Report from the Achievement and Opportunities for Deaf Students in the United Kingdom: from Research to Practice project

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The Research Team

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Julie Arendt was a Research Fellow at the Moray House School of Education, The University of Edinburgh between 2011-12. After completing a Diploma (MSc) in Pedagogical and Clinical Psychology at the Albert Ludwigs Universität Freiburg in Germany, she completed a MA in International Humanitarian Action at the Ruhr Universität Bochum in Germany and the Uppsala universitet in Sweden. Julie joined the Achievement and Opportunities for Deaf Students in the United Kingdom project in May 2011. Her main research interests are in the areas of psychosocial wellbeing, education, as well as human rights and social justice.

Marc Marschark was Honorary Professor of Deaf Education at the University of Edinburgh between 2009-12. He is a prolific researcher and writer who has the highest international profile in the field of deaf education. Marc is the Director of the Centre for Education Research Partnerships at NTID. He has research interests in the language, cognitive and social development of deaf children, sign language interpreting, and the relations between language, cognition and learning in deaf students. Marc founded and edits the Journal of Deaf Studies and Deaf Education which has the best reputation in the field internationally. Marc has many years of experience of running and supervising research projects (see www.rit.edu/ntid/cerp).

Nuffield Foundation

Executive Summary

The aim of this project was to provide a comprehensive and in-depth understanding of the academic achievement, social, and inter-personal lives of deaf young people in the UK. Given the characteristics of the population studied, it also offers insights into accessing vulnerable and geographically dispersed populations.

The project addressed four main research questions:

1. How do the academic, social, and vocational outcomes for deaf children compare to those in the wider population of children and school leavers in Scotland and the UK?

2. What patterns of intervention, support, and educational methods lead to the most successful outcomes for deaf children in academic, social, and personal growth?

3. What proportion of deaf school leavers are not in education, employment, or training (NEET)?

4. What are the characteristics of deaf young people in these various groups?

Organisation of this report
This report takes a life course approach to setting out the study's findings. First, it charts the deaf child's progress through school and parental perspectives on their education. It then looks at achievement and exam taking at the end of secondary schooling focusing on young people at 16 years of age. Finally it examines the voices of deaf young people and their assessment of their past educational experiences, their relationship with peers and involvement in social activities.

Chapter 1 provides a background and introduction to the project.

Chapter 2 describes the survey involving parents of pupils in the original Achievements of Deaf Pupils in Scotland (ADPS) study, 2000-5. Responses were forthcoming from 131 parents, 35% of the parents of ADPS pupils still at school, and analyses indicated that we can be confident about generalizing findings from the parents' survey to the whole of the original ADPS group who remained at school.

The key findings from the parents' survey were:

- More deaf children from advantaged backgrounds were found to attend mainstream schools compared with those from the most deprived backgrounds, who were more likely to attend specialist provision.

- Children from the most socio-economically deprived backgrounds were more likely to attend special schools, including deaf schools.

- Mainstream education settings were associated with higher teacher expectations by parents.

- Deaf children with multiple disabilities were more likely to attend schools for the deaf than mainstream schools.

- Similar to the general population, parental expectations for their deaf children were high. The key concern of parents was identified as low expectations from some teachers.

- Two kinds of parental attitudes were found with regard to their child's education. Parents either advocated a direct and proactive role in relation to their child's education while others viewed themselves as rational consumers of services.

Chapter 3 describes academic achievement of deaf youth at age 16. The project team continued a data sharing agreement with the Scottish Qualifications Authority (SQA), the examination board for Scottish school examinations. We used SQA data to compare the achievement of a group of 540 deaf pupils with the known support they received at school. This group was fairly representative of the wider group of ADPS pupils for whom we had exam results, although there were fewer pupils with additional disabilities than expected in the sample group.

The key findings from the academic achievement analysis at the age of 16 were:

- Deafness across all categories (including mild, moderate and pupils with a cochlear implant) has a negative effect on achievement.

- Even mild hearing loss was found to impact negatively on the achievement of pupils. Those effects were compounded when connected with other vulnerabilities in deaf young people (i.e. pupils with identified additional support needs or they were from deprived backgrounds).

- Severely and profoundly deaf pupils were entered for fewer examinations than the pupils with a cochlear implant (CI) between 2001 and 2011.

- When entered for examinations, deaf pupils with additional disabilities perform significantly worse than those without.

- Deafness was found to have a negative effect on English grades for all categories of deafness, including mild. There is no significant association however between deafness category and whether or not deaf pupils pass English at Scottish Credit and Qualification Framework (SCQF) levels 3, 4 or 5.

- The mean tariff score for deaf boys and girls at S4 differs, with girls out-performing boys, but the achievement gap is not statistically significant.

- There are significant differences in tariff score between pupils with cochlear implants and those who are severely deaf. However, after controlling for the effect of the socio-economic status, the deafness category of the pupils has no significant effect on their tariff score.

- Deafness category appears to be at least partly the basis on which support was allocated to pupils in Scotland during the period of the earlier study (2000-05).

Chapter 4 addresses findings from the survey of deaf young people which sought their views on their experience of school, transitions and their social engagement and participation. The research team contacted as many school leavers as possible from the ADPS sample of 1,379 and asked permission to match data from the earlier period with data obtained through a new questionnaire. This was administered on paper and, importantly, a BSL / English version was available online. The sample of 188 deaf young people who were also in the ADPS database was representative of the wider group in terms of age and level of deprivation of the home area; it was not representative in terms of deafness category, additional disability, gender or tariff score.

The key findings from the survey of deaf young people were:

- Most deaf young people in our sample had attended mainstream schools (60%). An additional 25% attended resource bases in mainstream schools.

- The proportion at college was 30%, comparable to the Scottish rate of 34% for the 17-29 age group. Of those who were or had been at college, 40% studied for Higher Education courses in colleges.

- The 16-19 age group who were not in education, employment or training (NEETS) was higher amongst our respondents (18.3%) than the Scottish rate of 12.4% in 2011. For this small and vulnerable sample of young people a failed transition to college appeared to be the reason why some of them were in this NEET category.

- In the 16-24 age group, 31% were employed, compared to 53% for Scottish young people of the same age. Of those 16-28 year olds who were in work (n=63) many were part time (i.e. 68% of females, as compared with 32% of males).

- Government funded support for adjustments in the workplace was found to be very low. Only 11% of deaf people in work reported having 'Access to Work' support.

- Most respondents said they were happy at work (67%) similar to the rate for the UK working population (70%).

- Of those who had attended mainstream schools 94% used spoken English as their preferred mode of communication.

- The mode of communication preferred was speech (75%) with 24% preferring sign (British Sign Language (BSL) or Sign Supported English (SSE).

- Young peoples' attitudes towards hearing people show a clear expectation of equality, but nevertheless suggest widespread experiences of being bullied by them.

- Individual effort and personal attributes were identified by young people as leading to success for deaf people at school. They highlighted the fact that it was very important to ask for help, even though this was often difficult. Young people stressed the need for taking responsibility for improving their own access arrangements at school.

- Most of the respondents indicated they were happy at school (59%) and they reported that school had prepared them well for getting a job.

Chapter 5 considers implications of the study including recommendations for policy and practice.

The recommendations from Chapter 2 focus on relationships of school services with parents. For well-informed parents, school services could focus more on how to use their ideas more effectively. For parents from socially deprived backgrounds, there could be much more effort to engage with them and explain the system. School services could focus more on explaining the reasons why literacy is often a challenge for deaf children. Teachers need to maintain high expectations of deaf pupils. They should be aware of their role in encouraging self-confidence in deaf pupils, and the importance of friendships with other deaf children as well as with hearing ones.

The recommendations from Chapter 3 are addressed to government, local authorities and teachers. All children who are deaf, whatever the level, would benefit from pre-school support for language development. More rigorous deaf awareness and more mandatory minimum acoustic levels in schools are needed. When school services for deaf children allocate support for deaf children, they could consider the impact of poverty on the child as much as the degree of deafness. For children who are severely or profoundly deaf, particularly those who don't have cochlear implants, schools need to maintain high expectations and should aim to enter them for the same number of exams.

Chapter 4 recommends that all local authorities should put in place real, resourced choices for deaf young people so that being taught through sign language is available as an available option wherever the deaf child lives.

Many of the recommendations from this chapter relate to careers guidance and the way deaf young people move through the education system. More information about a wide range of deaf people's career choices should be available. Schools should pass on more information about deaf and disabled people's rights at work, for example explaining Access to Work. Young people who are mildly or moderately deaf need access to other deaf children and to this information about work too. School services for deaf children should continue to focus on how deaf young people can become self-reliant and know their rights. Schools need to focus more attention on young deaf people who are not likely to achieve SCQF level 5 (GCSE A* - C) and to prepare carefully for their transition to college, training or work. For deaf students at college, more focus should be put on increasing the proportion who move from an HND to a degree. It is recommended that governments routinely collect more data about deaf children and young people and monitor their progress, including information about whether the deaf young person has additional impairment and their socio-economic status.

In conclusion, more targeted and tailored support for parents, better information and knowledge for deaf young people, improved classroom acoustics and developing enhanced awareness in teachers will all help improve the life chances of deaf young people over the longer term.

Chapter 1

Introduction

This report summarises findings from the Achievement and Opportunities for Deaf Students in the United Kingdom project (2010-13), which built on the previous ADPS research. The results have wider implications for deaf education in the UK, since approaches used in Scotland are similar to the UK. In this section we explain the background to the present study, as well as relevant developments in the provision of education for deaf children in Scotland.

The Achievements of Deaf Pupils in Scotland study

The aim of the earlier ADPS study was to examine the conditions which led to academic success for deaf pupils. It produced a large data set on deaf pupils, collected from the perspective of teachers of deaf children working in local authority school services.

