitively moved

[8] In general, September is the only point of intake in each academic year.

from their address at the time of the Wave 2 interview (at 3 years of age). Outcomes of '*Unavailable during fieldwork'*, '*Other*', or '*Can't locate/address derelict*' were assigned to 42, 43, and 10 families, respectively.

Table 2.1: Outline of samples issued at Waves 3 and 2, summary of response rates at Wave 2.

	Outcome at Wave 2																
	Completed		No contact despite callbacks		Refused		Moved in Ireland, no address		Unavailable during fieldwork		Other		Can't locate/ address derelict		Emigrated (not incl. in valid sample)		**Total**
Section A – Sample at Wave 2																	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Not Issued															408		408
Issued	9793	91.3	284	2.6	492	4.6	62	0.6	42	0.4	43	0.4	10	0.1			10726
Grand Total																	11134
Section B – Sample at Wave 3																	
Not issued					53		58				18		10		408		547
Issued	9793		284		439		4		42		25		-		-		10587
Grand Total																	11134

Section B of Table 2.1 summarises the sample issued at Wave 3 and shows that this was largely made up of families who participated at Wave 2, with some exceptions. All of the families (9,793) who participated at Wave 2 were issued at Wave 3, as well as 439 of the 492 refusals at Wave 2; the remaining 53 were not issued as they had previously made it clear to the interviewer that they did not wish to participate at Wave 2 or subsequent rounds of the study (referred to as 'hard refusals'). Most (58 out of 62) of the families who were classified as '*Moved, no forwarding address*' were not issued at Wave 3, with addresses being found only for the remaining 4 between Waves 2 and 3. The 42 families who were classified as '*unavailable during fieldwork'* at Wave 2 were issued, along with 25 of the 43 who were assigned to the '*other*' outcome category at Wave 2. The 10 families who could not be located or whose address was identified as derelict were not issued at Wave 3. Therefore the total valid sample at Wave 3 was made up of 10,587 cases. This figure was used for the calculation of Wave 3 response rates, which are outlined in Table 2.2.

Table 2.2 details the response outcomes at Wave 3, as classified by response outcome at Wave 2. This shows that of the 10,587 families issued at Wave 3, 227 were identified as having emigrated, and were not included in the valid sample. Therefore the valid sample, used for the calculation of Wave 3 response rates, was 10,360. As discussed, the Wave 3 sample consisted largely of families who participated at Wave 2, but also included some families who did not participate at Wave 2 due to unavailability or other family circumstances at the time of fieldwork. Looking only to the 9,793 families who participated at Wave 2, one can see that the response rate at Wave 3 was 91 per cent (8,712 families).

Looking to the overall sample, including those who did not participate at Wave 2, the response rate was 86.9 per cent. The ‘total’ column provides a breakdown of overall response rates and details a refusal rate of 7.5 per cent, compared to a lower 4.9 per cent refusal rate among families who participated at Wave 2.

Table 2.2: Response rates at Wave 3, classified by response outcome at Wave 2.

	Outcome at Wave 2									
			Completed	**No contact despite callbacks**	**Refused**	**Moved in Ireland, no address**	**Unavailable during fieldwork**	**Other**		**Total**
Outcome at Wave 3	Completed	N	8712	123	125	3	22	16		**9001**
		%	*91.0*	*44.2*	*8.3*	*75.0*	*52.4*	*64.0*		***86.9***
	No contact despite callbacks	N	212	61	36	1	5	2		**317**
		%	*2.2*	*21.9*	*8.3*	*25.0*	*11.9*	*8.0*		***3.1***
	Refused	N	471	54	238	0	13	5		**781**
		%	*4.9*	*19.4*	*55.0*	*0.0*	*31.0*	*20.0*		***7.5***
	Moved in Ireland, no address	N	86	30	24	0	1	2		**143**
		%	*0.9*	*10.8*	*5.5*	*0.0*	*2.4*	*0.0*		***1.4***
	Unavailable during fieldwork	N	47	4	6	0	1	0		**58**
		%	*0.5*	*1.4*	*1.4*	*0.0*	*0.0*	*0.0*		***0.6***
	Other	N	23	2	2	0	0	0		**27**
		%	*0.2*	*0.7*	*0.5*	*0.0*	*0.0*	*0.0*		***0.3***
	Can't locate/Address derelict	N	27	4	2	0	0	0		**33**
		%	*0.3*	*1.4*	*0.5*	*0.0*	*0.0*	*0.0*		***0.3***
	Total	**N**	**9578**	**278**	**433**	**4**	**42**	**25**		**10360**
	Emigrated (not included in valid sample)	N	215	6	6	0	0	0		**227**
	Grand Total	**N**	**9793**	**284**	**439**	**4**	**42**	**25**		**10587**

2.6 Attrition

Interwave non-response and attrition are, unfortunately, unavoidable in panel surveys, regardless of tracking and conversion procedures employed. Attrition becomes a particular problem where it is systematically related to family or other characteristics. Watson and Wooden (2009), for example, note that it may be systematically associated with respondents': sex; age; race/ethnicity; marital status; household composition and size; educational attainment; labour force status; and family income. They find that, on average, attrition is higher among males; younger respondents; minority groups; one-parent and non-marital households; lower educated families; economically active; and low income families. It is important to understand the levels and correlates of attrition and non-response to inform re-weighting procedures for statistically adjusting the data prior to analysis.

To assess the extent and correlates of differential attrition in Wave 3 of the Infant Cohort, Table 2.3 outlines response rates in Wave 3 classified according to family characteristics in Wave 2. This table is based only on those who were interviewed at Wave 2 (by definition there are no Wave 2 characteristics available for non-responders at Wave 2) and included in the valid sample for Wave 3. The table indicates that attrition was higher among those from more disadvantaged backgrounds. This is driven by a combination of higher direct refusal rates as well as lower achieved contact levels and higher interwave residential mobility ('cannot contact').

For example, from Table 2.3 one can see that attrition is negatively related to Primary Caregiver education, i.e. the higher the level of the Primary Caregiver's education at Wave 2, the lower attrition is likely to be at Wave 3. Among families with a Primary Caregiver with a third-level degree, the response rate was almost 94 per cent, compared to just over 83 per cent for those with a Primary Caregiver with lower secondary education or less.

Table 2.3: Response outcomes at Wave 3 (5 years of age) divided by family characteristics at Wave 2 (3 years of age).

Characteristics at Wave 2	Completed	No contact	Refused	Moved, no forward address	Unavail-able during fieldwork	Other	Can't locate/ address derelict	Total
	Per cent							
Primary Caregivers Education								
Degree or higher	93.6	1.5	3.5	0.6	0.5	0.2	0.2	100.0
Non-Degree	92.2	2.0	4.6	0.5	0.4	0.1	0.1	100.0
Leaving Certificate	89.0	2.3	6.0	1.3	0.6	0.4	0.5	100.0
Lower Secondary or less	83.3	5.9	8.1	1.9	0.5	0.0	0.3	100.0
Missing	84.2	0.0	10.5	5.3	0.0	0.0	0.0	100.0
Household Class								
Professional	93.7	1.5	3.9	0.4	0.1	0.1	0.3	100.0

Characteristics at Wave 2	Completed	No contact	Refused	Moved, no forward address	Unavail-able during fieldwork	Other	Can't locate/ address derelict	Total
workers								
Managerial & technical	93.4	1.4	3.5	0.5	0.6	0.3	0.2	100.0
Non-manual	90.4	2.5	5.7	0.5	0.3	0.2	0.4	100.0
Skilled manual	90.1	2.0	5.6	1.1	0.7	0.1	0.3	100.0
Semi-skilled	88.9	2.4	5.9	1.6	0.8	0.3	0.1	100.0
Unskilled	81.8	2.8	7.0	5.6	1.4	1.4	0.0	100.0
All others	89.3	1.3	8.0	1.3	0.0	0.0	0.0	100.0
No social class	83.1	6.0	7.3	2.4	0.3	0.3	0.5	100.0
Equiv. Household Income								
Quintile 5 (high)	94.3	1.1	3.3	0.2	0.6	0.3	0.2	100.0
Quintile 4	93.2	1.6	4.1	0.4	0.3	0.3	0.1	100.0
Quintile 3	91.9	2.1	4.3	0.6	0.6	0.2	0.3	100.0
Quintile 2	89.5	2.6	5.0	1.6	0.6	0.3	0.4	100.0
Quintile 1 (low)	87.0	3.6	6.8	1.8	0.3	0.2	0.4	100.0
Missing	85.7	3.2	8.6	1.3	0.6	0.2	0.4	100.0

The table indicates that Primary Caregivers whose education was 'missing' also had lower response rates. This reflects a tendency, common in surveys, for those whose socio-demographic characteristics are 'missing' to come from disadvantaged backgrounds.

A similar pattern is seen for household social class: professional workers had the highest level of response at Wave 3 (93.7 per cent), with unskilled workers having a much lower response rate (81.8 per cent). Finally, the table shows a strong relationship between participation at Wave 3 and equivalised household income; the highest response rates are among families in the highest income quintile, and the lowest rates are among those in the lowest quintile (and those with missing income values).

Table 2.4 summarises the association between attrition at Wave 3 and background demographics as they were recorded in Wave 2, in the form of odds ratios. It presents the odds of completing the survey at Wave 3 compared to not completing it for the valid sample (those who were no longer resident in Ireland or had deceased between waves were excluded from the analysis).[9]

Column A of the table presents the bivariate odds ratio of participating in Wave 2. The characteristics (in circumstances where these could change between Waves 1 and 2) are those of the family or Primary Caregiver at Wave 2[10]. The figures show, for example, that there is

[9] Dummies for missing values were also included in the analysis.

[10] For example, whether or not the PCG was born in Ireland or whether or not the Study Child was breastfed will not change between Waves 1 and 2. Other characteristics such as equivalised family income, PCG's weight

a clear, negative relationship between the odds of participating and equivalised family income – relative to a family in the lowest income quintile at Wave 2, a family in the highest quintile has an odds ratio of 2.48 of participating at Wave 3. Families for whom there is no valid value for equivalised household income have an odds ratio of 0.90 of participating at Wave 3 (these families are likely to be among the most disadvantaged). The odds of participating increase with educational attainment (another measure of social advantage/disadvantage). Characteristics such as depression and smoking have significantly lower odds of participation (on a bivariate basis). Mothers who breastfed are 1.86 times more likely to have participated in the study that those who did not.

