

## Growing Up in Scotland – 2009 – Topic Research Findings

# Growing Up in Scotland (GUS): The Impact of Children's Early Activities on Cognitive Development Summary Report

### The Growing up in Scotland Study

The Growing Up in Scotland study (GUS) is an important longitudinal research project aimed at tracking the lives of a cohort of Scottish children from the early years, through childhood and beyond. The study is funded by the Scottish Government and carried out by the Scottish Centre for Social Research (ScotCen). Its principal aim is to provide information to support policy-making, but it is also intended to be a broader resource that can be drawn on by academics, voluntary sector organisations and other interested parties. Focusing initially on a cohort of 5,217 children aged 0-1 years old and a cohort of 2,859 children aged 2-3 years old, the first wave of fieldwork began in April 2005.

### Background to Report

This document is one of a series that summarise key findings from the third sweep of the survey which was launched in April 2007. It presents key findings from the Growing Up in Scotland study (GUS) report *The Impact of Children's Early Activities on Cognitive Development*.

This report uses data from the first three waves of the Growing Up in Scotland study (GUS) to explore differences in children's cognitive ability. Assessments of children's language development (using a naming vocabulary task) and problem solving skills (using a picture similarities tasks) were carried out at age 34 months.

Previous studies have established that early cognitive ability influences later outcomes, for example early poor cognitive ability can have a negative impact on outcomes in the realms of education, employment, health and social development. Using cohort studies such as GUS to measure cognitive ability, and how it differs within the population, can help build a better understanding of the dynamics of children's

development and to identify stages at which interventions might have a positive influence on later outcomes.

This report aims to answer the following questions:

- Do children's early activities have an influence on cognitive development in addition to socio-demographic factors?
- Do children's early activities moderate the effect of socio-demographic factors on cognitive development?

This report starts by introducing some measures of children's activities, including what parents think of those activities. It shows how activities vary across socio-demographic groups. It then illustrates how cognitive ability scores are associated with socio-demographic factors and with activities. The final stage of the analysis attempts to differentiate between the influences that socio-demographic factors and activities have on cognitive ability in order to answer the two questions above.



## Children's activities

- At 10 months of age most children experienced the following on a daily basis: playing indoor or outdoor games (94%), singing or having rhymes recited to them (90%), looking at books or being read stories (66%). Only a minority of children (25%) had visited a library by the age of 10 months.
- Children living in the most deprived 15% of areas were less likely to have been read to on a daily basis at 10 months of age than children in the rest of Scotland (54% versus 69%). Similar patterns were evident between children whose families had the lowest and highest incomes (55% and 78% respectively), and between children whose mothers had no qualifications and those whose mothers had degrees (51% and 78% respectively).
- By the age of 22 months 79% of children looked at books or read stories every day, 58% recited rhymes or sang songs, 52% ran around or played outdoors, 28% did activities like painting or drawing and 30% played at recognising letters, words, numbers or shapes.
- Children were classified according to how many activities they had carried out per day at age 22 months. Children from less advantaged households were the least likely to be classified as being in the most active group of children and were the most likely to be in the least active group.
- The survey also measured how many events or places children had been to in the past year when they were aged 22 months. The activities ranged in popularity from just 5% having been to the cinema and 17% to a sporting event to 73% who had been to a zoo, farm or aquarium and 83% who had been to a swimming pool. Children had been to an average of three of the eight events / places asked about while only 4% had never been to any.
- The children most likely to have been to none or just one of the events or places asked about were those: in the most deprived 15% of areas, in the lowest income households, in families with no parent working full-time, with mothers aged under 20 at time of their birth, whose mothers have few or no qualifications.
- Parents were asked how important they thought it was for their children to experience various activities when their child was aged 22 months. The activities most likely to be rated as very important were: running around or playing outside (84%); educational activities such as reading, drawing or painting (82%); social activities such as visiting friends or having visitors (74%); exercise such as swimming, dancing or gymnastics (64%). Two activities were not rated as strongly: cultural activities

such as museum visits (18%) and watching TV (6%).

- All the activities, except for watching TV, were used to create a scale measuring how many activities in total parents rated as very important. The average number rated as very important was just over three, just 5% rated none of them as important and 14% said all five were. Two-parent families with neither parent working full-time were the most likely to say that one or none of the activities were very important, followed by families in the lowest income households and mothers with no qualifications.
- Over half of parents were either very happy (19%) or quite happy (37%) with the range of activities available to their child when aged 22 months. In contrast, 28% would have liked their child to have a slightly wider range and 16% wanted a much wider range of activities. Demand for a much wider range of activities was greatest among the most disadvantaged groups: in the 15% most deprived of areas, with the lowest household incomes, in families where no adult works more than 16 hours a week, mothers aged under 20 when their child was born, and mothers with few or no qualifications.