Data were collected on every deaf child who received at least two visits from a teacher of deaf children each year. The criteria for visits were based on educational need rather than audiological requirements. As a result this database included information about children with a very broad range of deafness and was completed annually from 2000 to 2005 by teachers of deaf children. Parents and deaf young people were regularly informed regarding the progress of this study through newsletters and events organised by voluntary networks (e.g. National Deaf Children's Society).

For further details of the pupils in the ADPS study see Appendix 1.

The present study: the Achievements and Opportunities for Deaf Students in the United Kingdom project

The present study ran from January 2010 to May 2013. There was no overlap with the previous research team and the project worked with a Reference Group which included deaf people and deaf people's organisations.

Finding our sample

Of the 1,740 deaf children in the ADPS database, we calculated that 557 remained at school. We asked the services for deaf children in the local authorities to forward a paper-based questionnaire to these parents if their address was known. Frequently, date of birth was the only information we had on these children, so authorities could not always provide addresses for them. Responses from 131 parents were forthcoming (a response rate of 35%) from the pupils with a known address and we report on this in Chapter 2.

The ADPS project aimed to compare examination results of the deaf pupils with the wider group of all Scottish candidates. The project had made an agreement with SQA to use data sharing in the future. This agreement was extended by the current project, allowing us to track the achievement of the deaf pupils who had by that time completed S4[1] or left school. In Chapter 3 we outline our findings about this older group from the ADPS database.

We also contacted as many deaf young adults as we could in the age group 16-28 who had left school. The results are reported in Chapter 4. Using the project website and letters to the deaf young people, we asked their permission to match data from the earlier period with data obtained through the current questionnaire. Of the 188 young deaf people who were in the previous ADPS database, 177 gave their consent.

It was not possible to contact most of the young people from the ADPS study (i.e. those who had left school or remained at school after S4). Fortunately however, we could use SQA data to compare their achievement with the known support they received at school.[2]

Deaf education in the UK

Deaf education in the UK is internationally most like Australia; most deaf children are educated in ordinary schools rather than deaf schools. The move away from residential schools started after the Second World War with day schools available for deaf pupils, and attendance at units in ordinary schools for some, with the aim of moving the more successful deaf children into a mainstream environment (Ewing and Ewing, 1954).

In the 1960s in the UK the prevailing view of teachers of the deaf was that the purpose of deaf education was to communicate through speech rather than to obtain qualifications (Ewing, 1957). The Lewis report (DES, 1968) indicated that although the objective was to develop happy and literate adults, this aim was unlikely to be fulfilled in most cases:

'We believe … that neither they nor their parents should be given unrealistic expectations or be subject to unrealistic demands'. (DES, 1968, p. 91)

In part low expectations were because oral methods and poor quality hearing aids meant very slow progress was possible for many deaf children. However, there was also an expectation that pupils who were academically unsuccessful would leave without qualifications. This view changed radically during the 1970s. In the UK between the 1950s to the 1970s the approach to children with disabilities was one of protection and separation, which led to an increasing number of children with disabilities learning in segregated settings (Rieser, 2006). For deaf children, however, the advent of the NHS meant that many more partially deaf children were identified, fitted with free hearing aids

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[1] S4 is the fourth year of secondary school, when Scottish pupils are aged 15 to 16.
[2] The research team had discussions with the School of Education ethics committee to ensure arrangements for data sharing were careful and abode by the Data Protection Act 1998.

and increasingly supported by peripatetic teachers in their local school (DES, 1968).

By 1968 in England and Wales there were 8 deaf children per 10,000 in mainstream settings whereas 5 were in schools or units for the partially deaf and 4 were in deaf schools (DES, 1968, p. 8). These ratios are likely to have been similar to Scotland. From 1968 to 2000 the proportion attending schools for deaf children dropped to 6% in schools for deaf children in Scotland as deaf schools closed (ADPS, 2005, Fig. 16a). Research by Weedon et al., (2012) showed that 10% of deaf children in Scotland attended a special school by 2012. Between 1968 and 2000 most deaf children came to be educated in local, mainstream schools.

When the ADPS project began (2000), deaf education in Scotland was organised into 32 local authority services. There was one national deaf school, Donaldson's, funded by central government and five remaining day schools for deaf children. There were six primary and eleven secondary resource bases for deaf children. Consequently most deaf children were supported by peripatetic teachers of deaf children who visited their school regularly. The highly devolved structure in Scotland led to variations in provision, there existed strong professional links between teachers of deaf children across Scotland which encouraged collaborative learning.

In 1972 the Scottish school leaving age was raised to 16, which meant that many more pupils expected to take O-Grade examinations at the end of the fourth year of secondary school (S4). This qualification had been designed for the most academically able third of the age cohort. By 1974 about 35% of the S4 cohort of Scottish pupils had either left school early or were entered and did not pass any examinations (SED, 1977, p. 15 and p. 131). During this period there was a rapid change in the Scottish education system from academic selection at age 11 to comprehensive education. Thus national examinations were implemented from 1986 designed to accredit the whole ability range at three different levels: foundation, general and credit (Kirk, 1982). The Scottish School Leavers survey for the period 1992-8 showed that 25% of the year group had no Standard Grade passes in S4 (Howieson and Ianelli, 2008). This suggests that many deaf adults who are now in their 40s would not have been entered for examinations at school; their school attainment was seriously affected by late diagnosis and limited early intervention. Recent research (Cameron, 2013) suggests that their early school leaving and lack of formal qualifications had a long-term impact on the employment prospects of these deaf adults.

After 1984 young people attending Scottish schools benefitted from the Higher Still reforms. This initiative allowed pupils to stay on longer at school taking Standard Grade late or a wider range of Intermediate qualifications (Scottish Credit and Qualifications Framework: SCQF 4 - 5) and Highers (SCQF 6). This flexible approach to accreditation allowed for better articulation between school, college and university learning and harmonised the way vocational and academic qualifications were perceived (Bryce, 2003; Raffe et al., 2007).

The Standards in Scotland's Schools Act 2000 led to more local and national monitoring of achievement, a culture of individual consumer choice and higher expectations for children who had results in the bottom 20% (Doherty et al., 2007). This Act gave parents the right to choose their local school as the expected placement if their child had a disability (Scottish Government, 2002). From 2001 the Disability Discrimination Act applied to education, and schools across the UK had to make reasonable adjustments to make sure they catered for a wide range of additional needs (MacKay and McLarty, 2003). In Scotland the Education (Additional Support for Learning) (Scotland) Act 2004 consolidated this approach. By 2001 there were higher expectations of all pupils, and organisations such as the National Deaf Children's Society (NDCS) were highlighting the achievement gap between deaf and hearing pupils (McGilp, 2001).

Chapter 2

Parents' views of their deaf children's education

Here we explore the literature about parents' views of their deaf children's education, then briefly outline the research method used to gather Scottish parents' views. Findings address two of the main research questions:

(RQ3) What patterns of intervention, support, and educational methods lead to the most successful outcomes for deaf children?[3]

(RQ4) What are the characteristics of deaf young people in these various groups?

Reviewing the literature on studies which focused on the views of parents of deaf children, we found research on school experiences, and studies exploring the views of parents whose deaf children have cochlear implants. We also review general educational research which examined parents' views about school in Scotland.

Parental views about their deaf child

Deaf children have a diverse range of issues in their lives, and as Calderon and Greenberg point out (2011), there is no one main effect which determines outcomes but many, including the family and community support systems. Gregory et al. (1995), for example carried out 82 extended interviews with parents of deaf young people in England. Interview questions were designed to encourage the parents to talk about the choices they had made, options available, preparation for adult life their child's school offered, the schools' attitude towards communication and parental views on their deaf child's literacy and numeracy skills. This study also examined the views of deaf young people themselves, at that time aged 18-24. Significantly parents reported that they felt very disempowered about the educational process. Frequently they were told which school their child would attend and the communication approach that would be adopted. Reports of bullying were widespread and low expectations from teachers were highlighted. Many parents were shocked at the low levels of literacy their children had by the time they left school. In the 1980s about 10% of all children in England left school without qualifications; for the group of deaf young people in the Gregory et al. study it was high (i.e. 50%).

More recently Heineman-Gosschalk and Webster (2003) surveyed 100 parents of deaf children in the UK about early literacy. This study also examined the views of teachers of deaf children about early reading. A majority of families (60%) did not think they had received enough advice about how to read with their child at home. Subsequent research by Watson and Swanwick (2008) compared deaf and hearing parents' assessments of advice offered by teachers about sharing books with their deaf children.

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[3] These are parents of deaf children who are still at school.

Deaf parents felt that they were offered very little advice on this topic while hearing parents said they received quite specific guidance and support.

Jackson (2011) identified 456 parents of deaf children in the US who completed a questionnaire about their schools' support for the deaf child and their satisfaction with school services. For parents of school aged, deaf children the most important forms of family support were not teachers of deaf children but networks of friends, parents of other disabled children, as well as professionals.

In Canada a similar study (Jamieson et al., 2011) explored parental views of support services. They surveyed 38 parents which were followed-up by focus group with 15 parents. They identified that parents had a pressing need for more information about deafness and that the transition from the family-centred practices of early deaf education to the less close relationship with schools was difficult. Parents said they wanted an independent advocate to help them negotiate the school system and raised concerns that their deaf children were not fully participating in mainstream classes. They also said that they worried about poor acoustics and thought mainstream staff needed more deaf awareness training. Parents recognised that they and their children needed to develop strong self-advocacy skills to get reliable information from the school system, including more tailored deaf careers advice for their children.

In the UK, parents of deaf children can access support from the NDCS which provides good quality information on the internet as well as local family officers, weekend courses and social events.