In Column B of Table 2.4 the same set of odds ratios are presented, now controlling for other Wave 2 characteristics. The important point to note is that in a multivariate framework not all variables maintain their significant relationship with participation; for example, while daily smoking behaviour had a significant association with attrition in the bivariate analysis, this association was mitigated in the multivariate analysis.

(BMI) status, family structure etc. may change between Waves 1 and 2. Where the characteristics could change, the Wave 2 characteristics were used in the analysis.

Table 2.4: Association between completing the survey at Wave 3 and background demographics in Wave 2.

Family characteristics (Wave 2)	Category	(A) Predicted OR– bivariate assoc.	(B) Predicted OR– multivariate assoc.
Age of Primary Caregiver (PCG)	Less than 25	0.36**	0.63**
	26 – 30	0.58**	0.77*
	31 - 35	0.93	0.99
	36- 40	**1 (Ref)**	**1 (Ref)**
	41 or more	0.98	1.03
Weight of PCG	**Not overweight**	**1 (Ref)**	**1 (Ref)**
	Overweight	1.01	1.04
	Missing	0.58**	0.68**
PCG Depression status	**Not depressed**	**1 (Ref)**	**1 (Ref)**
	Depressed	0.63**	0.81
	Missing	0.30**	0.51
PCG Smoking behaviour	**Never smokes**	**1 (Ref)**	**1 (Ref)**
	Smokes occasionally	0.56**	0.70**
	Smokes daily	0.55**	0.86
	Missing	0.26**	0.81
Mother ever breastfed	**No**	**1 (Ref)**	**1 (Ref)**
	Yes	1.86**	1.56**
PCG born in Ireland	**Yes**	**1 (Ref)**	**1 (Ref)**
	No	0.95	0.85
Family structure	**Lone parent**	**1 (Ref)**	**1 (Ref)**
	Cohabiting	1.68**	1.35*
	Married	2.38**	1.34**
Region (Girls)	**Dublin**	**1 (Ref)**	**1 (Ref)**
	Border	1.20	1.32
	Mid East	0.74	0.75
	Midlands	0.58**	0.67
	Mid West	0.64*	0.67*
	South East	0.78	0.88
	South West	0.84	0.85
	West	0.90	0.95
Region (Boys)	Dublin	0.75	0.83
	Border	0.75	0.77
	Mid East	0.67*	0.68*
	Midlands	0.54**	0.63*
	Mid West	1.03	1.09
	South East	0.90	1.07
	South West	0.82	0.84
	West	1.41	1.53
Equivalised Household Income	**First Quintile (Lowest)**	**1 (Ref)**	**1 (Ref)**
	Second Quintile	1.28*	1.12
	Third Quintile	1.71**	1.25
	Fourth Quintile	2.06**	1.29*
	Fifth Quintile (Highest)	2.48**	1.38*

	Missing	0.90	0.70*
PCG Educational Attainment	**Lower Secondary or less**	**1 (Ref)**	**1 (Ref)**
	Leaving Certificate	1.61**	1.30*
	Non-Degree	2.37**	1.47**
	Degree	2.91**	1.49**
	Missing	1.0	1.16

**significant at $p < 0.01$ *significant at $p < 0.05$

2.7 Reweighting the data

The data from the Infant Cohort at 5 years of age are from the third round of interviews. The earlier rounds of interviewing with these families took place when the children were 9 months and, subsequently, 3 years of age.

As noted in Section 2.4 above, the longitudinal sample at Wave 3 is made up of children and their families who participated in the study at 9 months of age and who continued to live in Ireland when they were 5 years old. Given the fixed sample design, children who were living in Ireland at 5 years of age but who were not resident in the country at 9 months will not be included in this population. Equally, it does not include children who were resident in Ireland at 9 months of age but who had emigrated out of the country by 5 years and who, accordingly, were no longer growing up in Ireland.

By 5 years of age three rounds of data have been collected on the children and their families. The target sample at Wave 3 was principally made up of the families and children who had participated in Wave 2 (at 3 years of age). However, it also included 794 families who participated at Wave 1 (9 months) but who did not participate in Wave 2 (3 years). It was clear from the discussion of response rates above that Wave 3 response among those who did *not* participate in Wave 2 was substantially lower than among those who participated at the second round of interviewing (37 per cent[11] and 91 per cent, respectively).

With three waves of data now available for analysis one can focus on children and families who participated at 9 months; 3 years and 5 years of age or, alternatively, the subset who participated at various combinations of these ages. The full sample of 11,134 Wave 1 participants breaks down in terms of participation at Waves 2 and 3 as set out in Table 2.5 below.

Table 2.5: Breakdown of cases according to participation at 9 months, 3 years and 5 years of age

File Option	*Participated at:*	*No. of families*
	9 months only	1,052

[11] This figure is not illustrated in Table 2.2 but is calculated using the N of cases included in the Wave 3 valid sample who did *not* participate at Wave 2 (782 cases) and the number of these who did participate at Wave 3 (289 cases).

	9 months and 3 years only	1,081
A	9 months, 3 years and 5 years	8,712
B	9 months and 5 years only	289
	TOTAL	11,134

These response patterns mean that there are 11,134 cases available for analysis of 9-month-olds in cross-section. If one is interested in transitions from 9 months to 5 years of age one can use 9,001 cases for analysis (the combination of subgroups A and B above). If one is investigating child development at each observation from 9 months, 3 years and 5 years of age 8,712 cases are available for analysis (sub-group A in Table 2.5).

In preparing the Wave 3 dataset two sets of weights and grossing factors were calculated. The first set should be applied in analysis based on the 9,001 families for whom there is a valid observation at 9 months and 5 years of age. The second set of weights and grossing factors should be used in analysis based on the smaller set of 8,712 families who participated at all three rounds of interview.

Variable '***xxwave2***' can be used to select which subset of data to use in analysis. The distribution of the variables is as in Table 2.6 below.

Table 2.6: Breakdown of variable ***xxwave2***, used to select cases for inclusion in analysis, depending on whether or not families participated in Wave 2 of the study, when the Study Child was three years of age

Value	*Participated at:*	*No. of families*
0	9 months and 5 years only	289
1	9 months, 3 years and 5 years	8,712
	Total Cases at 5 years of age	9,001

The two sets of weighting and grossing factors on the datafile are as set out in Table 2.7:

Table 2.7: Weights and grossing factors available for use with Infant Cohort at 5 years of age.

Families participated at:	***No. of families***	***Weights & Grossing Factors***
9 months and 5 years only	9,001	WGT_5YRa & GROSS_5YRa
9 months, 3 years and 5 years	8,712	WGT_5YRb & GROSS_5YRb

The first set (subscript 'a') should be used when one is carrying out analysis on the most complete 5-year sample of 9,001 families. The 'weighting factor' adjusts the internal structure of the sample in line with the population, summing to the actual number of cases, i.e. to 9,001 families. The 'grossing factor' grosses the sample to the estimated population

total of 69,300. As noted above, this latter is the estimated number of 5-year-olds who were resident in Ireland at 9 months of age and who continue to be resident in the country when they are 5 years old, accounting for those who no longer live in Ireland at 5 years of age or who have deceased since 9 months of age. The internal breakdown of the grossed and weighted samples are identical. The only difference between the two is one of calibration, the grossing factor summing to the population total of 69,300.

The second set of statistical adjustments (those with subscript 'b') perform exactly the same functions as the first set. The only difference is that they are applied to the slightly smaller sample of 8,712 families who participated in all three rounds of the study, i.e. at 9 months, 3 years and 5 years of age. As above, the 'weighting' factor adjusts the sample in line with the population structure and sums to the actual number of families (i.e. to 8,712 cases). The 'grossing' factor sums to the estimated population total of 69,300.

A standard iterative procedure (known as the GROSS system) was used to generate both sets of weights (sets 'a' and 'b' above). This is the system used in previous rounds of ***Growing Up in Ireland*** and has been used extensively by the Economic and Social Research Institute (ESRI) since 1996[12]. The GROSS system is based on a minimum information loss algorithm which fits population marginals within a regression framework and adjusts the sample according to pre-specified characteristics to ensure that it produces estimates which match population totals.

The sample weights for Wave 3 of the Infant Cohort were constructed by first generating an inter-wave attrition weight to adjust the composition of the completed Wave 3 sample to the Wave 2 sample by taking account of: (a) children who lived in Ireland at Wave 2 but who had been definitively identified as having moved out of the country by Wave 3 and (b) variations in Wave 3 response and attrition. The former adjustment accounts for changes in the longitudinal population by excluding children who no longer live in Ireland or who have deceased since the previous round of interviewing. The latter adjusts for differential attrition rates between Waves 2 and 3. The variables used to adjust for Wave 2 to Wave 3 attrition and so generate the inter-wave attrition weights were as follows:

- Educational attainment of Study Child's mother in previous wave
- Family structure / Mother's marital status (married and living with spouse; cohabiting; one-parent family) in previous wave
- Mother's age in previous wave
- Regional distributional of children by gender in previous wave
- Whether or not child was ever breastfed
- Mother's depression status in previous wave

[12] 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. 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.

- Mother's BMI status in previous wave
- Mother's smoking status in previous wave
- Whether or not mother was born in Ireland
- Family income quintile in previous wave

When the Wave 3 sample was adjusted in line with both changes in the population and differential interwave attrition a new Wave 3 weight/grossing factor was generated by taking the product of the attrition weight and the Wave 2 weight/grossing factor. The reader is reminded that the Wave 2 weight, in turn, incorporated the original design and differential response at Wave 1 as well as attrition between Waves 1 and 2[13].

