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# The Growing Up in Scotland study (GUS)

Briefing Paper for the Scottish  
Parliament Education and Skills  
Committee



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Date: 8 February 2019

The Growing Up in Scotland study (GUS) is a major longitudinal research project that tracks the lives of several cohorts of Scottish children through the early years and beyond. The study is funded by the Scottish Government and carried out by the Scottish Centre for Social Research (ScotCen). GUS provides crucial evidence for the long-term monitoring and evaluation of policies for children and families. It collects a wide range of information about children and their families. The main areas covered include education, childcare, parenting, health, development and social inclusion.

## 1 The purpose of GUS

GUS seeks to generate, through robust methods, specifically Scottish data about outcomes throughout childhood and into adulthood for children growing up in Scotland. It does so across a range of domains:

- Cognitive, social, emotional and behavioural development
- Physical and mental health and wellbeing
- Childcare, education and employment
- Home, family, community and social networks
- Involvement in offending and risky behaviour

Where possible, the study aims to focus on topics where Scottish evidence is lacking and policy areas where Scotland differs from the rest of the UK.

## 2 Study design

GUS is a multiple cohort longitudinal study, meaning that several discrete groups of children have been followed over time. The study was launched in 2005 and has consisted of three cohorts of children: around 3000 children born in 2002/03 (the Child Cohort – ‘CC’), 5000 born in 2004/05 (Birth Cohort 1 – ‘BC1’), and 6000 born in 2010/11 (Birth Cohort 2 – ‘BC2’). Children in the Child Cohort were aged 2-3 years old when data was first collected whereas those in the Birth Cohorts were aged just 10 months old. Birth Cohort 1 is the only cohort which is still active. Children and families in this cohort are currently participating in their 10<sup>th</sup> sweep of data collection.

The study collates data on participating children and families from several sources, as shown in Figure 1. The principle source has been a regular face-to-face survey interview with the child’s main carer. This takes place in the family home and is carried out by a trained survey interviewer using a computer-based questionnaire. This approach allows the collection of robust and detailed information. It also facilitates the collection of complex data including from sub-groups of significant policy interest such as younger mothers or those out of work. Furthermore, using interviewers and home visits enables the study to collect a range of other data including via objective, standardised assessments of height and weight and cognitive development.

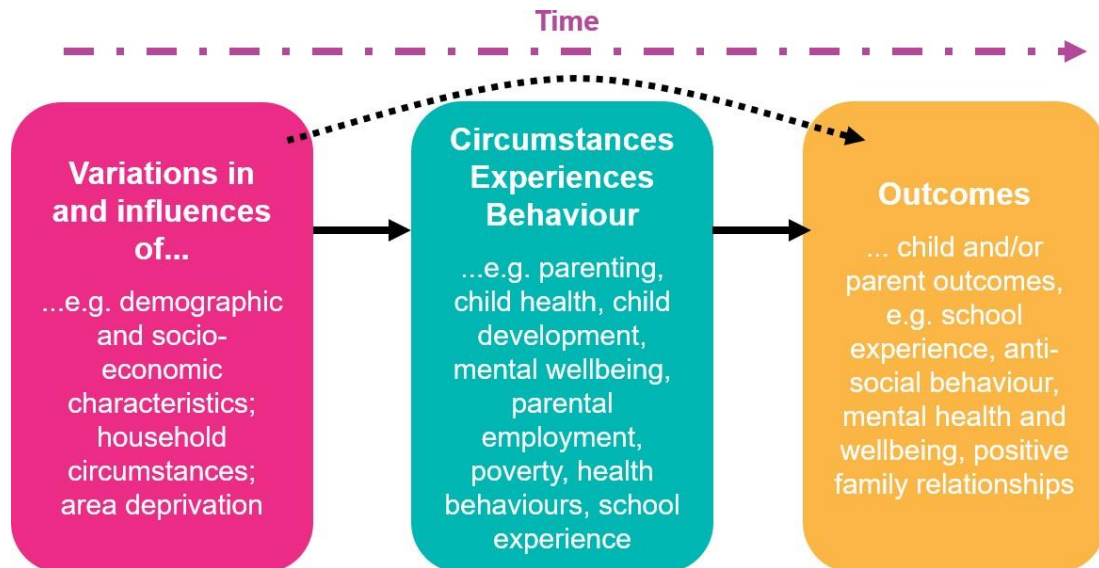
Figure 1 Sources of data and child's age at data collection

Source of data	Child's age/school stage									
	10mth	Age 2	Age 3	Age 4	Age 5	Age 6	Age 8	P6/10	S1/12	S3/14
	BC1 & BC2	BC1	CC, BC1/2	CC & BC1	CC, BC1/2	CC, BC1	BC1	BC1	BC1	BC1
Main carer interview										
Partner or Teacher questionnaire		Partner						Teacher	Partner	Partner
Child questionnaire										
Child height and weight measurements										
Cognitive assessments										
Linked admin data - health records										
Linked admin data - education records			Pre-school			Primary School			Secondary	

\*BC1 = Birth Cohort 1; BC2 = Birth Cohort 2; CC = Child Cohort.