The ADPS research gathered views from 366 parents of deaf children (Grimes, 2009a). Respondents were representative of parents of Scottish school leavers in terms of parents' highest qualification, age of child, ethnicity and child's gender. The proportion of severely deaf children and those with CIs was higher than expected from the ADPS database; more were in mainstream settings and a higher than expected proportion had deaf parents. The research focused on the extent to which the deaf children participated in social life and activities outside school and whether deafness impacted on participation. The majority of parents thought that they had good quality communication within the family. Almost half of the parents of secondary aged deaf children felt that they were not allowing their deaf children the same freedoms as they would a hearing child. Parents of children who were profoundly deaf or had a CI were more likely to report difficulties with regard to participation in social or cultural events. Difficulties ranged from issues such as lack of subtitles, lack of British Sign Language interpreting and poor listening environments.

Another Scottish Study (Edwards et al., 2009) asked parents of deaf children about their satisfaction with the Additional Support for Learning (ASL) Act. A postal survey gathered 128 responses, followed by 19 interviews with parents. It is of note that the children of most of this sample were severely or profoundly deaf (81%). About a third of parents expressed concern about some aspect of their deaf children's support at school, but most issues were resolved at a local level. Twelve of the 19 families interviewed had deaf

children with an additional disability in addition to deafness, a much higher proportion than in the whole population of deaf children. Parents were generally unaware of their rights under the ASL Act and a quarter of the deaf children surveyed did not have any sort of individual education plan. Parents were satisfied with support services for deaf children, but thought mainstream staff often needed more specific knowledge about the needs of their deaf children.

Studies investigating the views of parents whose deaf children have CIs

Since cochlear implantation of children started in the late 1980s, the average age of implantation has been significantly reduced. Various studies have investigated the views of parents about the development of their children and teenagers with CIs. They focus on the views of the family on the implant process, early language development, parenting stress and behavioural issues, social development for teenagers, and views of parents of deaf children with multiple disabilities who have also received an implant.

Parents of a group from the first cohort of 30 children to be implanted at the Nottingham CI centre were asked to respond to some general questions about their experiences, three years after the operation (Archbold et al., 2002). Specifically parents were asked about the process of deciding on a CI, to describe the benefits of the CI and any concerns they had. They were also asked to evaluate links they had with education services as well as the CI centre. Parents said that their children had increasing confidence with communication through speech. They highly valued the liaison between the CI centre and their child's school service for deaf children.

A similar project in Finland (Huttunden and Välimaa, 2010) asked parents of 18 deaf children to fill in regular questionnaires about their changing perceptions from before the CI operation to 5 years afterwards. The report shows interesting patterns about the proportion of the group of parents, deaf children, siblings and friends who used spoken Finnish, Finnish Sign Language, and spoken Finnish with sign over the 6-year period. In keeping with research undertaken elsewhere half of the parents reported an increase in self-confidence in their child by the point 5 years after the operation.

A US study about parents' attitudes after their deaf child's implant used attitude scale closed ended responses to a questionnaire (Quittner et al., 2010). The sample included parents from a range of socio-economic backgrounds who had 181 deaf children with implants and 92 hearing children. The study's focus was on links between parenting stress and child behaviour. Criteria for inclusion were that the child had severe to profound deafness before the CI, the children were under 5 and did not have a learning disability. They found no difference in stress levels between parents of deaf and hearing children, but there were some issues specific to parenting deaf children. These included communication, managing the implant and having to assume the role of language teacher for their child.

An Australian based study included young people with implants, parents and teachers (Punch and Hyde, 2011). Twenty-four phone interviews were

conducted with parents with deaf children (aged 17 to 25). Parents reported that social play situations were difficult for their deaf children although having an implant may have made them more outgoing. Parents said they would have liked more contact with other deaf children, but found it hard to organise given they lived in rural areas. Findings showed that parents were most concerned about aspects of social development in their implanted children. The deaf young people with implants were functioning in a similar way to other, less deaf, teenagers for whom there is already research evidence about the issues which arise in mainstream schools.

Parents of children with implants and additional disabilities were included in a study of parental views about multiply disabled deaf children (McCracken and Turner, 2012). Fifty-one phone interviews were conducted with the parents of deaf children with complex needs; 12 of whom had received an implant. If parents of children with complex needs received services which were at similar levels as for other deaf children, then they were happy. The researchers however found that often parents were not receiving help with early listening skills in the vital early stages after implantation. Parents reported that the CI had distinct limitations (i.e. not set up to listen to music/computer) and that they required more information from professionals.

Research with parents of hearing children in Scotland

Scottish Government funded research explored parental views through focus groups and interviews (Russell and Granville, 2005). This purposive sample represented the 'silent majority', i.e. parents who did not engage with the schools, as well as with a smaller group of actively involved parents. Results from the 'silent majority' suggested that many parents viewed their role as rather limited, that is to make sure their child arrives each day dressed appropriately, and as parents to attend music events and parents' evenings. Parents had not previously realised the important impact that they have on school achievement. Subsequently the Scottish Schools (Parental Involvement) Act 2006 replaced School Boards with Parent Councils. The Act made it clear that schools needed to give more recognition to the role of parents advising to involve parents from a range of backgrounds, including parents of children with disabilities. Practical barriers which prevent parental involvement were also highlighted, building on findings from previous studies (e.g. Parentzone, 2013).

The 2006 Act was reviewed by Wallace (2009) in a telephone survey of 1,000 parents from across Scotland. The study found that 16% of parents had a reason to complain over the past year, but that only a quarter of this group actually went on to make a complaint. The report highlighted the fact that parents had limited familiarity with the education system.

The Scottish Government's longitudinal project, *Growing Up in Scotland,* in 2003, about the experiences of children born since 2002, gathered data mainly through parental questionnaires. The first cohort of 3,000 children has now entered primary school, so a recent report investigated parents' views about relationships with and engagements with primary school (Bradshaw et al., 2012). Crucially, measures of socio-economic disadvantage were a

significant influence on the extent of parental involvement with schools. While parents were generally very satisfied with their child's experience of Primary 1, they were dissatisfied with poor communication from the school, a vital issue stressed in the policy advice supporting the 2006 Act.

Implemented since 2010, Scotland now has the new Curriculum for Excellence, where one key aim is promoting better relationships between schools and parents. To date, the impact of the new curriculum has not been explored from the perspective of parents. While critics have argued that the new model is full of prescriptive content, it offered an early opportunity for the present study to see if the curriculum changes have affected deaf pupils from the point of view of parents.

Successful outcomes: parental views about interventions, support and methods

By seeking appropriate consent we were in a position to link parental responses in the present study with response to the ADPS database (2000-2005). Using this previous data, we were keen to establish how the effects of socio-economic deprivation may continue to impact on deaf children. Very little is currently known about the effects of poverty on deaf children's lives.

We also aimed to ascertain parents' views on what leads to success, both in educational and social terms. Our objective was to complement existing data on deaf pupils' engagement with social activities outside school (see Grimes 2009a) and explore parental perspectives on how effective the deaf child's school was in relation to learning and social activities in preparation for adult life.

Methods and approach in seeking parental views

Using the ADPS database - a note on practical and ethical considerations

There were practical and ethical issues regarding using the ADPS database since data were provided by visiting teachers of deaf children. While a commitment to the project was evidenced by the high response rate achieved, some important information was missing so data on ethnicity was found to be insufficient, possibly because teachers did not wish to decide personal matter on behalf of parents. The database was extremely complex with numerous variables, many of which had not been coded.

There were ethical issues about using the ADPS data; the current team consulted with the Moray House School of Education Ethics Committee which gave formal approval to carry out the research.

Developing the questionnaire for parents

Our initial task in terms of the questionnaire was to establish if the deaf child was in the ADPS database and seek appropriate permissions. We aimed to collect salient background information, including how the deaf child preferred to communicate at home and school, ethnicity and additional disability of the child. This facilitated comparison with what was known about their earlier lives. Specifically, we sought information about:

- Parental views on the child's experience of school, both positive and negative.

- Parental reports on deaf children's peer networks and participation, including their friendships with deaf and hearing children and whether they were involved in after school activities.

- Parental expectations and hopes for their child's future and how well they thought schools had prepared them for adult life.

See Appendix 2.1 for a copy of the questionnaire. See Appendix 2.2 for further information about the method of contacting parents and establishing how representative the sample was. The sample of 131 parents was representative of the wider ADPS population, which gives confidence in the findings.

Findings and discussion

Responses to the questionnaire: communication

Parents were asked how their deaf child liked to communicate most of the time (Q6). Not surprisingly, given the wide range of deafness represented in the survey, speech was the overwhelmingly preferred communication mode. In Figure 1 below we combined the two groups to make the green sector, Sign Supported English: those who use English based signing and speech together and those who used English based signing without voice. Parents used the *Other* option box to write it in 'Makaton', which was not a separate option in this section. This is a sign code system often used with children who have learning difficulties (Sheehy and Duffy, 2009).