In generating the two sets of weights/grossing factors the characteristics of the family or child at the previous round of interviewing were used. This means that when generating the adjustment factors for use with the 8,712 families who had participated at Wave 2 (i.e. in all rounds three of interviewing to date) the Wave 2 characteristics were used. When generating the weights/grossing factors for use with the larger set of 9,001 families who participated at 9 months and 5 years of age (Waves 1 and 3), but not necessarily at Wave 2, the characteristics at Wave 1 were used (as the Wave 2 characteristics were not, by definition, recorded in respect of all participants at Wave 2.

2.8 A comparison of 9-month population estimates from different sub-samples

The archiving of interviews when the children were 5 years of age means that three waves of data have been deposited in the Irish Social Science Data Archive. These data open up the potential for analyses based on several combinations of the children at different ages and stages of their development. As noted in the previous section, the data have been statistically adjusted (or re-weighted) to accommodate analysis of these various combinations of waves. Table 2.8 indicates which weights to use in analysis of the matched data over the three waves of the study carried out to date. The researcher may use any of the combinations of data, as outlined in the table, depending on the type of analysis being undertaken.

[13] For a discussion of Wave 2 (3 year) weighting see, for example, Murray A., Quail A., McCrory C., and Williams J., 2013, *A Summary Guide to Wave 2 of the Infant Cohort (at 3 years) of Growing up in Ireland*. Irish Social Science Data Archive website; http://www.ucd.ie/t4cms/SUMMARY%20GUIDE%20-%20INFANT%20-%20WAVE%202.pdf.

For a discussion of sample selection and Wave 1 weighting see Quail A., Williams J., McCrory C., Murray A. and Thornton M. *Sample Design and Response in Wave 1 of the Infant Cohort (at 9 months) of Growing Up in Ireland,* Irish Social Science Data Archive website; (http://www.ucd.ie/t4cms/GUI-SampleDesignResponseInfants.pdf)

Table 2.8: Combinations of data waves and statistical adjustment factors, Waves 1, 2 and 3.

	Combination of data waves	Unweighted number of cases	Weighting Factor	Grossing Factor	Comments
A	9 months in cross-section	11,134	WGT_9MTH	GROSS_9MTH	All families who participated in Wave 1
B	Standalone 3 years (matched 9 mth and 3 years)	9,793	WGT_3YR	GROSS_3YR	All families who participated in Wave 2 (all of whom, by definition, also completed in Wave 1)
C	Standalone 5 years (matched 9 mth and 5 years)	9,001	WGT_5YRa	GROSS_5YRa	Families who participated in Waves 1 and 3, 289 of whom did not participate in Wave 2 (at 3 years of age).
D	Matched 9 months, 3 years and 5 years	8,712	WGT_5YRb	GROSS_5YRb	Families who participated in all three Waves of interviewing to date.

For example, if one wishes to track the trajectories of a particular characteristics across *all three waves* one must use the matched datafile containing 8,712 cases as in Row D in Table 2.8 However, if one is interested only in investigating differences between 9 months and 5 years, regardless of the intervening 3-year wave, one may use the larger sample of 9,001 cases (Row C in Table 2.8). In sampling terms, it is generally preferable to use as large a sample as possible, to minimise standard errors and corresponding sampling fractions. Similarly, if one is investigating trends only in the 3-year component of the sample the 9,793 cases contained in Row B in Table 2.8 above is the appropriate file to use (with corresponding weighting and grossing factors). Finally, if one's focus is solely on the infants in the base-year at 9 months of age in cross-section the 11,134 cases in the file at Row A should be used, as this provides the largest sample for analysis.

All four datafiles in Table 2.8 potentially contain the characteristics of the infants at 9 months of age. As discussed, some level of differential attrition is unavoidable in longitudinal surveys from one round of the study to the next. The weights provided in the data file account for this differential attrition. To assess the effectiveness of the weights at each round of data collection it is instructive to consider how the fixed characteristics of the infants at 9 months of age vary across the four potential sub-samples outlined in Table 2.8. The reader should note that one would not expect the distributions to be identical across the four subsamples as

each represents the characteristics of 9-month infants at different phases in the longitudinal population. For example, File A in Table 2.8 provides the cross-sectional estimates for 9-month-olds at the point of first interview. File B can provide an estimate of the 9-month characteristics for those families who were living in Ireland when the Study Child was 9 months of age and who were continuing to live here when the child was 3 years of age. The datafiles in rows C and D provide comparable estimates of 9-month characteristics for families who were living in Ireland when their infant was 9 months and who continued to live here when the child was 5 years of age. Accordingly, there will be some minor differences in the estimates of 9-month characteristics between samples A, B and C/D in the extent to which 9-month characteristics based on datafiles in rows B, C or D are related to the propensity to migrate out of the country between waves of the study. The weights, however account for inter-wave response attrition. Table 2.9 provides a comparison of a selection of 9 month characteristics across all four subsamples, denoted by A, B, C, and D, as detailed above. Column (i) for each of the four datafiles outlines the unweighted breakdown of the characteristics in question in each of the four files. Column (ii) provides details on the weighted distribution for each of the four datafiles, for the weighted / grossed breakdown. As discussed in the previous section, the weighting factor incorporates the structural adjustment of the completed sample to the population, while maintaining the total completed sample size at the relevant round of the study. The grossing factor calibrates to the total number of cases in the population at each round of data collection.

Table 2.9: Comparison of *(i)* unweighted and *(ii)* weighted/grossed breakdowns of the 9-month characteristics across the 4 subsamples,.

		A		**B**		**C**		**D**	
		n = 11,134		*n* = 9793		*n* = 9001		*n* = 8712	
Variable	**Response**	*(i)*	*(ii)*	*(i)*	*(ii)*	*(i)*	*(ii)*	*(i)*	*(ii)*
Child's Gender	Male	51.0	51.3	50.7	51.3	50.7	51.3	50.6	51.2
	Female	49.0	48.7	49.3	48.7	49.3	48.7	49.4	48.8
Baby's weight at birth	Normal(≥2500g)	94.4	94.3	94.6	94.3	94.7	94.5	94.7	94.5
	Low (<2500g)	5.6	5.7	5.4	5.7	5.3	5.5	5.3	5.5
Has childcare outside home	*(Per cent)*	39.7	39.0	40.6	39.2	41.3	39.6	41.4	39.5
Final mode of delivery	Normal	59.3	58.2	59.3	58.2	59.1	58.3	59.0	58.1
	Suction assisted	9.6	9.6	9.8	9.7	9.8	9.7	9.9	9.8
	Forceps assisted	4.8	5.2	4.7	5.1	4.8	5.1	4.8	5.1
	Planned/Elective caesarean	12.6	12.9	12.7	13.0	12.9	13.0	12.9	13.0
	Emergency caesarean	13.3	13.8	13.2	13.8	13.1	13.6	13.1	13.7
	Vaginal breech	0.4	0.3	0.3	0.3	0.4	0.3	0.4	0.3
Per cent. ever breastfed	All	60.3	56.0	60.8	55.5	61.3	55.2	61.6	55.2
	Mother born in Ireland	51.5	48.5	52.9	48.5	54.1	48.5	54.5	48.6
	Mother not born in Ireland	85.0	82.2	85.1	81.9	84.7	80.7	85.1	81.1
PCG Primary Economic	At work	57.2	56.0	58.7	56.5	59.5	56.7	59.9	56.8
	Unemployed	3.4	5.5	3.2	5.2	3.1	5.4	3.0	5.2

Status	Home duties	36.5	36.1	35.3	36.0	34.6	35.5	34.3	35.7
Degree of ease/difficulty with which family is able to make ends meet	Great difficulty	4.8	4.9	4.4	4.7	4.2	4.5	4.1	4.5
	Difficulty	8.1	8.0	7.7	7.9	7.6	7.9	7.5	7.8
	Some difficulty	30.7	31.2	30.0	30.9	30.1	31.2	30.0	31.2
	Fairly easily	37.5	37.7	38.5	38.4	38.6	38.3	38.8	38.4
	Easily	14.1	13.6	14.3	13.6	14.4	13.5	14.5	13.5
	Very easily	4.9	4.6	5.0	4.5	5.1	4.6	5.2	4.6
PCG citizen of Ireland	*(Per cent)*	80.5	84.7	82.5	86.0	83.5	86.8	83.5	86.7
PCG born in Ireland	*(Per cent)*	73.5	77.8	75.6	79.2	76.5	79.8	76.6	79.8
PCG highest level of education	Lower secondary or less	11.7	17.6	11.0	17.4	10.5	17.8	10.3	17.5
	Upper secondary	19.2	25.2	18.7	25.2	18.4	24.9	18.2	25.1
	Technical/vocational qualification	8.9	4.1	9.0	4.1	9.0	4.2	9.0	4.1
	Upper secondary and Technical/ Vocational qualification	4.6	4.1	4.6	4.1	4.4	4.1	4.5	4.1
	Non Degree	19.4	19.8	19.8	20.0	20.1	20.1	20.3	20.1
	Third Level	36.3	29.2	37.1	29.3	37.5	29.0	37.7	29.1
Household type	One parent, 1 child	5.3	7.3	4.9	7.1	4.6	7.0	4.5	6.9
	One parent, 2+ children	6.9	7.5	6.2	7.1	6.0	7.4	5.8	7.1
	Two parents, 1 child	33.2	32.4	33.0	32.1	32.8	31.6	33.0	31.9
	Two parents, 2+ children[14]	54.6	52.8	55.9	53.7	56.7	54.1	56.7	54.1
PCG Current marital status	Married and living with husband / wife	68.1	70.3	69.7	70.8	70.2	70.4	70.6	70.6
	Married and separated from husband / wife	1.9	1.6	1.8	1.6	1.7	1.5	1.7	1.6
	Divorced	1.0	0.7	1.0	0.6	1.0	0.6	1.0	0.6
	Widowed	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Never married	28.8	27.2	27.4	26.8	26.9	27.2	26.5	27.0
Consumed alcohol during pregnancy	*(Per cent)*	20.4	20.1	20.9	20.2	21.4	20.5	21.5	20.4
Smoked during pregnancy	*(Per cent)*	17.0	18.3	16.7	18.4	16.1	18.6	16.0	18.6

As can be seen from the table, very little difference exists between the unweighted and weighted/grossed[15] breakdowns across the four sub-samples, illustrating that the weighting is

[14] 'Child' refers to a dependent in the household under the age of 18

[15] There will, by definition, be *no* difference between weighted and grossed percentage breakdowns. Both are adjusted to the estimated population structure at the relevant round of interviewing. As noted throughout the

accounting for differences in sample size across the four sub-samples in question.. For example, the unweighted percentage of families with childcare outside the home is 39.7, 40.6, 41.3 and 41.4 for subsamples A, B, C, and D, respectively. When the weighting or grossing factor is applied, the percentage of the sample with childcare outside the home remains much the same, with frequencies of 39.0, 39.2, 39.6 and 39.5 for groups A, B, C and D, respectively.