## Factors influencing cognitive development

- Large variations in cognitive scores were evident at age 34 months with children from less advantaged families outperformed by their more affluent counterparts on both assessments.
- Children who had been identified at 22 months as having developmental difficulties had lower cognitive ability scores than children with no developmental difficulties. Children born with low birth weight and boys also had lower than average ability scores.
- Children whose mothers have no qualifications scored less well than those with degree-educated mothers (who perform particularly well, especially on the naming vocabulary assessment). Children with older mothers (30 years or above) perform better than those with younger mothers.
- Children in households with four or more children have lower ability scores than those with fewer or no siblings. Low household income levels and unemployment/low working hours are also significant factors associated with poorer performance.

- Those in the 15% most deprived areas of Scotland have lower scores than those in the rest of Scotland.
- Children who were read to often, and those who had visited a library by the time they were 10 months old, scored higher on both assessments than children who had comparably less experience of these activities (though the impact was less pronounced for the picture similarities assessment than for the naming vocabulary).
- At age 22 months the number of days in the past week children had played educational games, their overall daily activity levels and the number of places or events they had visited in the past year were all associated with cognitive ability. The more activities children had experienced the higher their ability scores.
- Ability scores were higher among children whose parents rated four or five activities as very important, and whose parents were satisfied with the range of their activities, than for children whose parents attached less importance to activities or were dissatisfied with their range.
- The association between activity levels and cognitive ability might simply be a reflection of the fact that children with high activity levels tend to be from more socially advantaged backgrounds; this is explored further below.
- For the naming vocabulary assessment, area deprivation and family composition/employment type were no longer significant when all socio-demographic factors were considered together. Three activity measures were independently associated with ability when all factors were considered: being read to every day at age 10 months, being in the most active group at age 22 months for daily activities, and visiting a wide range of events/places at age 22 months. The last two activity measures were still significant when the analysis focused on less advantaged children.
- For the picture similarities assessment, mother's education was no longer significant when all socio-demographic factors were considered together, while age of mother at birth and family composition/employment type were no longer significant once all factors were considered. Two activity measures were independently associated with ability when all factors were considered: being in the most active group at age 22 months for daily activities, and visiting a wide range of events/places at age 22 months. The daily activity measure was still significant when the analysis focused on less advantaged children.

## The relative importance of children's activities and socio-demographic factors

To answer the two questions set out above, multivariate analysis was carried out to explore whether any of the activity measures were independently associated with cognitive ability scores once a range of socio-demographic factors were controlled for.

The analysis considered each of the cognitive ability assessments separately and looked at the influence of:

- socio-demographic factors alone,
- activity measures and socio-demographic factors together, and
- activity measures and socio-demographic factors in a sub-set of less advantaged children.

## Conclusions

Collectively these findings suggest that activities do have an influence on children's cognitive development and that they can moderate – though by no means eradicate - the effect of socio-demographic disadvantage. The important issue for children is the extent and range of activities they do, rather than any specific pursuits. It is also important to stress that many of the activities included in this analysis have few or no monetary costs; parents should not feel that their child needs to participate in expensive hobbies or classes in order to benefit from the advantage that activities confer.

The overall amount of variation in children's scores explained by the analysis was relatively low, but typical for analysis of a social survey. Other factors that haven't been explored here are also likely to be important, including genetic factors.

Further information on the Growing Up in Scotland study can also be found at: [www.growingupinscotland.org.uk](http://www.growingupinscotland.org.uk)

If you wish further copies of this Research Findings or have any enquiries about the GUS project, please contact:

Education Analytical Services  
Scottish Government  
Victoria Quay  
Edinburgh, EH6 6QQ  
Dissemination Officer on 0131 244 0894

Email: [recs.admin@scotland.gsi.gov.uk](mailto:recs.admin@scotland.gsi.gov.uk)

Or visit our Website: [www.scotland.gov.uk/insight](http://www.scotland.gov.uk/insight)

The research findings and the main report can be viewed on the Internet at:  
<http://www.scotland.gov.uk/Topics/Research/by-topic/children-and-young-people/publications>

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