Figure 1
Communication method preferred most of the time by deaf children
(n = 131)
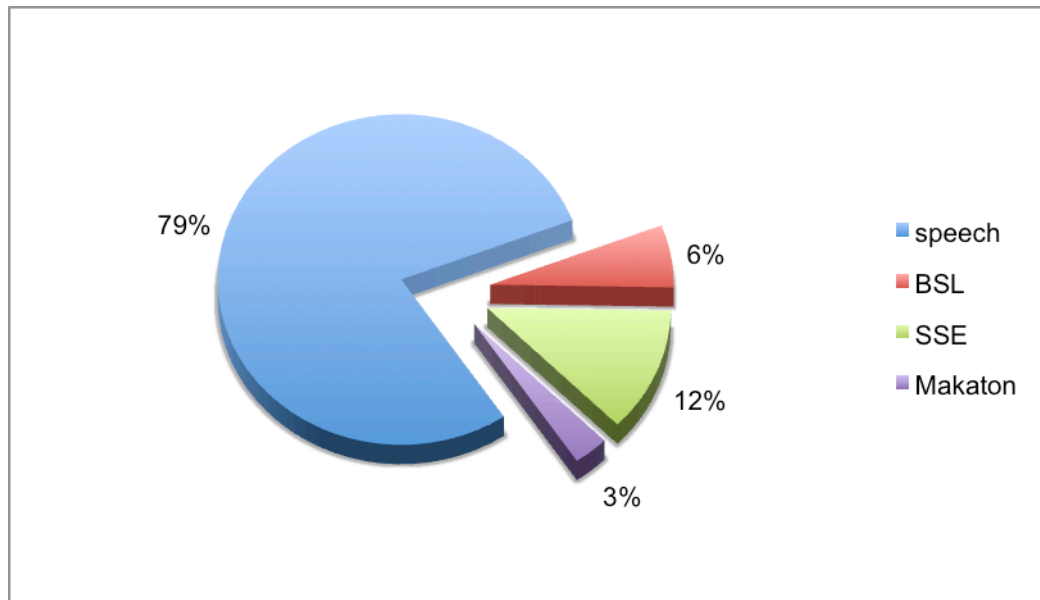
Parents also indicated that their child had more than one preferred way of communicating. Seven of the children who preferred speech (n = 103) also used sign in some circumstances, e.g. when their processor was off or when communicating with deaf friends. We also asked what communication methods were used with the deaf child at school (Q7: see Figure 2 below). In 8% of cases this did not coincide with the child's preferred communication method.

Figure 2
Comparison of deaf child's preferred communication method with method used at school
(n = 131)
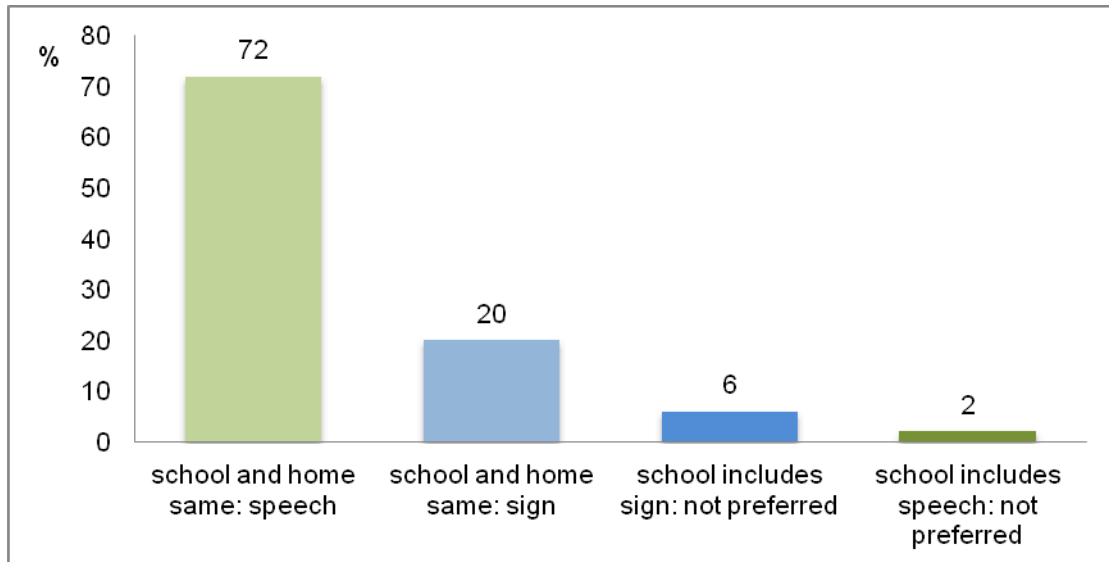
Figure 3 below shows deafness category, as recorded in the ADPS database, by the preferred language and mode the child uses now. The profoundly deaf group is quite small and there is a range of preferred communication methods, whereas the CI group is proportionately much larger, also with a range but speech being preferred by most.
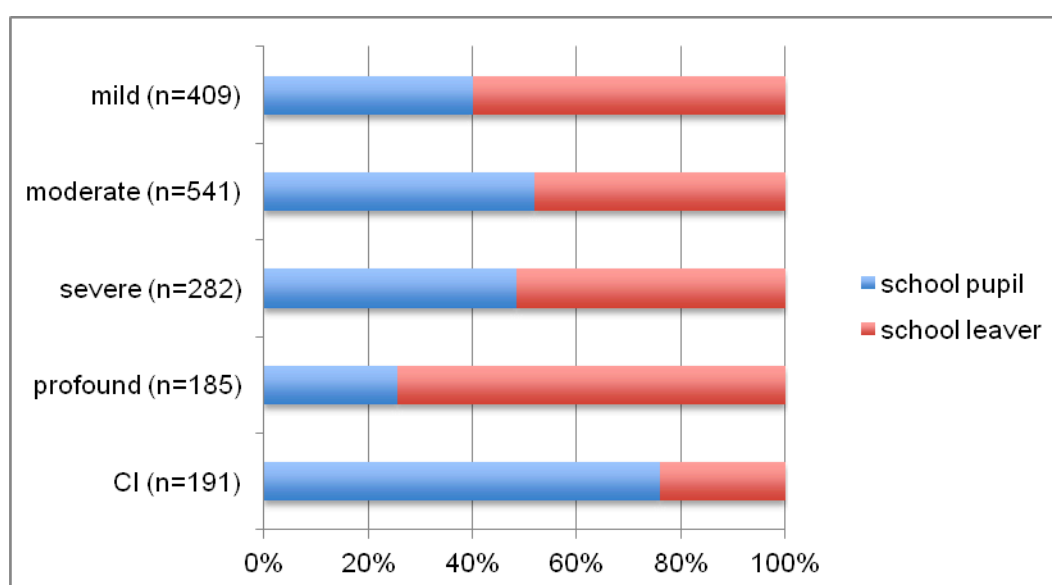
Figure 3
The deaf child's preferred communication method by deafness category
(n = 102)
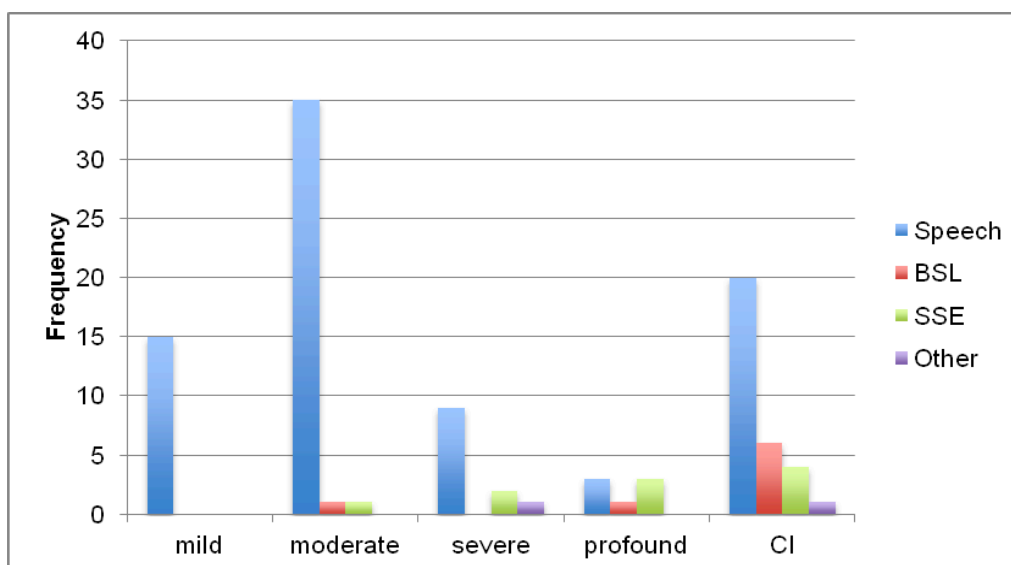
These findings are in keeping with other research undertaken in the UK (e.g. Watson et al., 2008).

The proportion of school-age profoundly deaf children in the ADPS database is much lower than amongst the school leavers. Nearly all of the children born profoundly deaf who are now at school will have been offered a CI. Figure 4 illustrates the change in the proportion of profoundly deaf and implanted children amongst school-age children and school leavers. There is a significant difference between the profoundly deaf and CI groups for the proportion that are school pupils.[4] Taking the children at school with a CI or profoundly deaf as a group (n= 120), 83.3% of them have a CI. In the same group of ADPS children who have left school (n= 256), only 35.6% had a CI.

Figure 4
The proportion of pupils and school leavers by deafness categories from the ADPS database
(n = 1,608)

This change has implications for communication choices. As Figure 3 illustrates, for school-aged children both groups have a mixture of preferred communication methods, but speech now predominates as the preferred method for school children with CIs.

Appendix 2.3 describes a group of 27 pupils from the ADPS database diagnosed as deaf in the first year of life, using information from ADPS and the parents' questionnaire. Early diagnosis also appears to have affected language choice.

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[4] z = -5.278, p<0.01

Type of school

Most of the children represented in the survey are now at secondary school. From Figure 5 below we can see that about 85% of the deaf children of respondents to the survey are in mainstream settings, either in their local school or a resource base school. In the Scottish pupil population as a whole about 1% are at special school (Weedon et al., 2012).