In summary, if one is analysing each of the four sub-samples outlined in Table 2.8 above one will be able to generate a weighted (grossed) estimate of the 9-month characteristics of the children. The figures in Table 2.9 illustrate that, accounting for minor changes in the longitudinal composition of the sample over time, these estimates of 9-month characteristics of the infants will be broadly similar, notwithstanding differences in their respective sample sizes.

chapter, the weighting factors will adjust to the actual sample totals the grossing factors to the corresponding population totals. The internal structure of both (according to standard socio-demographic and other characteristics) will be identical.

3. Instrument Development & Piloting

3.1 Introduction

This chapter gives a brief outline of the consultative process of instrument development for Wave 3 of the Infant Cohort and provides a summary of the groups of experts who gave such valuable input during this process. An overview is given of the Pilot Phase of the Wave 3 data sweep, which consisted of two components: a household pilot and a school-based pilot.

3.2 Instrument Development

As at previous waves of the study, intensive consultation took place with various groups of experts in the development of the instruments and procedures used at Wave 3 of the Infant Cohort. These included, in particular, the policy sector and practitioner groups. The policy sector input came from the funding departments of the Children and Youth Affairs; Social Protection and the Central Statistics Office as well as the Department of Education and Skills. Inputs were also made by the following groups:

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

In addition, substantial input to instrument development was contributed by panels of experts assembled by the Study Team. Four panels, each headed by members of the Study Team Management Group, were formed in the following areas:

- Health & Health Policy
- Child Development and Education
- Social Context & Social Institutions
- Methodology & Design

The panels of experts were made up of specialists drawn from a wide range of backgrounds such as youth and research policy, early childhood development, educational development, paediatrics, child psychiatry, family, gender and the labour market, and health psychology, among many others.

In developing the instrumentation, the Study Team synchronised, as far as possible, with other longitudinal child cohort studies, to facilitate later comparative research as well as to draw on their experiences and lessons learned.

3.3 Piloting the Instruments

The pilot phase of the Wave 3 data sweep consisted of two components: a household pilot and a school-based pilot.

3.3.1 Household Pilot

Fieldwork for the household phase of the pilot was carried out between October and November 2012. As well as testing all general aspects of the questionnaire design, content and timings, of particular interest in this pilot was the recording of information on the child's pre-school and education experience, including the transition to primary school. Details on the primary school attended were critical for rolling out the next phase of piloting in the schools, as discussed below.

Mirroring the sampling method which would later be used in main fieldwork, the sample used in the Wave 3 pilot was the effective (interviewed) sample of the Wave 1 pilot, regardless of outcome in Wave 2. A total of 198 families were approached for this phase of the study, and there was a response rate of just over 90 per cent among the families who had participated at Wave 2. Among families who had participated at Wave 1 but not at Wave 2, the response rate was lower, as expected.

The pilot test provided a lot of useful feedback on procedures, protocols, instrumentation and measures. Questions which were identified during the pilot phase as having low prevalence or analytical relevance were removed in order to reduce the overall length of the questionnaire or to facilitate the gathering of more comprehensive information in other sections. For example, questions on snacking behaviours and with whom the Study Child eats main meals were removed in order to facilitate a more detailed questionnaire on the dietary profile of the child. Some questions which were identified as difficult to interpret by the respondent were also removed and in some cases the need for additional response categories was highlighted.

3.3.2 School-based Pilot

Fieldwork for the school-based pilot was undertaken between November 2012 and February 2013. In addition to gathering feedback on survey instrumentation and protocols, the school-based phase of the Wave 3 pilot provided crucial information on the numbers of children in the pilot sample who had commenced primary school, allowing the Study Team to estimate the percentage of children in the main sample who would be attending school. The address and contact details for the child's school (where relevant) were recorded in the Primary Caregiver's questionnaire during the course of the home-based component of the pilot. Very importantly, the Primary Caregiver was asked to sign a consent form granting permission for the Study Team to approach the Study Child's school teacher, with a view to getting the teacher to complete a detailed Teacher-on-Pupil questionnaire.

A total of 126 primary schools were identified in the home-based component of pilot fieldwork as containing a Study Child. It was agreed with the DCYA that a sample of 60 of these schools would be selected for inclusion in the school-based pilot, some of which would have more than one Study Child. The 60 schools selected contained 82 Study Children in total.

Overall, 56 (93%) of the 60 sampled schools participated in this phase of the project. A total of 52 of these schools participated in full, completing and returning the three school-based

questionnaires (Principal, Teacher-on-Self and Teacher-on-Pupil; details of which can be found in Chapter Four). In the remaining four schools some combination of Principal, Teacher-on-Self or Teacher-on-Pupil questionnaires were not returned.

On the basis of the pilot experience it was decided that a school-based element would be incorporated into the main phase of fieldwork. Only a few changes were made to the school-based questionnaires following piloting; these changes included shortening the Teacher-on-Self questionnaire and providing clearer instructions around reporting child's achievement in the Teacher-on-Pupil questionnaire.

4. Survey Instruments

4.1 Introduction

This section provides a general overview of the instruments used in the Infant Cohort at age five. In the household, questionnaires were completed by the Primary Caregiver and Secondary Caregiver (where relevant), and physical measurements were taken. Direct physical and cognitive assessments of the Study Child were also carried out in the home. As many of the Study Children in Wave 3 had started school since the previous wave, a number of school-based instruments were also administered where relevant; these will be further outlined in this section.

4.2 Household based instruments

Questionnaires with the Primary and Secondary Caregivers were completed in the home using a laptop. The Primary Caregiver and Secondary Caregiver Main Questionnaires were administered by the interviewer on the laptop (Computer Assisted Personal Interviewing; CAPI). A common Sensitive Questionnaire was completed by Primary and Secondary caregivers on a self-completion (Computer Assisted Self-completion Interview; CASI) basis. Table 4.1 provides an outline of the different Wave 3 household based instruments, divided into sections according to topic. For more detailed information on the all questionnaires and instruments used at Wave 3, see www.growingup.ie. It is important to note that Section G contains two parallel sub-sections depending on whether or not the child had started school: this means that questions, for example, on the free pre-school year appear in two different places in the dataset (e.g. questions G20-G27 for children who have started school and questions G55-G63 for children who have not yet started school).

In addition to the survey questionnaires which were administered to the Primary and Secondary Caregivers, interviewers recorded the height and weight of the Study Child and the weights of Primary and Secondary Caregivers. Height measurements for adults were taken if this information was not available from previous waves (new respondent or missing). A medically approved mechanical SECA weighing scales was used for adult weight and a digital SECA scales was used for the child's weight. A Leicester height stick was used for all height measurements.

Children undertook two standardised cognitive tests which were administered directly by the interviewer in the home, with assistance of the CAPI programme. These tests were the Picture Similarities and Naming Vocabulary scales from the British Abilities Scales (Elliott, Smith & McCulloch, 1996), measuring reasoning/problem solving and vocabulary respectively.

Table 4.1: Household based instruments used at Wave 3.

Respondent	Mode of completion	Summary of content
Primary Caregiver	**CAPI**	**Main Questionnaire**
		A: Household Composition
		B: Child's Sleep and Relationships
		C: Child's Physical Health and Development
		D: Parental Health
		E: Child's Play, Activities and Temperament
		F: Child's Functioning and Relationships
		G: School/ Childcare/ Preschool Arrangements ***G1: Where child has started school*** *Subsection A – School details, school choice and transition to school* *Subsection B – Term-time out of school care for those who have started school* *Subsection C – Attendance at preschool prior to starting school* ***G2: Where child has not started school*** *Subsection A – Reasons for not starting school yet and preparations for starting school* *Subsection B – Attendance at preschool* *Subsection C – Term-time care arrangement: Additional care arrangements for children attending preschool; Alternative arrangements for children not attending preschool* ***G3: Where child is not in school or in childcare*** ***G4: Childcare arrangement when child turned 3 years of age***
		H: Parenting and Family Context
		J: Socio-Demographics
		K: About You [the Primary Caregiver]
		L: Neighbourhood/Community
Secondary Caregiver	**CAPI**	**Main Questionnaire**
		A: Introduction
		B: Parent-Child Relationships
		C: Child's Physical Health and Development
		D: Parental Health
		E: Child's Play and Activities
		H: Parenting and Family Context
		J: Socio-Demographics
		K: About You [the Secondary Caregiver]
		L: Neighbourhood/Community
Primary & Secondary Caregiver	**CASI**	**Supplementary Sensitive Questionnaire**
		Reasons for people leaving the household since Wave 2 (Primary Caregiver only)
		Relationship to child
		Current (and previous) marital status
		Relationship with partner

		Parental stress and satisfaction
		Parental self-efficacy
		Current pregnancy status (routed on gender)
		Alcohol consumption
		Smoking
		Drug use
		Mental health
		Contact with the Criminal Justice System
		Sharing of domestic and child-rearing duties
		Information on non-resident parent (if relevant)
Primary & Secondary Caregiver	**Measured by interviewer**	**Physical Measurements**
		Height and weight
Study Child	**Measured by interviewer**	**Physical Measurements**
		Height and weight
Study Child	**Administered by interviewer (CAPI assisted)**	**Cognitive Assessment**
		Reasoning (Picture Similarities test)
		Vocabulary (Naming Vocabulary test)

4.3 School-based instruments

Three school-based questionnaires were completed by the Study Child's school on paper and returned to the GUI study team by post – these were the Principal, Teacher-on-Self and Teacher-on-Pupil Questionnaires[16]. Following recruitment into the study, the Principal was posted the list of GUI study children attending the school along with the three questionnaires. The Principal distributed these questionnaires to the relevant teachers for completion. Teachers were requested to seal their completed questionnaires in an envelope provided by the Study Team and to return the sealed envelopes to the Principal for postal return. Following the mailing of the questionnaires to the schools, repeated phone calls were made over a period of 6-8 weeks to remind and encourage schools and their teachers to complete and return them, or to secure a definitive outcome on non-completions.