As the purpose of the study suggests, GUS is interested in generating a 'holistic' picture of children's lives. The study collects data on a wide range of topics from childcare and diet through to parenting and physical activity.

Figure 2 What can GUS tell us?



GUS provides a rich dataset. This allows us to look at relationships between aspects of children's lives in several different ways. For example, with reference to Figure 2, we can look at how behaviours – like parenting (green box) - vary according to characteristics - like household income (pink box). We can also look at how these behaviours, in turn, might be associated with outcomes like children's health and wellbeing (yellow box), and how these relationships (between behaviours and outcomes) vary for children with different backgrounds. Because of the longitudinal nature of the study, we can examine these relationships over time, including exploring how a change

in circumstances might affect behaviours or experiences, or how changes in behaviours or experiences might affect outcomes.

### 3 Measuring cognitive ability

The assessment of children’s cognitive function is a key part of GUS. Standardised cognitive assessments have been carried out with children in BC1 at ages 3, 5, 10 and 12, and are currently being conducted as part of the age 14 data collection. To limit the time spent in households during study visits and minimise burden on participants, only a small number of assessments have been used allowing them to be administered within a time frame of around 15 minutes. Two standardised educational assessments, widely used by educational psychologists, have been used in GUS to date:

- British Ability Scales Early Years Battery, 2<sup>nd</sup> & 3<sup>rd</sup> editions, from which we have used the Naming Vocabulary and Picture Similarities sub-tests
- Weschler Individual Achievement Tests, 2<sup>nd</sup> edition from which we have used the Listening Comprehension subtest. This has three components: receptive vocabulary, sentence comprehension and expressive vocabulary.

Further details of the assessments are provided in Table 1.

<b>Table 1 Child cognitive assessments in GUS</b>			
<b>Assessment name</b>	<b>Assesses</b>	<b>Method</b>	<b>Ages used (years)</b>
<b>British Ability Scales Early Years Battery (2<sup>nd</sup> and 3<sup>rd</sup> eds.)</b>			
Naming Vocabulary	Knowledge of words	Child is shown a picture and asked to say its name.	3, 5
Picture Similarities	Problem solving/non-verbal reasoning	Child is shown a row of 4 pictures and is given a card with a 5th picture. The child places the card under the picture which shares an element or concept with the card.	3, 5
<b>Weschler Individual Achievement Tests, 2nd edition – Listening Comprehension</b>			
Receptive vocabulary	Ability to listen for details and knowledge of words	Child is asked to select a picture that matches a word	10, 12, 14
Sentence comprehension	Ability to listen for details and knowledge of words	Child is asked to select a picture that matches a sentence	10, 12, 14
Expressive vocabulary	Knowledge of words	Child is asked to generate a word that matches a picture and oral description	10, 12, 14

These assessments are normally employed by educational psychologists in a classroom or clinical setting but have been adapted for use in a survey setting. This included modifying them to be administered with the help of an electronic questionnaire pre-determining the complex set of rules for guiding children through each assessment.

## 4 Some relevant findings from the study

Analysis of GUS data on cognitive ability consistently demonstrates that children from more advantaged circumstances significantly outperform those from disadvantaged circumstances, particularly in relation to differences in parental level of education. However, research from the study has also identified a range of other factors linked to more positive or negative cognitive ability which remain associated over and above the effect of background characteristics. Whilst these associations cannot be interpreted as causal, they nevertheless point to areas of children's lives which offer some scope for intervention to reduce inequalities in developmental outcomes. In each of the examples below, the primary outcome of interest was measured using information from the standardised assessments of child cognitive ability - as described above - and analysed alongside the rich data provided from the parent interview and other sources.

Research published in 2011 (Bradshaw, 2011) found that at age 3, children whose parents had no qualifications had an average vocabulary ability around 18 months behind children of degree-educated parents. Similarly, the average vocabulary ability of children from households with the lowest 20% of incomes was around 13 months behind those in households with the highest 20% of incomes. By age 5, the picture was similar with little notable change in the 'gap' between more and less advantaged children. A relative improvement in vocabulary ability between the ages of 3 and 5, specifically amongst children from more disadvantaged groups, was associated with a greater consistency of parenting, stronger parent-child attachment, attendance at ante-natal classes and having been breastfed. The child having better, earlier communication skills (e.g. at the age of 22 months) was also important.

Research from GUS has also explored how children's experience of early learning and childcare (ELC) is associated with their cognitive development. A 2014 report (Bradshaw *et al*, 2014) linked information about child outcomes from our 2004/05 cohort to data from the Care Inspectorate on the quality of ELC settings. This study found that attending an ELC setting with a higher care and support grade was associated with better vocabulary ability at age 5, after controlling for social background. More recently, analysis from our 2010/11 cohort (Knudsen *et al*, 2017), did not find a link between ELC quality and cognitive ability. However, an association was found between quality of ELC staffing and more positive social development for children at age 5, again after controlling for differences in social background.