Figure 5
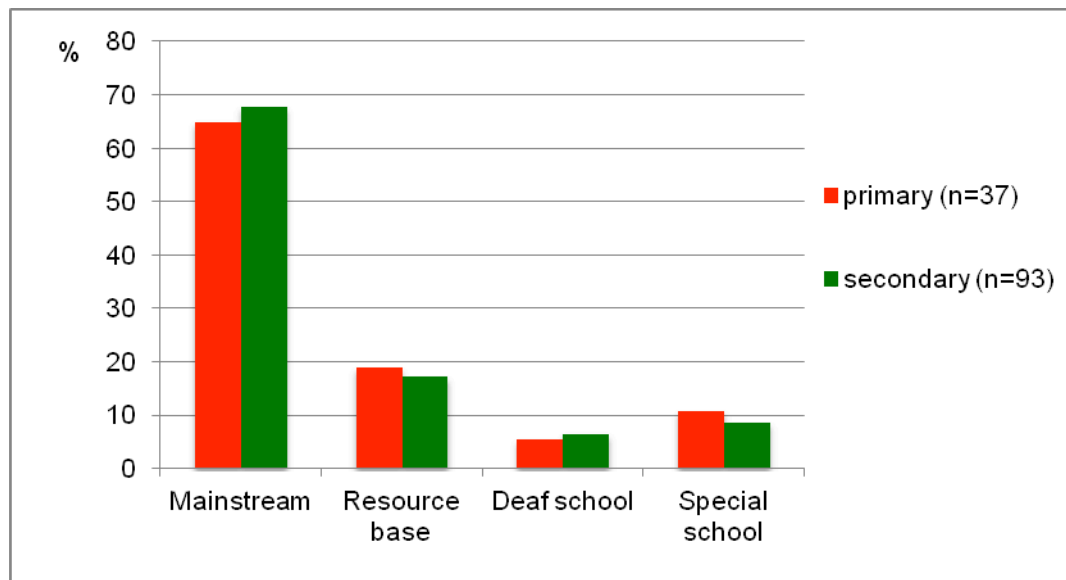**The proportion of deaf children in different types of school**
(n= 130)

Figure 6 below shows the proportion of deaf children with a disability according to the type of school they attended.[5] The proportion of deaf children with additional disability is very similar in mainstream school and resource bases. Attending a resource base school means more travelling for the child, and expense for the local authority, but better access to specialist staff and more choice about communication method, as was confirmed by the school leavers survey' (see Chapter 4 below, p.70).

The proportions for deaf school and special school should be treated with caution as there are very few in each category.

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[5] Parents told us if their child had an additional disability (or disabilities) and we also had agreement from parents to use the information held in the ADPS database about additional disability. We used a combined method, and coded according to whether the disability has an impact on learning.

Figure 6
Additional disability and type of school placement
(n = 130)
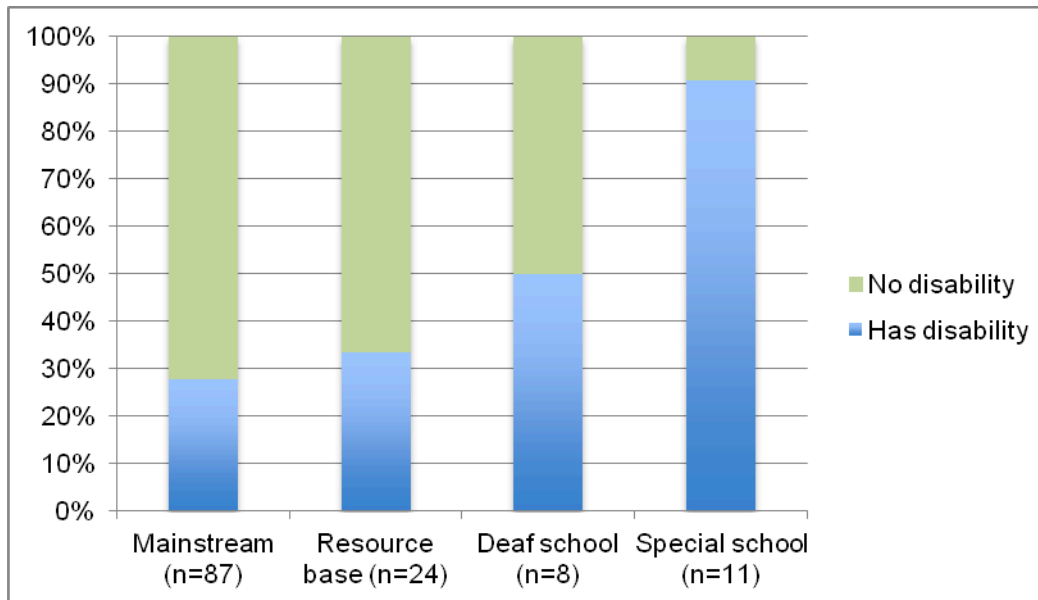
The data suggests that socio-economic factors may play a role in school placements, as Figure 7 shows below. This chart shows the level of deprivation of the children at resource base and mainstream schools. The team used the families' postcodes to find the Scottish Index of Multiple Deprivation (SIMD) level; the five bands each represent 20% of the population (Scottish Index of Multiple Deprivation, 2012a).[6]

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[6] There are accepted limitations of SIMD; for example ranking of datazones does not imply a fixed scale so it is not possible to say one area is twice as deprived as another. In rural areas there is more variability in income level in a datazone. Nevertheless, it is a useful tool given it is based on official data on employment, income, health, education (see Scottish Government, 2014).

Figure 7
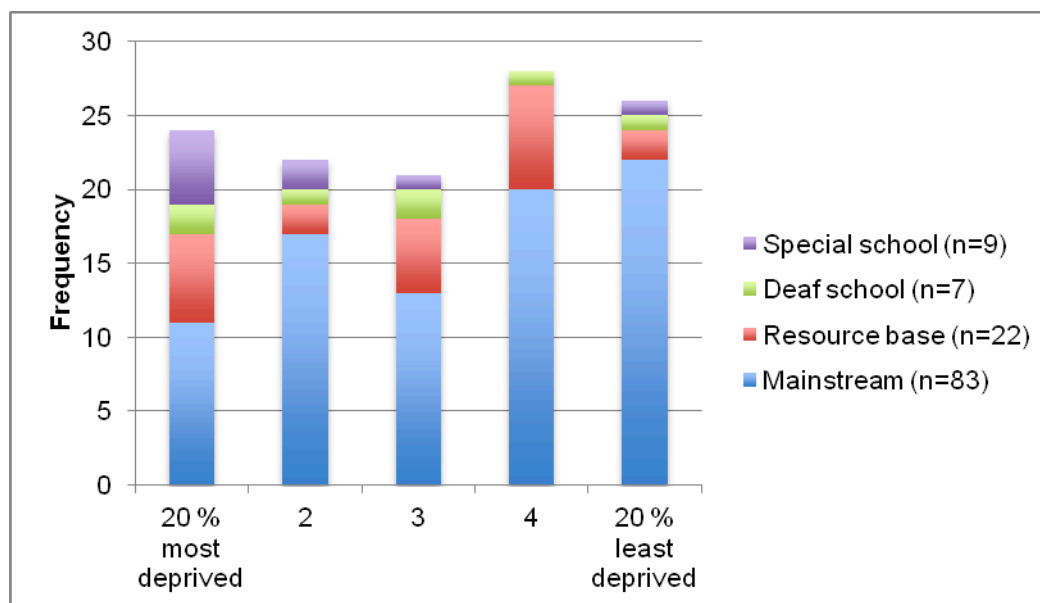**Frequency of school type by level of deprivation**
(n = 121)

Figure 7 shows that parents in the least deprived quintile are most likely to choose mainstream settings for their deaf child's education, while the most deprived quintile has a larger proportion in special school. By contrast deaf school and resourced school placements are represented across the range of different socio-economic backgrounds.

Deafness is an impairment which affects people from across the socio-economic spectrum fairly equally, which is one reason why there has historically been good educational provision for this group: richer parents from the 18th century ensured that their children received a specialist education. However, other types of impairment are much more strongly associated with poverty: social, emotional and behavioural difficulties and learning difficulties, for example (Riddell et al., 2010).

Figure 8
Proportion of deaf children having at least one additional disability by level of deprivation
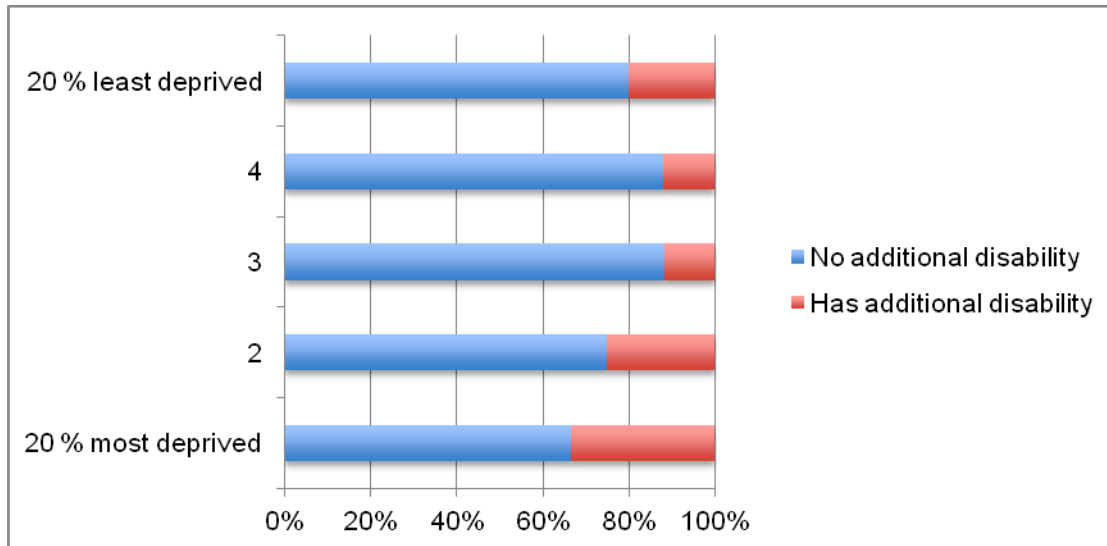(n= 104)

Figure 8 illustrates that deaf children have a higher proportion of disabilities when they live in more deprived areas. When quintile 1 (most deprived) and quintile 4 (second least deprived) are compared, there is a significant association between having an additional disability and the level of deprivation.[7] Socio-economic deprivation appears to affect the schooling opportunities for deaf children, in that they are more likely to attend a special school, as Figure 7 suggested earlier.