The content of the three school-based questionnaires is outlined in Table 4.2. It should be noted that content of the Teacher-on-Pupil Questionnaire relates to one specific study child, as opposed to the Teacher-on-Self Questionnaire which asks about pupils on a general, school or class level.

[16] In some cases, teachers will have completed more than one Teacher-on-Pupil questionnaire relating to different Study Children. This questionnaire is sometimes also referred to as Teacher-on-Child but it is the same questionnaire.

Table 4.2: School based instruments used at Wave 3.

Respondent	Summary of content
Principal	Personal information
	School size and staffing resources
	DEIS status
	Classroom provision
	Year school was built and most recently refurbished
	Adequacy of school facilities and resources
	Free school meal provision
	Resources for parents
	Computer resources
	Availability of school facilities to community
	Provision of extra-curricular activities
	School educational goals
	School composition
	Attendance levels
	Catchment area
	Emotional/behavioural problems and school supports
	Admission and streaming criteria
	School-parent engagement
	School-pupil engagement
	Disciplinary policy
	Bullying
	General school environment
	Principals' own job stress/satisfaction
Teacher	**Teacher-on-Self**
	Personal Information
	Basic characteristics of class taught
	Continuing Professional Development
	Subjects undertaken by class
	Teaching methods
	Control and input to decision-making in the classroom
	Beliefs about school-readiness
	General perception of pupils
	Satisfaction with information received on incoming pupils
	Parental attendance at parent-teacher or school meetings
	Perception of general school environment
	Job stress and job satisfaction
Teacher	**Teacher-on-Pupil (Child)**
	Characteristics of the Study Child
	Attending school appropriately prepared
	Child's readiness for school/core abilities
	Academic abilities
	Parent's engagement with the school and teacher
	Strengths and Difficulties Questionnaire (SDQ)
	The Pianta Student-Teacher Relationship Scale (STRS)
	Limitations and special supports

5. Fieldwork and Implementation

5.1 Introduction

This chapter briefly outlines the fieldwork procedures at Wave 3. This includes the training and vetting of fieldworkers, protocols for making initial contact with a household, tracing methods, and incident reporting procedures.

5.2 Interviewer Training

Fieldwork was carried out by the ESRI's national panel of interviewers. All interviewers who worked on the home-based fieldwork received in-depth training prior to beginning work on the project. Training included the following modules:

1. Background and objectives of the study
2. Detailed review of the content of all questionnaires
3. Familiarisation with, and practice on, the Computer Assisted Personal Interview system (CAPI)
4. Fieldwork procedures
5. Adult and child measurements (height and weight) and GPS co-ordinates
6. Instruction and practice in the administration of the direct child assessments
7. Child protection guidelines and incident reporting
8. Ethics
9. Summary of other documentation used in the administration of the survey

There was additional training provided to those interviewers who worked on the school phase of fieldwork.

5.3 Vetting

Growing Up in Ireland was carried out under the Statistics Act (1993). This is the same legislation as is used, for example, to carry out the Census of Population. Interviewers were appointed as 'Officers of Statistics' for the purposes of this project. This included a confidentiality clause on non-disclosure of information which was recorded in respect of a family or child to any unauthorised person, for any purpose.

In addition to being appointed Officers of Statistics, all interviewers and all other staff involved in the project were security vetted by An Garda Síochána.

5.4 Contacting a Household

As in other sweeps of the study, the initial contact with the family at this wave was made via a letter from the Study Team. The interviewer subsequently made a personal visit to each household to arrange an interview. At that first visit, interviewers asked to speak to the person listed at Wave 2 as the Study Child's Primary Caregiver. If the person was still resident in the household, then s/he was asked to confirm that s/he was still the Primary

Caregiver. Having reminded the parent/guardian of the letter and information sheet[17] which had already been posted to the family, and answering any queries the parent had, the interviewer asked the Primary Caregiver to sign two copies of the main consent form. One copy was returned by the interviewer to the field office, and the other was retained by the Primary Caregiver for his/her own records. Only after securing signed consent did the interviewer undertake any work with the family (interviews, tests or measurements).

Additional consent forms were signed in relation to (a) asking the Study Child's teacher to complete a questionnaire about him/her and (b) permission to link to information about the centre where the Study Child attended the Free Preschool Year.

5.5 Follow-Up/Tracing Information

As discussed in Chapter Two, there are a number of variables associated with inter-wave attrition, some relating to the characteristics of the interview and others relating to characteristics of the individual respondent. The problem of attrition may be somewhat mitigated by implementing rigorous tracking procedures aimed at tracing respondents who, for example, change address between data sweeps. Lynn (2009) distinguishes between forward or proactive tracing methods, i.e. procedures put in place prior to the current phase of fieldwork; and retrospective tracing methods, i.e. procedures which are put in place after fieldwork, when it has been identified that the participant has changed address since the previous wave. Both proactive and retrospective tracing methods were implemented in the GUI study.

5.5.1 Proactive tracing procedures

A number of proactive procedures were adopted during data collection. These included recording contact information in respect of two of the respondent's close associates or family members (outside their own household) whom the Study Team could call if it was found in the subsequent wave that the respondent had moved since the previous interview. In addition, respondents were given a "change-of-address" postcard and asked to fill in their new contact details and return them to the Study Team in the event of them changing address between interview rounds.

5.5.2 Retrospective tracing procedures

Retrospective procedures were also adopted. When field interviewers identified that a family was no longer resident at the address known to the Study Team they attempted to obtain a new address from the current occupant or neighbours at the respondent's former address. In doing this the interviewer told the current occupier or neighbour that s/he wished to track the family who had previously participated in a survey, but did not divulge that it was the ***Growing Up in Ireland*** study or the nature or content of the project in question. In cases

[17] A copy of the information sheet provided to participants can be found at www.growingup.ie.

where a new address was successfully obtained in this manner, interviewers fed the new address back to Head Office where the family were reallocated to field staff (if in a different area from previous address).

Where a new address for a family who had moved could not be obtained by the interviewer, field support staff in Head Office accessed the alternative contact details provided for tracing purposes by the family in earlier waves of the study. These alternatives were contacted with a view to securing a current address for the respondent Study Child.

A final (and extremely important) source of potential tracking in Wave 3 was the Child Benefit Register, which is maintained by the Department of Social Protection. In the course of the earlier interviews, respondents were asked to sign a consent form giving permission to track them using their Personal Public Service Number (PPSN) through the Child Benefit Register for tracing purposes associated with the study. This was implemented through the Department of Social Protection. To minimise the burden on the Department this approach was used as a final stage in tracing, only after field and other tracking procedures had been exhausted. Given the high quality of the contact information contained on the Child Benefit Register the success rate in securing alternative contact addresses was very high.

5.6 Incidents

A detailed ***Growing Up in Ireland*** Child Welfare and Protection protocol was developed by the Study Team. One aspect of this involved an incident report system. All incidents were immediately reported by interviewers to their Field Support Contact at Head Office and a detailed Incident Report Form was completed. Given that interviews often took place outside office hours, interviewers were provided with an emergency telephone number which could be used to contact the Study Team on a 24-hour, 7 day basis. Interviewers were instructed that in extreme circumstances, where a child or other vulnerable person was thought to be in immediate danger, they should use their own discretion and contact the Gardaí if necessary, without recourse to the Study Team.

6. Structure and Content of the Data File

6.1 Introduction

This section outlines the structure of the Researcher Microdata File (RMF) and Anonymised Microdata File (AMF) and provides a brief explanation of how the two data files differ in content. An overview is given of variable naming and ordering conventions and the reweighting process. Details are provided of the derived variables and those pertaining to the scaled measures used in the study, followed by the measurement variables, i.e. physical measurements and cognitive tests. Finally, the coding and editing process is outlined.

The Study Team would advise that the data are used in conjunction with the Questionnaire Documentation. This is probably the easiest way to get a broad overview of the topics included in the data file. Researchers should however note that there may be differences in value labels between the questionnaires and the data file, for the purposes of preparation and anonimisation. This is especially true for the AMF.

6.2 Anonymised (AMF) and Researcher (RMF) Microdata Files

Two data files are available for researchers: the Researcher Microdata File (RMF) and Anonymised Microdata File (AMF). The AMF is a publicly available anonymised dataset, while the RMF is a more detailed dataset, access to which is subject to appointment as an Officer of Statistics by the Central Statistics Office. Accordingly, some potentially disclosive variables which appear on the RMF have been removed from the AMF. Other variables have had their values banded into larger groups so that frequencies with low cell counts are not visible. In some instances this was achieved by either bottom or top coding (or both) of outlying cases. In others, continuous scores were grouped into categories. Information particularly likely to be sensitive in nature (i.e. the majority of the variables in the sensitive questionnaires) has been removed from the AMF. The user should therefore note that not every question from the questionnaires is included in the data file, particularly in the case of the AMF. A list of variables included in each data file is available via the accompanying summary data dictionary.

6.3 Structure of the data file

Both the Researcher Microdata File (RMF) and Anonymised Microdata File (AMF) are presented as a flat rectangular data file based on a simple concatenation of all questionnaires administered to respondents. The case-base is the Study Child. This means that the user does not have to be concerned about matching Primary and Secondary Caregiver questionnaires within household.

6.4 Variable naming

All variables for Wave 3 of the Infant Cohort of prefixed with a 'b' for 'birth cohort'; there are slight differences to the combination of preceding letters for the home-based versus school-based variables.

6.4.1 Naming of Home-based Variables

For the home-based questions, the prefix 'b' is followed by two letters which indicate the respondent: 'pc' for Primary Caregiver, 'sc' for Secondary Caregiver. This is followed by '3', to indicate the third wave of data collection, and the question number. In the case of the sensitive questionnaire, the question number is preceded by 'S'.