GUS evidence has consistently demonstrated that children who more frequently experience home learning activities – such as reading, painting/drawing and singing/reciting nursery rhymes – show better cognitive development (Bromley, 2009; Bradshaw, 2011; Bradshaw *et al*, 2016). This relationship is evident for children from all social backgrounds. GUS has also produced some evidence showing an association between receipt and use of the initial Bookbug pack<sup>1</sup> and improved vocabulary ability at age 3 (Bradshaw *et al*, 2016).

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<sup>1</sup> Bookbug is a universal book gifting scheme launched in 2010 that aims to encourage parents to share books with their child or children from an early age. Questions asked in GUS allow us to establish whether parents recalled receiving and using the initial Bookbug pack issued when the cohort child was a baby.



Having two cohorts born 6 years apart means that GUS data can be used to explore differences between children in Scotland growing up in different times and contexts. Analysis (Bradshaw *et al*, 2015) indicated that at age 3, children born in 2010/11 had slightly higher average vocabulary scores than those born in 2004/05, even after controlling for known differences between the cohorts such as parental level of education (which was generally higher amongst parents in the 2010/11 cohort). However, by age 5 this difference had disappeared (Knudsen *et al*, 2017). No differences in problem solving ability between the two cohorts have been detected at either age 3 or age 5.

## 5 Dissemination and impact

GUS has made a major contribution to the evidence base on children and families in Scotland: 35 reports have been published by the Scottish Government and over 30 journal articles have been produced by academics using the data. In addition, the study team have delivered a wide range of briefings, evidence papers and presentations on numerous and wide-ranging topics from alcohol use to work-life balance.

The study has developed a wide constituency of users across government, local authority, voluntary and academic sectors. A longstanding series of annual conferences have been well attended and well received and the study has achieved extensive coverage in the media. Findings have been referred to in a wide range of policy documents, publications and websites, and evidence has been considered in several parliamentary inquiries including on preventative spending and health inequalities in the early years. Practitioners use GUS as evidence in local policy development and service planning and many use findings in applications for funding. Some even report that GUS findings motivate them in their day to day work, by providing a reminder of the issues they are trying to address. Students across a range of disciplines use GUS as a source of information while those providing on-going training, support and CPD to professionals across the children's sector use GUS as a teaching resource. Academics and others use GUS data to carry out further analyses and inform their own research.

Whilst demonstrating explicit impact is difficult, evidence from GUS has been instrumental in informing a wide range of policy and practice guidelines and interventions including:

- Revised Birth to 3 Guidance 'Positive Outcomes for Scotland's Children and Families'
- 'Play, Talk, Read' and 'Read, Write, Count' campaigns
- Bookbug
- Family Nurse Partnership
- Early Years Framework
- Child Poverty Strategy
- Expansion of Early Learning and Childcare
- Parenting Strategy; Pregnancy and Parenthood in Young People Strategy
- Children (Equal Protection from Assault) (Scotland) Bill

## 6 What next for GUS?

The study is now in its 14<sup>th</sup> year and is currently conducting its 10<sup>th</sup> sweep of data collection with the 2004/05 cohort. The cohort children are aged 14 (and are in S3 at

school). Further rounds of data collection have not yet been commissioned by Scottish Government but the next sweep would be expected when the young people are aged 16/17 in 2021/22.

The next set of findings will be published by Scottish Government in the coming months. Two reports are currently being prepared addressing separate topics: children's language development over the primary school period and a summary of 'life at age 12'. Crucially, the former report will examine children's language ability at age 10, explore whether inequalities in development have changed since age 5 and the factors associated with relative improvement between ages 5 and 10.

New data from age 12 will be released in Spring 2019. This will create opportunities to explore the primary to secondary school transition, involvement in risky behaviours, adolescent mental wellbeing, online and social media activity and parent-child relationships, amongst a host of other topics.

GUS is a unique resource, providing a range of stakeholders with invaluable evidence about the experiences of and outcomes for children and families in Scotland. Its value continues to grow as, with each round of data collection, it becomes possible to map further and more fully the varied and complex pathways taken by Scottish children as they move through their childhood, into adolescence and beyond.

## References

Bradshaw, P. (2011) [\*Growing Up in Scotland: Changes in child cognitive ability in the pre-school years\*](#), Edinburgh: Scottish Government

Bradshaw, P., King, T., Knudsen, L., Law, J. & Sharp, C. (2016) [\*Language development and enjoyment of reading: impacts of early parent-child activities in two Growing Up in Scotland cohorts\*](#), Edinburgh: Scottish Government

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Bradshaw, P., Lewis, G., and Hughes, T. (2014) [\*Growing Up in Scotland: Characteristics of pre-school provision and their association with child outcomes\*](#), Edinburgh: Scottish Government

Bromley, C (2009) [\*Growing Up in Scotland: Year 3 – The Impact of Children's Early Activities on Cognitive Development\*](#), Edinburgh: Scottish Government

Knudsen, L., Currie, E. & Bradshaw, P. (2017) [\*Changes in Early Learning and Childcare Use and Outcomes at Age 5: Comparing Two Growing Up in Scotland Cohorts\*](#), Edinburgh: Scottish Government

All research reports and summaries available from the publications page of the GUS website: <https://growingupinScotland.org.uk/publications>