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[7] z = - 7.52, p<0.1

Parental views about school

Parental views were sought on whether they felt that school prepared their deaf child well for adult life (Q.11). The majority of all parents, 77% agreed that it did; this view was similar for parents whose children were at primary and secondary school. This positive response is a useful indicator of levels of parental satisfaction.

The proportion of parents who thought school was preparing their child for adult life also did not vary significantly by type of placement, comparing special and deaf schools to mainstream.[8]

Parents had the opportunity to give an open-ended response to this issue but while comments were mainly positive a minority of parents expressed negative views:

> *The school is well run, well organised and caters for all their pupils needs personally and fabulously.*

> *They are completely incompetent. Lack of language input. I introduced iPad. I have constant meetings to push his education. Staff writing inappropriate and low targets.*
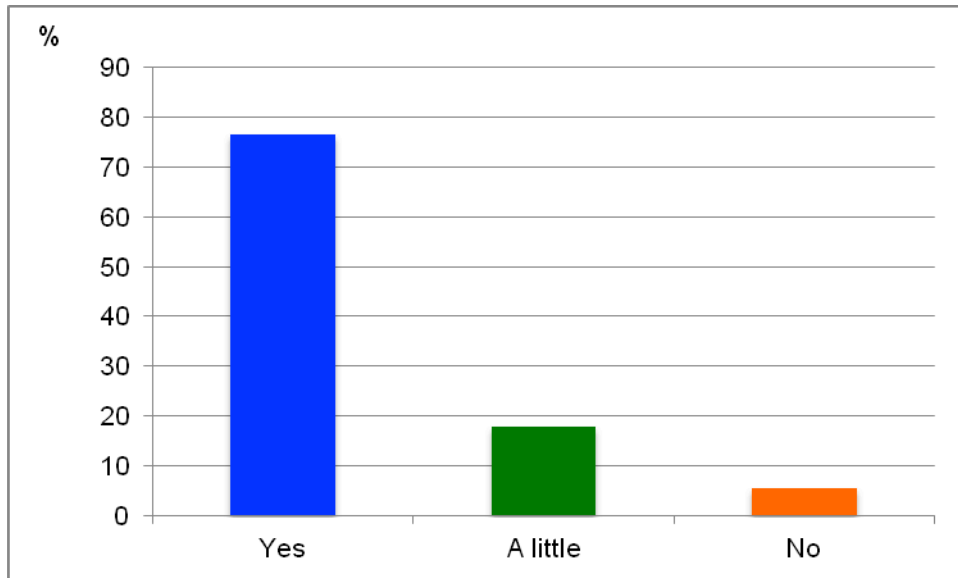
Views about participation: clubs and extra curricular activities

Parents were asked (Q16) if their deaf child joins in after school clubs and the majority reported that they did (see Figure 9).

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[8] $z = -1.028$

Figure 9
Proportion of parents who report their deaf child's involvement in after school clubs
(n=131)

There was just as much participation in after school activities amongst deaf children with an additional disability as without. Parents reported on the type of clubs or activities that their deaf child was involved with (Q17) and a range of different activities was mentioned for 105 children (see Figure 10 below).

Figure 10
Proportion of type of activity
(n = 127 activities, for 105 children)
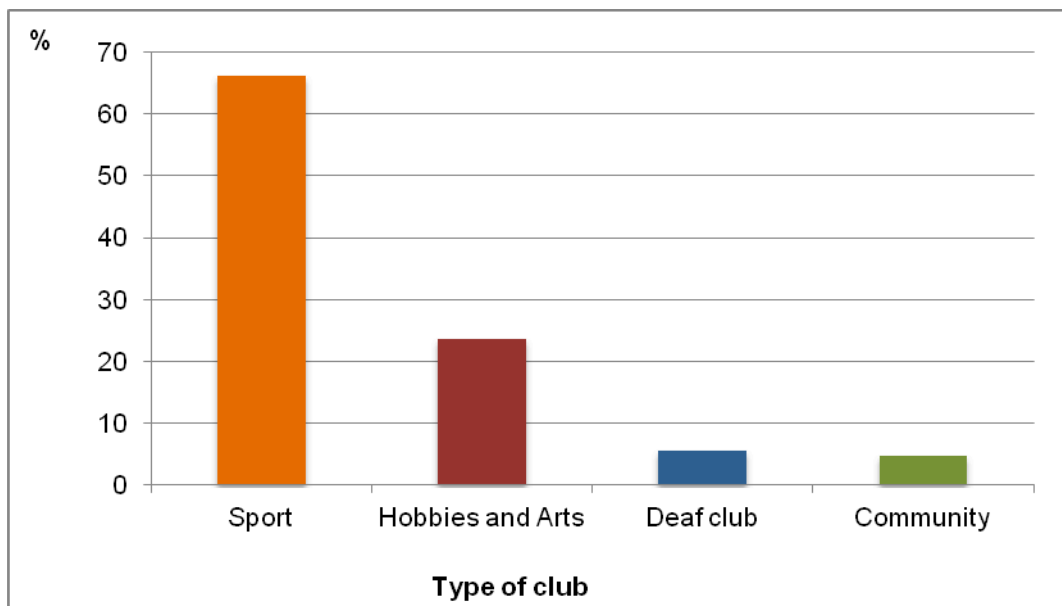
The most popular club was Sports (66%). The category *community* included attending church and helping others, e.g. being a volunteer at riding for disabled children club.

The small proportion of children attending deaf clubs (6%) is likely to reflect the fact that there are not many available. Deaf centres often have social events aimed at all ages for BSL-using families. Deaf clubs currently available for deaf children in Scotland include a drama club based in a theatre, clubs run by parents' groups and youth clubs aimed at BSL users.

Parents were generally convinced that attendance at clubs and activities is important in the lives of their deaf children (87%, see Figure 11).

Figure 11
Proportion of parents who think the clubs their child attends are important in the child's life
(n = 95)
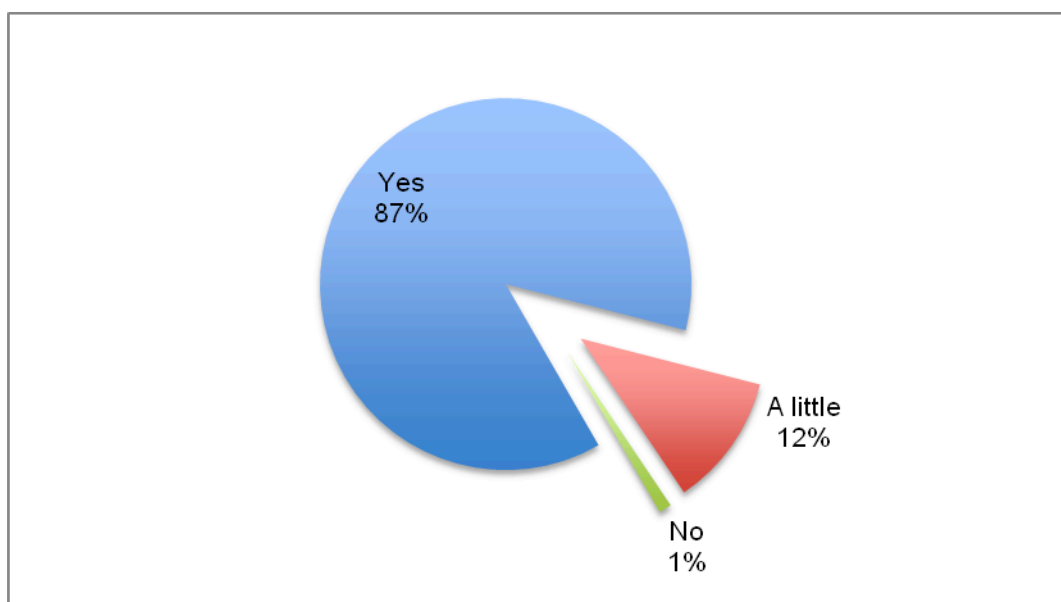
Deaf children's rates of participation were linked with levels of socio-economic deprivation. Figure 12 below shows that children from the least deprived areas are most likely to be involved in three or more activities on a weekly basis.[9] These findings reflect other Scottish based research (Chamberlain et al., 2008) showing that social deprivation has a serious impact on the number and range of cultural and sporting activities in which teenagers engage.

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[9] The large proportion of children in the most deprived areas who attend one club is likely to reflect targeted government funding in these wards.

Figure 12
The proportion of deaf children attending 1 - 2 clubs, or 3 or more clubs by level of socio-economic deprivation
(n = 98)
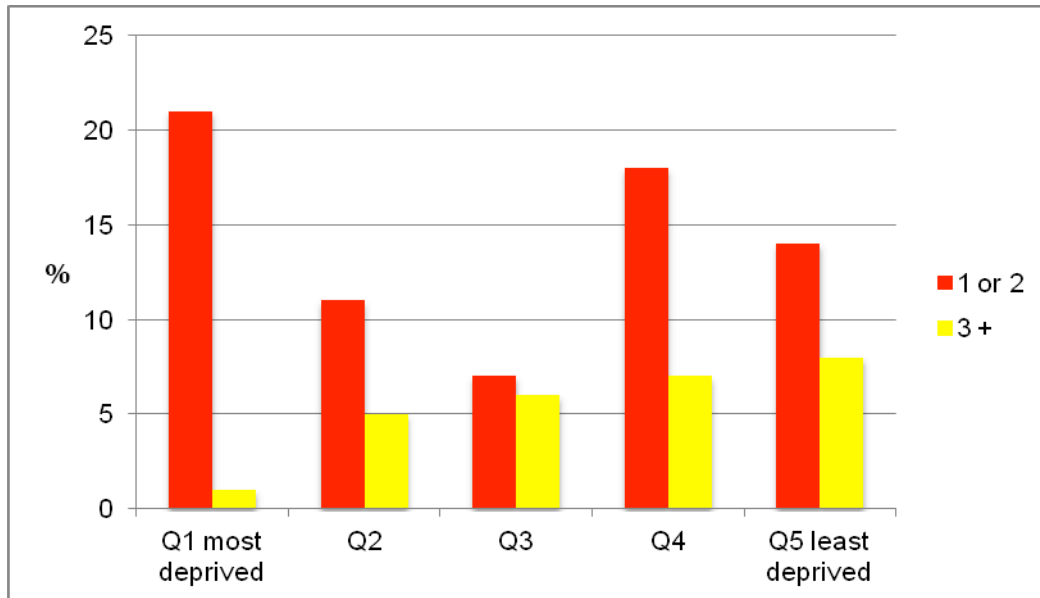
SMS use and social contacts

Parents were asked if their child used text messaging and who they usually contacted (Q.19). The largest group of non-users was at primary level (24 of the 37 primary-aged children). Figure 13 compares the results to this question with results from a similar question asked of school leavers (see Chapter 4 below).