Examples:

- Question 'D8' from the Primary Caregiver Main Questionnaire at Wave 3 will have the variable name '**bpc3D8**'
- Question B2(g) from the Secondary Caregiver Main Questionnaire will have the variable name '**bsc3B2g**'
- Question 12 from the Primary Caregiver Sensitive Questionnaire will be named '**bpc3S12**'

6.4.2 Naming of School-based Variables

For the school-based questions, the initial 'b' prefix is followed by '3' (to indicate the third wave of data collection), an underscore and subsequently letter(s) to indicate the questionnaire: 'P' for Principal, 'TC' for Teacher-on-Child (Pupil) and 'TS' for Teacher-on-Self.

Examples:

- Question 35b on the Principal Questionnaire will be named '**b3_P35b**'
- Question 4 on the Teacher-on-Child (Pupil) questionnaire will be named '**b3_TC4**'
- Question 22 on the Teacher-on-Self questionnaire will be named '**b3_TS22**'

6.4.3 Naming of other variables

Exceptions to the aforementioned variable naming conventions are variables from the household grid, derived variables and variables from the scaled measures, as well as direct measurements, i.e. physical measurements and cognitive tests.

6.5 Variable order

The first variables in the data file include the household identification code, details of family's participation in subsequent waves and the weighting factors, all of which are detailed later in this chapter. Following these, blocks of variables appear in the dataset in the order listed in Table 6.1 (variable prefixes for blocks of variables are also shown). Note that derived variables appear at the end of the relevant block of variables, i.e. variables derived

from the Primary and Secondary Caregiver (PCG and SCG) questionnaires appear after the other home-interview variables. Variables derived from the Teacher-on-Child (Pupil) questionnaire appear after the other Teacher-on-Child Variables.

Table 6.1: Ordering of variables in the data file.

Order	Questionnaire/Section	Variable prefix
1	Household Grid	p1xxW3, p2xxW3
2	Primary Caregiver Main Questionnaire	bpc3
3	Primary Caregiver Sensitive Questionnaire	bpc3S
4	Secondary Caregiver Main Questionnaire	bsc3
5	Secondary Caregiver Sensitive Questionnaire	bsc3S
6	Physical Measurements	bpc3, bsc3 or b3kid [study child]
7	Derived Variables (PCG & SCG)	b3_
8	Principal Questionnaire	b3_P
9	Teacher-on-Child Questionnaire (& relevant derived variables)	b3_TC
10	Teacher-on-Self Questionnaire	b3_TS

6.6 Identification Codes

Each household has a unique identification code, which is the same at all waves to enable matching of the data files where necessary. The sequence of identification codes runs from 300 to 1,113,400 and is indicated by the variable '**id**'.

6.7 The Household Grid

The household grid contains the information on the members of the household, i.e. who lives in the household, his/her person number on the grid, gender, relationship to both the primary caregiver and the Study Child, age and principal economic status. For ease of reading, the household grid variables are prefixed with the person number. For example, the variable indicating the sex of the person on line 1 of the grid is 'P1sexW3' where 'W3' indicates Wave 3 data. Details were recorded such that the Primary Caregiver (usually the mother) was on line 1, the Study Child was on line 2, and the Secondary Caregiver (if relevant) was on line 3. The Study Child's twin or triplet etc was on lines 4, 5 as appropriate unless there was no Secondary Caregiver, in which case they were on lines 3, 4.

To save time in administering the interview at Wave 3 some information on household composition which was captured at Wave 2 was fed forward. The Primary Caregiver was asked to review this information and to correct any inaccuracies, either due to errors or changes which had taken place since the previous interview. New people could be added to the grid and others removed. The information represented by the variables labeled 'P1xxW3' etc included any corrections made at Wave 3. To ensure confidentiality, only the respondent who identified as the Primary Caregiver at Wave 2 could review the forward-fed information[18]. If the respondent identified as the Primary Caregiver at Wave 2 was no longer

[18] This was done to meet the guarantees of confidentiality of information which were given to respondents in previous waves. At the interviews in both Wave 1 and Wave 2, respondents were told that no-one would have

resident in the household at Wave 3, the person identifying as the Primary Caregiver at Wave 3 was asked to complete a new household grid, without any forward-fed information. On the *RMF only*, the original line number for the person at Wave 1 can be found in the variables named 'origlineP1' etc. Note that individuals with an original line number from 21 onwards are new additions to the grid at Wave 2; individuals with an original line number from 31 onwards are new additions at Wave 3. The variables named 'W3xstillp3' etc. indicate whether or not the person on that line number (e.g. line 3) at Wave 1 is still resident in the household.

In families in which the Primary Caregiver at Wave 2 had become the Secondary Caregiver by Wave 3 (and hence would not be completing the Wave 3 Primary Caregiver Questionnaire), s/he was asked to review (and correct if necessary) the grid information which s/he had provided at the first interview. Whether or not the Primary Caregiver and Secondary Caregiver roles at Wave 3 are being filled by the same individual as in Wave 2 is indicated by the derived variables '**xpcgstatph3**' and '**xscgstatph3**[19]'.

As noted, where there is a Secondary Caregiver, s/he will be person 3 on the household grid. However, not all persons on line 3 of the household grid are Secondary Caregivers. For example, in a one-parent family the third person will be another household member (other than the Primary Caregiver or Study Child). A variable has been included in the database to indicate whether the Primary Caregiver has a partner (by definition the Secondary Caregiver) resident in the household (**b3_partner**).

Details obtained in the household grid, such as dates of birth, gender and relationships are very important in terms of derived variables. Consequently, some editing of the information took place where it was clear from associated details that this was appropriate. There are, however, a few minor outstanding anomalies between the information given on the interviewer administered household grid and that given in the Primary Caregiver Sensitive questionnaire (self-completed on CASI). The reader should note that (for anonymisation purposes) exact dates of birth have been removed from the archived file and replaced with age in years.

6.8 The Main Respondent – Primary Caregiver

The Primary Caregiver was self-identified within the home as the person who provided most care to the Study Child and who knew most about him/her. In most cases, this was the child's mother. As noted above, in some cases the Primary and Secondary Caregiver from Wave 1 had swapped roles between waves (flagged by the variables '**xpcgstatph3**' and '**xscgstatph3**'). Note that more detailed information on the inter-wave swapping of roles is provided in the *RMF*.

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sight of the information which they provided in the course of their interview, including the information contained in the household grid.

[19] Note this information will be unavailable for families who did not complete at Wave 2

6.9 Twins

A data record exists for each child included in the sample. All non-singleton children are coded as '**b3_nonsingleton'** in the file. In situations where there was a non-singleton in a family a core questionnaire was administered to the Primary and Secondary Caregivers (where relevant) in the normal way to record the characteristics of the informant. These core questionnaires included details on, for example, the informant's health status and lifestyle, socio-demographic characteristics etc. In addition, the Primary and Secondary Caregivers were asked to complete a questionnaire containing the relevant questions specific to each of the non-singleton Study Children – for example, in respect of the Primary and Secondary Caregiver's relationship with the child. Following the interview, a data record was constructed for each sampled non-singleton child to include the common questions from the Primary and Secondary Caregiver as well as the child-specific questions from the individual questionnaires.

6.10 Weighting variables

As discussed in Section 2.7 above, in line with best practice in sample surveys, the data have been re-weighted or statistically adjusted to ensure that the sample is representative of the population[20] from which it has been drawn. By doing this one ensures that the structure of the completed sample is in line with the structure of the population along key socio-demographic and other dimensions.

The data file contains two sets of weighting and grossing factors. The first set is made up of: **WGT_5YRa** and **GROSS_5YRa.** These are based on the families who participated at Wave 1 and Wave 3, but not necessarily Wave 2. The weighting factor (**WGT_5YRa)** incorporates the structural adjustment of the completed sample to the population, whilst maintaining the total completed sample size of 9,001 cases. The grossing factor (**GROSS_5YRa)** calibrates to the estimated population of 69,300.

In addition, there is a separate set of weighting and grossing factors: **WGT_5YRb** and **GROSS_5YRb**. These relate to families who participated at all three waves in the study to date - the reduced sample of 8,712 families. The weighting factor **WGT_5YRb** incorporates the structural adjustment of the completed sample to the population, whilst maintaining the completed sample size of 8,712 families who participated in all three waves. The grossing factor **GROSS_5YRb** calibrates to the estimated population size of 69,300.

Both **WGT_5YRa/b** and **GROSS_5YRa/b** provide the user with the same structural breakdown of the data. The former can be used in significance testing and data modeling.

[20] As noted in Chapter Two, given the fixed panel design of ***Growing Up in Ireland*** in the current context this is the population of 5-year-olds who were resident in Ireland at 9 months of age and who continued to live in the country at 5 years, adjusting for those who (with their families) had emigrated or deceased between 9 months and 5 years of age.

More detail on the specifics of the weighting / grossing procedure is provided in Chapter Two above.

The variables ***xxwave1***, ***xxwave2*** and ***xxwave3*** indicate if the case has data for Wave 1, Wave 2, and Wave 3, respectively. A value of one indicates participation at the relevant wave. In the 5 year data file **xxwave1** and **xxwave3** are equal to 1 for all cases, as all cases in this file have completed both Wave 1 and Wave 3. The variable of interest for selecting the appropriate sample of respondents at 5 years is **xxwave2** In a small number of cases, **xxwave2**will not be equal to 1, as there are 289 cases which completed Wave 1 and Wave 3 but not Wave 2. Frequencies of these indicator variables are outlined below.

Table 6.2: Frequency distribution of variables *xxwave1, xxwave2* and *xxwave3*.

Variable Name	**Value**	***N***
xxwave1	1 0	9001 0
xxwave2	1 0	8712 289
xxwave3	1 0	9001 0

6.11 Derived Variables

In addition to some of the derived variables mentioned above (e.g. 'b3_partner', 'xpcgstatph3'and 'xscgstatph3'), a number of variables were derived to provide additional information on the circumstances of the household. These variables pertain to family composition, household income and household social class and are outlined below.