Figure 13
Comparison of the proportion of deaf children and young adults who contact hearing and deaf people by text message
(n = 309)
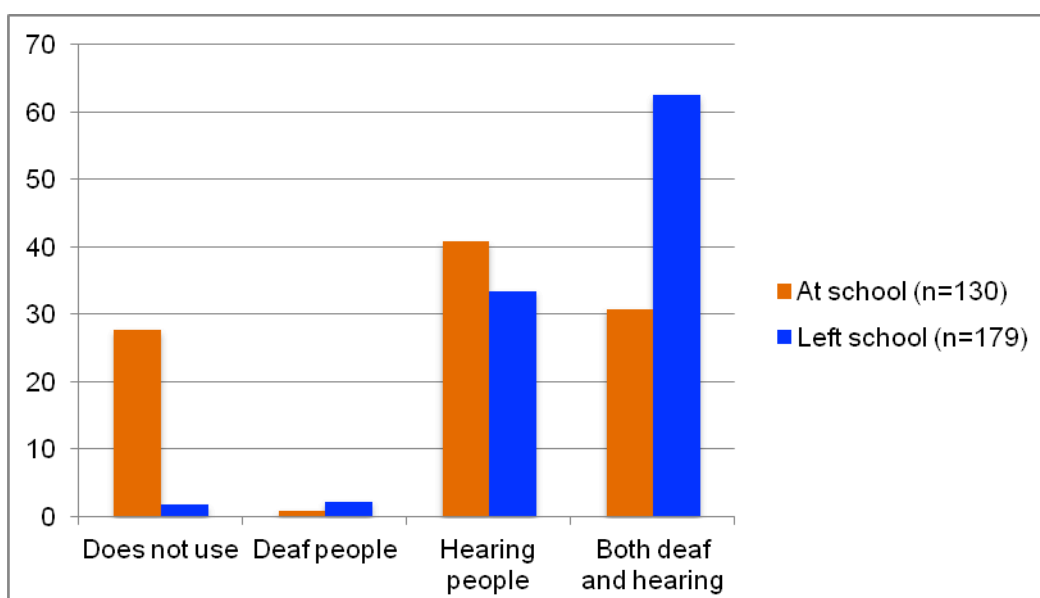
Text message use could be seen as a proxy indicator for friendships, extent and type of social contact. The proportion of deaf young people who contacted both deaf and hearing people rises for the adult group. It is likely as deaf young people leave school they have more control over their friendship choices, and this group starts to include more deaf people.

For both groups 34-41% of deaf people have no contact with deaf people by SMS. It was more likely that deaf children in mainstream schools had less contact with other deaf people, and this had no relationship to their category of deafness.

Younger children and children from more deprived areas were found to be less likely to use mobile phones.

Parental concerns about school

Parents were asked (Q15) about any aspects of their child's education which worried them. Responses sometimes covered several issues and as a result were classified under several headings. Findings suggest that we can construct some generalisations about parents' views (Robson, 2011).

Concerns about the deaf child as an individual

As one might expect, the key concerns of parents (35%) were related to the individual needs of their deaf children. Parents were acutely aware that some aspects of learning were particularly difficult for their child but they were unsure as to why this was the case. They also expressed uncertainty about their child's level of skill in the classroom. Many responses were from parents who had children with additional disabilities and they highlighted their concerns about their child's health or behaviour.

Concerns about the school system

Another main concern of parents (28%) related to aspects of the school system which were either not readily understood or reported to be inflexible and unresponsive to their deaf child's needs. Teachers' low expectations of their children, examinations and access to the curriculum were regularly highlighted as significant concerns by parents.

Schools and services for deaf children appeared not to explain examination arrangements sufficiently. Parents indicated that they worried about this well in advance of the actual examinations, even though the examination board in Scotland has flexible arrangements which matches the support usually provided in class:

> *How will she sit exams since she doesn't understand the questions fully? She has a smaller range of vocabulary compared to her peers. (C5)*

The clear anger felt by some parents at low expectations from teachers were evident in many responses:

> *He's 13 and unable to read and write. He has always had the capability but never been stretched in this area. A huge lack of underachieving in regard to his education. School do not understand his potential - they agree I can get more out of him myself but fail to work with me to find out why. (C2)*

Heinemann-Gosschalk and Webster (2003) found similar views among parents and therefore recommended more effective training for specialist teachers.

Concerns about the child's social relationships

Surprisingly, a relatively small proportion of comments related to the social skills of their deaf children (9%) and most of these concerned relationships with hearing children in mainstream settings. The following parent refers to the negative effect of having a support worker in class:

> *Sarah attends the support base in school and has an assistant in class so doesn't mix very well with classmates. (B2)*

Schools with resource bases vary in the UK; in some the deaf child is part of a mainstream class tutor group whereas in others the base room is the centre for the deaf children's socialising. Bullying was mentioned by only four parents. However, when we directly asked the school leavers about their advice for deaf school children, dealing with bullying was found to be a common and important theme.

Concerns about transitions and life beyond school

Parents of older children were worried about how their deaf child would cope after school in adult life or higher education or work contexts (6%).

Some parents expected that their children would be in control of access arrangements at the next stage of their education, a finding also corroborated by deaf school leavers (see Chapter 4).

Responses to question 15 suggest that schools and services for deaf children could do much more to provide information to parents about learning issues for deaf children and explain why these occur. A few parents indicated that all aspects of their child's education worried them. All parents, however, were found to have high expectations for their deaf children; one of the most concerning areas emphasised by parents was the low expectations of teachers.

Advice to other parents

Parents engaged well with the question which asked: 'If you could give advice about schooling to other parents of deaf children, what would you say to them?' (Q.20). This produced a high response rate; 107 of the 133 parents responded (81%) and made 127 different comments. The themes identified were much broader, and several were inter-related.

A. Parents as proactive consumers (31% of comments)
This group of parents identified themselves as rational consumers who wanted to co-operate with the school to make their child's path easier. They stressed the importance of help seeking behaviour, being proactive, considering all options and seeking support from other parents. They believed in good communication and co-operation with the system.

B. Parents as drivers and advocates of deaf education (22%)
This group of parents were found to be far more radical in their approach to the education system: advocating fighting for the deaf child's rights and understanding and using the system to improve services. They were well informed about how professionals should collaborate, and they recommended ways to ensure it was successful. Over 31% of parents subscribed to this viewpoint of which parents from the most deprived 40% of households were less represented and constituted 21% of total responses. Interestingly, children of the activist parents tended to have a cochlear implant.

These parents were familiar with the educational language used by the school and they often suggested that it was role of parents to ensure all the professionals involved collaborate in the appropriate way. These parents thus emphasised self-reliance. Similarly, Edward et al. (2009) also found that parents of deaf children were very concerned about the low levels of deaf awareness amongst mainstream teachers. Other Scottish research with a general sample of parents found two main kinds of parent groups in the 'silent majority' and the actively involved minority (Russell and Granville, 2005). For parents of deaf children in this study, the activists were a much larger group.

C. Seeing the child as different (9%)
Many parents showed they assessed their child's needs as different from hearing children's, although most parents balanced this with a recognition of the advantage of being in a mainstream school. The children of these parents attended mainstream, resource base and deaf schools in equal proportions. A tension was evident in their responses, because they acknowledged the advantages of mainstream schools and specialist resource bases. For these parents being in mainstream was associated with high teacher expectations. Parents also recognised that an inclusive education needed more specialist resources, and that deaf children needed deaf friends too for their well-being.

D. Seeing the child as the same as hearing children (8%)
Some parents viewed their child as almost the same as a hearing child, sometimes because the child was minimally deaf. Normality for these parents was social inclusion, including local friendships, and not wanting their child to appear different. This group were parents whose children (9/10) attended mainstream schools.

E. Supporting the child (8%)
These particular parents suggested that providing love, support, patience and not interfering too much in their child's life was the preferred role of parents. Parents from the most deprived 20% of households represented 46% of the supporters of this viewpoint.

The non-respondents to question 20 were more likely to be from poorer socio-economic backgrounds; 61% of the non-responders were from the 40% most deprived households, a finding similar to Bradshaw et al. (2012).

Summary of findings from the parents' questionnaire

As indicated, the present sample of parents was similar to the ADPS database for the same age range. Findings relating to parental views of deaf children were:

(RQ3) What patterns of intervention, support, and educational methods lead to the most successful outcomes for deaf children?

- A high proportion of children (85%) were educated in mainstream settings, either a local school or school with resource base.

- Parental expectations for their deaf children are high but one of the most concerning areas for them are low expectations from some teachers.

- While parents were assured that their deaf child was acquiring good ICT skills at school (82%) they were slightly less confident that their child's school was preparing them well for adult life (77%).

- The majority of deaf school age children (77%) were reported to participate in after school activities. The presence of an additional disability made no difference to the level of involvement in clubs.