6.11.1 Household type (b3_hhtype4)

This fourfold variable gives an indication of family composition. It is based on whether or not the Study Child is living in a one or two parent family as well as the number of children living in the household. This gives us a classification as follows:

- One parent, one child
- One parent, two or more children
- Two parents, one child
- Two parents, two or more children

A child is defined solely in terms of age (under 18 years) and not in terms of relationship to the Study Child or others in the household.

6.11.2 Equivalised Household Income (b3_EIncDec, b3_EIncQuin)

In order to make meaningful comparisons between households on their income, household size and structure must be taken into account. This is done by creating an 'equivalised' income. In GUI, an equivalence scale was used to assign a "weight" to each household member. The equivalence scale used assigned a weight of 1 to the first adult in the household, 0.66 to each subsequent adult (aged 14+ years living in the household) and 0.33 to each child (aged less than 14 years). The sum of these weights in each household gives the household's equivalised size – the size of the household in adult equivalents.

Disposable household income is recorded as total gross household income less statutory deductions of income tax and social insurance contributions. Household equivalised income is calculated as disposable household income divided by equivalised household size. This gives a measure of household disposable income which has been "equivalised" to account for the differences in size and composition of households in terms of the number of adults and/or children they contain.

In the data file, equivalised household income is given in deciles (**b3_EIncDec**) and quintiles (**b3_EIncQuin**).

6.11.3 Household Class (b3_hsdclass)

In the course of the survey, both caregivers (where relevant), were asked to provide details on their occupations from current or previous employment outside the home[21]. On this basis, a social class classification was generated for both Primary and Secondary Caregiver. The classification used was that adopted by the Irish Central Statistics Office (CSO) with seven categories as follows:

1. Professional workers
2. Managerial and technical
3. Non-manual
4. Skilled manual
5. Semi-skilled
6. Unskilled
7. All others gainfully occupied and unknown

The household's Social Class is then taken as the highest Social Class category of both partners in the household (as relevant). This standard procedure is referred to as the 'dominance criterion'. Households where both caregivers are currently economically inactive and have not held any previous employment in the past are classified as 'validly no social class', as they have no occupation code upon which to base their social class.

[21] Current occupation if economically active; previous occupation if retired or unemployed.

6.11.4 Household location (b3_region)

This variable is based on information provided by the Primary Caregiver in the course of the interview. There is an eight-fold classification on the RMF (**b3region8**: South-East, Dublin, etc) as well as a three-fold classification (**b3region3**: Dublin, BMW, Rest); and on the AMF it is reduced to an urban/rural dichotomy (**b3_region**).

6.12 Scaled Measures Used in the Study

A number of scaled measures were used in the ***Growing Up in Ireland*** study and scored according to protocols provided by the authors. These are briefly described below. An indication of the reliabilities of these scaled measures, as illustrated by Cronbach's alpha, are detailed in the appendix to this report.

6.12.1 Strengths & Difficulties Questionnaire (SDQ; Goodman, 1997)

The SDQ is a brief (25 item) behavioural screening questionnaire designed to assess emotional health and problem behaviours in children. The SDQ appears on the Primary Caregiver questionnaire as question F1 and on the Teacher-on-Pupil (Child) questionnaire as question 11. The SDQ comprises five subscales, a total difficulties score and, in the case of the parent SDQ, an impact score. The subscales and their corresponding variables names are listed in Table 6.2.

Table 6.3: Subscales of the Strengths and Difficulties Questionnaire and their relevant variable names.

Subscale	Primary Caregiver Variable Name	Teacher-on-Pupil Variable Name
Emotional	b3_sdqemotional	b3_TCsdqemotional
Conduct	b3_sdqconduct	b3_TCsdqconduct
Hyperactivity	b3_sdqhyper	b3_TCsdqhyper
Peer problems	b3_sdqpeerprobs	b3_TCsdqpeerprobs
Prosocial	b3_sdqprosocial	b3_TCsdqprososcial
Total difficulties	b3_sdqtotaldiffs	b3_TCsdqtotaldiffs
Impact score	b3_sdqimpact	-

6.12.2 The Pianta Scales - Child Parent Relationship Scale (CPRS) and Student-Teacher Relationship Scale (STRS) (Pianta, 1992)

Each of these 15-item scales assesses both the negative and positive aspects of the relationship between either parent and child or teacher and child. The relevant scale appears as question B7 on the Primary Caregiver Main Questionnaire, as question B1 on the Secondary Caregiver Main Questionnaire, and as question 12 on the Teacher-on-Pupil questionnaire. Both scales are very similar in content, with altered wording in the STRS (i.e. "this child" as opposed to "my child"). The measure produces a *Positive Aspects* subscale (**bpc3_positive, bsc3_positive, b3_TCpositive**) and a *Conflicts* subscale (**bpc3_conflict, bsc3_conflict, b3_TCpositive**).

6.12.3 Temperament Scale (Abbreviated version of the Short Temperament Scale for Children (STSC) (Sanson, Smart, Prior, Oberklaid, & Pedlow, 1994)

Child temperament was measured using an abbreviated version of the Short Temperament Scale for Children (STSC; Sanson et al., 1994). This parent-report instrument comprises 13 items and yields scores for three subscales; *Sociability* (**b3_sociability**), *Persistence* (**b3_persistence**) and *Reactivity* (**b3_reactivity**). This inventory appears on the Primary Caregiver Questionnaire at E1 & E2.

6.12.4 Parenting Style Measure (from the Longitudinal Study of Australian Children [LSAC])

Questions H2 and H3 on the Primary Caregiver Questionnaire (and H1 and H2 on the Secondary Caregiver Questionnaire) were taken from self-report measures of parenting style which were used in LSAC. These yield scores for three different parenting dimensions: *Warmth* (**bpc3_warmth, bsc3_warmth**), *Hostility* (**bpc3_hostility, bsc3_hostility**) and *Consistency* (**bpc3_consistency, bsc3_consistency**).

6.12.5 Parental Stress Scale (Berry and Jones, 1995)

Two subscales of the Parental Stress Scale (Berry & Jones, 1995), which was designed to assess both positive and negative aspects of parenthood, appear on the Sensitive Questionnaire for both Primary and Secondary Caregivers as Question 21. The two subscales are the six-item Parental Stressors sub-scale (**bpc3_stress**, **bsc3_stress**) and the three-item Parental Satisfaction sub-scale (**bpc3_satis, bsc3_satis**).

6.12.6 Social Skills Improvement System Rating Scales (SSIS_RS: Gresham & Elliot, 2008)

This scale provides a measure of the study child's social skills and abilities to interact positively with adults and peers. The version of the SSIS_RS used in GUI, which appears on the Primary Caregiver Main Questionnaire as question C29, comprises 26 questions. These make up four subscales: *Assertion* (**b3_assertion**) *Responsibility* (**b3_responsibility**), *Empathy* (**b3_empathy**) and *Self-control* (**b3_selfcontrol**).

6.12.7 The Emlen Childcare Scales – Rich Activities & Environment Scale and the Parent Scale Measuring Quality of Child Care (Emlen, 2000)

Two scales from the Emlen Scales (Measuring Quality of Child Care from a Parent's Point of View) were used on the Primary Caregiver Questionnaire: the Rich Activities & Environment Scale and the Parent Scale Measuring Quality of Child Care. As these questions appear in a number of different sections, due to the different routing options for school and childcare, Table 6.3 provides a list of where the scales appear and their relevant variable names.

Table 6.4: The sections in which the Emlen Childcare Sub-scales appear and their relevant variable names.

Section	Scale	Variable Name
G26	Rich Environment & Activities Scale	bpc3_richenviron_g26
G32	Rich Environment & Activities Scale	bpc3_richenviron_g32
G32	Scale Measuring Quality of Child Care	bpc3_qualchildcare_g32
G52	Rich Environment & Activities Scale	bpc3_richenviron_g52
G52	Scale Measuring Quality of Child Care	bpc3_qualchildcare_g52
G62	Rich Environment & Activities Scale	bpc3_richenviron_g62

6.12.8 Centre for Epidemiological Studies Depression Scale (CES-D) (Melchior, Huba, Brown & Reback, 1993) *[RMF only]*

These eight questions provide a short self-report screening instrument for depression in the general population. Both Primary and Secondary Caregivers answered the CES-D as part of the sensitive questionnaires. For both respondents, a total score was obtained which is a sum of the raw scores (**bpc3_CEStotal; bsc3_CEStotal).** Also included in the file are two variables (**bpc3_CESD; bsc3_CESD**) which categorise respondents into 'depressed' or 'not depressed'.

6.12.9 Dyadic Adjustment Scale (DAS-4) (Sabourin et al., 2005) *[RMF only]*

The quality of the couple relationship was indexed using the short 4-item form of the Dyadic Adjustment Scale (DAS-4), which 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. Both Primary and Secondary Caregivers (where relevant) completed the DAS-4 (**bpc3_DAS**; **bsc3_DAS**).

6.12.10 FAST Alcohol Screening Test (Hodgson et al., 2002) *[RMF only]*

The FAST alcohol screening test was developed in the UK as a short screening tool for alcohol misuse. The scale comprises four items, however the test authors assert that 50% of people may be classified as 'hazardous' or 'not hazardous' drinkers using the answer to the first item "how often do you have EIGHT or more drinks on one occasion?" (six drinks for women). The items appear as S26 on the sensitive supplementary questionnaire for both the Primary and Secondary Caregiver. When these items are scored as 0 – 4, a person is classified as a 'hazardous' drinker if their total score is 3 or more. As anyone who answers S26a/b as having six or eight drinks on one occasion as weekly or more often is automatically classified as a hazardous drinker, not everyone will have a continuous score from 0 to 4. The classification is enclosed as **bpc3_fastclass** and **bsc3_fastclass.**

6.12.11 Achievement Scales (from the Millennium Cohort Study)

These questions (which were used in the Millennium Cohort Study, Age 5 survey and based on the Foundation Stage Profile in England) assess the study child's school achievement as reported by their teacher. The five subscales, which appear as question 8 on the Teacher-on-

Pupil (Child) questionnaire, assess the following areas: *Disposition and Attitudes* (**b3_TC8a_attitudes**), *Language for Communication and Thinking* (**b3_TC8a_language**), *Linking Sounds and Letters* (**b3_TC8a_linking**), *Reading* (**b3_TC8a_reading**) and *Numeracy* (**b3_TC8a_numbers**).

6.12.12 Food Frequency Questionnaire (School of Public Health, Physiotherapy & Population Science, UCD)

An expanded food frequency module was used at age five to allow more in-depth analysis of dietary patterns. This scale has previously been used in the Lifeways Study (Kelleher, Viljoen, Murrin et al.). The Primary Caregiver was provided (at question C26) with a list of 53 food types and asked to indicate how frequently the Study Child ate each one. This provided in-depth data indicating the child's food consumption and nutritional intake, and resulted in an estimate of the Study Child's daily calorie consumption (**b3_kcal**).

The value for daily calorie consumption was estimated using an R program (FFQ Software, Version 1.1, February 2015) and associated tables kindly provided by the School of Public Health, Physiotherapy & Population Science (UCD). The program was originally authored by Juzer Lotya and updated by John Mehegan. The program converts the food frequency information to quantities using young children's portion sizes (Wrieden et al., 2002) and subsequently to nutrient values based on standard data from the McCance and Widdowson Food Composition Tables (McCance and Widdowson, 2002).

6.13 Physical Measurements

6.13.1 Height & Weight

The heights of the Primary and Secondary Caregivers were fed-forward from the previous waves. Only in cases where this information was not available, or flagged for rechecking, were the heights of the Primary and Secondary Caregivers recorded at Wave 3. Heights and weights of all study children were recorded (unless they were unable to be measured).

All weights were recorded in kilograms using medically approved weighing scales: a flat mechanical scale for adults (SECA 761) and a digital scale for children (SECA 835). Height for both adults and children was recorded in centimetres using a standard measuring stick (Leicester portable height measure). All measurements were recorded on the laptop during the course of the CAPI interview.

The heights and weights recorded by the interviewer were edited to remove clearly implausible values. The Wave 3 measurements (which include the forward-fed height values where available) can be found in the following variables:

- Primary Caregiver Height (**bpc3cms**)
- Secondary Caregiver Height (**bsc3cms**)
- Study Child Height (**b3kidcms**)
- Primary Caregiver Weight (**bpc3kgs**)

- Secondary Caregiver Weight (**bsc3kgs**)
- Study Child Weight (**b3kidkgs**)

6.13.2 Body Mass Index (BMI)

BMI scores were derived from the height and weight measurements taken by the interviewer for the Primary Caregiver (**bpc3bmi**), Secondary Caregiver (**bsc3bmi**) and Study Child (**b3_kidbmi**)[22]. Categorised variables are also provided, which categorise Primary and Secondary Caregivers into underweight, healthy, overweight, obese (**bpc3bmi_cat**, **bsc3bmi_cat**) and Study Child into non-overweight, overweight, obese (**b3_kidbmi_cat).**

6.14 Cognitive Assessments

In order to obtain a direct assessment of the study child's cognitive abilities, two of the core scales from the Early Years Battery of the British Ability Scales (Elliott, Smith & McCullough, 1996) were administered in the home. The Naming Vocabulary test served as a measure of expressive English language vocabulary (variables prefixed by 'b3_nv') and the Pictures Similarities test measured reasoning capacity and problem solving skills (variables prefixed by 'b3_ps'). Variables in the data file consist of the total ability scores (**b3_psabscore, b3_nvabscore**), t-scores (**b3_pstscore, b3_nvtscore**) and percentiles (**b3_pspercentile, b3_nvpercentile**). T-scores and percentile scores are based on tables provided by the test authors.

6.15 Coding & Editing

The CAPI questionnaires administered in ***Growing Up in Ireland*** consisted mainly of closed questions[23]. The program included extensive range and cross-variable consistency checks (both hard and soft)[24]. This meant that much of the coding and data checking was effectively dealt with as the interview took place. However, in some cases open questions were needed to capture verbatim responses that would have been difficult to pre-code. Where relevant, these were coded into separate categorical variables after the interview was completed. Other questions did have a pre-defined coding frame but also had an 'other-specify' option for those responses which did not fit into any of the pre-coded categories - again answers were recorded on a verbatim basis by the interviewer. In this instance responses to these questions had to be recoded with additional categories. The newly coded responses for additional codes

[22] On the AMF, BMI scores are derived from the original height and weight measurements before top and bottom coding.

[23] Almost all CASI questions were closed.

[24] 'Hard' edit consistency checks in a CAPI program refer to cross-variable consistency checks which must be resolved by the interviewer in the field at the time of questionnaire administration. Until the inconsistency is resolved by the interviewer it will not be possible to continue administering the questionnaire. In contrast, a 'soft' edit consistency check is one which signals an apparent inconsistency, or extreme value from a respondent's answer to a question or set of questions. The extreme value may or may not be correct. If the interviewer administering the survey feels that it is a valid value, albeit extreme, s/he can suppress the soft edit check and continue with administering the survey.

or variables appear in the *RMF* dataset. All verbatim text from the original responses has been removed as a safeguard to protecting respondent's identity. In terms of editing the data, regular checks were carried out on the data as they were returned from the field and inconsistencies dealt with.

The possibility of longitudinal inconsistencies arises with the collection of a third wave of data, as well as cross-sectional inconsistencies within wave. For some key variables, such as education level, these were checked and edited to provide more consistency where appropriate. However, there remain some inconsistent cases where it was not possible to make a judgment on an appropriate edit. It should be noted that in relation to parental education Wave 3 saw (a) a change in the answer options, and (b) additional information was collected about educational qualifications which was used to evaluate apparent inconsistencies (e.g. a drop in level of education) – this means that there may be more adjustments to educational level between Waves 2 and 3 than observed between Waves 1 and 2.

6.16 Forward-feed from Wave 2

As discussed in Section 6.7 above, some variables were fed forward from previous waves to reduce interview time at Wave 3. Adult height was also forward-fed as noted earlier. A summary of all other variables that were fed forward at Wave 3 is provided in the Table 6.4 below.

Table 6.5: Details on variables forward-fed from previous waves (excl. household grid and adult height)

Variable name	Variable description	Rules
bpc3K4,bpc3K5, bpc3K6 *[RMF only]*	Literacy and numeracy	Asked if literacy or numeracy problems indicated at Wave 2, or new respondent or missing
bpc3K12, bsc3K10	Ireland as country of birth	Asked if missing from previous wave or new respondent
bpc3K14, bsc3K12 *[RMF only]*	Length of time living in Ireland	Asked if missing from previous wave or new respondent[25]

[25] Note that respondents who indicated 'within last year' at Wave 1 were assumed to be '1-5 years' in Ireland by Wave 3; '1-5 years ago' at Wave 1 were assumed to be '6-10 years ago' by Wave 3; '6-10 years ago' in Wave 1 was changed to '11-20 years ago' for Wave 3; '11-20 years' was not changed although possibly some respondents may have actually moved into the 'more than 20 years category'

7. Ethical Considerations

In undertaking research with families and children ethical considerations assumed primary importance. Procedures relating to child protection were informed by the Children First: National Guidance for the Protection and Welfare of Children (Department of Children and Youth Affairs, 2011) as well as the relevant Acts in Irish legislation. Three acts are of particular relevance for this Study; they are the Data Protection Acts 1988, 2003 and the Statistics Act, 1993. All interviewers, as well as other staff working on ***Growing Up in Ireland***, were security vetted by An Garda Síochána (the Irish Police Service).

All work in Wave 3 of the Infant Cohort was carried out under ethical approval granted by a dedicated and independent Research Ethics Committee convened by the Department of Children and Youth Affairs, especially for ***Growing Up in Ireland***. The Research Ethics Committee was very rigorous in its review and consideration of all the materials and procedures used in the project.

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9. Appendix

Appendix: Indicative Cronbach's alphas for the scales used in the study.

Scale	Respondent	Subscale (if relevant)	α
Strengths & Difficulties Questionnaire	PCG	Emotional	0.58
	PCG	Prosocial	0.67
	PCG	Hyperactivity	0.75
	PCG	Conduct	0.57
	PCG	Peer	0.50
	PCG	Total score	0.61
	Teacher	Emotional	0.72
	Teacher	Prosocial	0.81
	Teacher	Hyperactivity	0.86
	Teacher	Conduct	0.66
	Teacher	Peer	0.59
	Teacher	Total score	0.62
Pianta Child-Parent Relationship Scale	PCG	Positive	0.60
	PCG	Conflict	0.76
	SCG	Positive	0.64
	SCG	Conflict	0.75
Pianta Student-Teacher Relationship Scale	Teacher	Positive	0.82
	Teacher	Conflict	0.83
LSAC Temperament Measure	PCG	Persistence	0.78
	PCG	Sociability	0.79
	PCG	Reactivity	0.63
LSAC Parenting Style Measure	PCG	Warmth	0.88
	PCG	Hostility	0.65
	PCG	Consistency	0.71
	SCG	Warmth	0.88
	SCG	Hostility	0.64
	SCG	Consistency	0.67
Parental Stressors Scale	PCG	Stress	0.77
	PCG	Satisfaction	0.52
	SCG	Stress	0.74
	SCG	Satisfaction	0.49
Social Skills Improvement System Rating Scales	PCG	Assertion	0.73
	PCG	Responsibility	0.82
	PCG	Empathy	0.86
	PCG	Self-control	0.80
Achievement Scales (from Millennium Cohort Study)	Teacher	Disposition and Attitudes	0.78
	Teacher	Language for Communication and Thinking	0.88
	Teacher	Linking Sounds and Letters	0.85
	Teacher	Reading	0.77
	Teacher	Numeracy	0.76

Dyadic Adjustment Scale	PCG	-	0.56
Dyadic Adjustment Scale	SCG	-	0.55
CES Depression Scale	PCG	-	0.87
CES Depression Scale	SCG	-	0.81
Emlen Scales	PCG	Rich Environment & Activities (Childcare)	0.90
	PCG	Rich Environment & Activities (Free Preschool Year)	0.90
	PCG	Quality of Childcare	0.94