- Children from better off households attended a wider range of clubs. Those from the most deprived households appear to be benefitting from the Government's targeting of funding for youth activities.

- Mainstream education settings were associated with higher teacher expectations for both parents who want their child to be seen as the same as hearing children, as well as those who recognised they were different.

(RQ4) What are the characteristics of deaf young people in these various groups?

- Deaf children from the least deprived backgrounds attend mainstream school more than those from the most deprived. Those children from the most deprived backgrounds are the most likely to attend special schools.

- Mainstream school settings have the lowest proportion (28%) of deaf pupils with an additional disability; by comparison 50% of pupils in deaf schools had an additional disability.

- Parents reported that 29% of their deaf children have an additional disability. The proportion is higher in more deprived households.

- Speech is preferred by 79% and some sort of sign by 18% of the deaf children. The profoundly deaf and CI groups have the most variety of method.

- Looking at the profoundly deaf group and the CI group together, a higher proportion of children still at school now had a cochlear implant (83%) than amongst those who had left school (36%).

- Use of mobile phone for text messaging was found to be connected with socio-economic status and age. Of the school age children, the proportion with no deaf SMS contacts was fairly high, at 41%.

Limitations

This questionnaire for parents was unlikely to fully answer the main research questions simply because it could not provide a long-term view since the children were still at school. One rationale for this questionnaire was to make contact with parents so we could seek permission to maintain contact with them. When all the ADPS children complete their 4th year of secondary schooling (i.e. in 2016) it would be possible to look at school examination outcomes over a more sustained period.

In order to enhance response rates the questionnaire design was intentionally succinct, but better coverage of linguistic access or the effects of the new curriculum could have been addressed in a more extensive research tool.

Summary

This part of the research examined social outcomes such as participation in clubs and activities and social contacts for deaf children. We found that many parents saw themselves as key to the academic and social success of their children. Parents' views about success included their attitude to difference, which produced contrasting parental opinions. Some parents supported friendships with other deaf children as an important aspect of growing up, whereas others attempted to minimize this type of peer contact in an effort to normalise the experiences of their children. The responses from parents provided information about deaf children from across the socio-economic spectrum. There have been few previous studies which look at the effects of poverty on deaf children's lives.

The findings from the study offer more sociological detail about the composition of this group of largely mainstreamed deaf children and their parents' views. We have also been able to discover more about the group originally born profoundly deaf, the majority of whom had now been implanted, in the generation remaining at school.

Chapter 3

The educational achievements of deaf school leavers

This chapter analyses deaf pupils' school achievements at the age of 16 in Scotland and compares them with the wider school population.

The research questions examined in this chapter are:

(RQ1)   How do the academic, social, and vocational outcomes for deaf children compare to those in the wider population of children / school leavers in Scotland?

(RQ2)   What patterns of intervention, support, and educational methods lead to the most successful outcomes for deaf children?

(RQ4)   What are the characteristics of deaf young people in these various groups?

First we address other studies that have researched the school achievement of deaf pupils, then focus on a specific group: pupils with cochlear implants. This issue is particularly relevant to understanding achievement of deaf pupils given the substantial increase in implantation rates in recent years. We then examine literature about the prevalence of mild deafness in the general population. This is important since the category of mild deafness tends to be ignored in deaf educational research. Research about the education system is also discussed because it provides insights into progression between stages of education, as well as outcomes for pupils from different social backgrounds. Poverty has rarely been discussed in relation to deaf pupils' achievements.

Studies about the school achievement of deaf pupils

Over the past twenty years a number of international studies have considered the factors leading to academic success for school-aged deaf children. A widening range of variables has been considered (see Appendix 3.1).

Throughout this period, however, the range of deaf students who have been included in the analyses has affected the results. Sweden, is one of the few countries where it possible to share data between health and education to ascertain the real size of the deaf school age population.

The longest established survey of deaf children's characteristics is the Gallaudet Research Institute (GRI) annual survey, which has been administered across all US states since 1967 (Allen, 1994). It collects data on a proportion of the deaf and hard of hearing pupils in US schools, though the proportion has fallen from 75% in 1992 to 56% in 2008 (Allen, 1992; Allen 1994; Data Accountability Center, 2013; GRI, 2008).

Using the GRI data, which is biased toward those with greater hearing losses and in schools for the deaf, Holt (1994) investigated the significant

interactions between classroom settings and demographic variables for deaf pupils. The results showed that the poorest outcomes for reading and maths were at secondary level for those deaf pupils in local schools who were integrated for less than half the week. The most promising results were for deaf pupils integrated in their local school for more than half the week. Holt found that students from ethnic minority groups and students with additional disabilities were much more likely to be taught in non-integrated settings.

More recently, using a representative sample of more than 850 deaf secondary school students in the US, Shaver, et al. (2014) found that students attending schools for deaf children were more likely to have profound hearing losses and use sign language rather than spoken language. Contrary to the GRI database, no significant differences were found between students attending schools for deaf children and those attending regular schools in whether the child had a secondary disability or used cochlear implants.

In the UK Powers (2003) collected data on 747 deaf pupils who were 16 or above between the years 1992-1996, including examination achievement. The pupils were moderately to profoundly deaf, and he found no statistical significance within this range of the degree of hearing loss on educational outcomes. He reported a low but significant effect of socio-economic status on examination outcomes.

Antia, et al. (2009) in the US examined the performance of a group of 197 mainstreamed deaf children over a period of 5 years. Their range of deafness was from mild to profound. In contrast to the UK, almost 15% of deaf children attend deaf schools and use sign language at school. A key strength of this study was that they used a standardized assessment with each pupil. Results showed very positive academic achievement for this non-representative sample of mainstreamed deaf children: for maths, reading and writing over 50% of the children were performing at average levels or above. They found that support arrangements were often lacking for mildly or moderately deaf pupils beyond the basic provision of hearing aids. In fact, Marschark et al. (2014) recently found that in a nationally representative sample of 580 deaf secondary school students, students with mild hearing losses were not significantly different than those with profound hearing losses in their scores on reading, mathematics, and science achievement tests. Both groups were also found to score well below students with moderate hearing losses.

A study by Qi and Mitchell (2011) drew a large sample group from the Gallaudet Research Institute annual survey, from 1974-2003. Although not representative of the whole US deaf pupil population (Shaver et al., 2014), the results show reading scores over a period of 30 years for children aged 8-18. Significantly they identified a gradual rise in grade equivalence with age, but median performance in reading comprehension never exceeded 4th grade for any cohort, i.e. a reading age equivalence of nine years.

Mixed sources of data – including official government data

In Sweden 'The National Agency for Special Schools for the Deaf and Hard of Hearing' reported a comparative analysis of differences in goal achievement

of all deaf pupils, irrespective of degree of deafness, choice of school or language mode (Hendar, 2009). The goal of the first stage of secondary education in Sweden is to progress to the upper secondary school, which 90% of Swedish pupils achieve, including passing in Swedish, Maths and English. Deaf children in the study were aided or used Swedish Sign Language, so mildly deaf pupils (with hearing thresholds less than 35dB in this study) were not included. However, within these parameters it aimed to be a total population study of deaf children in Sweden. The number of pupils who had finished lower secondary school for whom grades were available was 1,275. Of pupils in schools for deaf children, 38% qualified for upper secondary. For children in schools for hard of hearing children, 65% qualified, and for children in mainstreamed schools, 78% qualified. When the results for reading and writing in Swedish were examined, 44% of the deaf children in deaf schools did not achieve the expected level. The figure for deaf children in schools for the hard of hearing was 16% whereas only 8% of mainstreamed deaf pupils did not achieve this level. Children in the deaf schools are more likely to have an additional disability and to be from a migrant family.

Heiling (1998) discusses these issues with reference to a group of Swedish deaf 13 year olds she had studied in the late 1980s who had received signed communication early in preschool. By the time they had left school she found that they were fluent in sign language and some had been able to develop good spoken skills too, although they preferred Swedish Sign Language for everyday communication. These children had experienced simultaneous communication (speech and sign together) in primary and intermediate school, and only at secondary school did they experience bilingual education in Swedish Sign Language and spoken / written Swedish, with the languages kept separate. Heiling found higher levels of academic achievement in terms of word knowledge, reading comprehension and mathematics compared to a 1960s cohort which had been educated entirely through spoken Swedish. However by the early 1990s Heiling (1997, cited in Bagga-Gupta, 2004) found that these advantages were not present amongst the deaf pupils assessed in the early 1990s. This second cohort had been the recipients of a more complete sign bilingual education than the earlier group. There could be a number of reasons for this difference: the late 1980s group may have benefited from the simultaneous communication approach; there seems to have been some migration out of special schools from this time perhaps leaving a higher proportion of children in deaf schools with additional disabilities or from less privileged social backgrounds.

Government data

Since 2004 the English Government has reported in more detail about particular impairments through the School Census. This has led to the establishment of a National Pupil Database in England, which may solve many of the issues about unrepresentative samples of the deaf school-aged population (Allen, 2013). Scotland has reported on particular impairments from 2003 (Scottish Government, 2004a) and this has led to a higher proportion of deaf children being recorded. Throughout the UK there are still issues about who fills in the record sheet, how much information the school has from the local authority service for deaf children about deafness, whether

enough information is collected and how multiple impairments are recorded (Weedon et al., 2012).

Early years studies

Examining a much younger cohort of deaf pupils, Tymms et al. (2003) in the UK investigated the validity of their language-free version of a value-added measure used at nursery to the end of the first year of primary school. Using a sample of 1,000 deaf pupils with a very wide range of deafness they were able to show that the assessment was valid with this group; that is, performance at nursery level successfully predicted later performance at the end of the first year of primary school.

A report of a series of studies (Yoshinago-Itano, 2003) focused on the pre-school age group and the advantage gained in spoken and sign language development for those identified and supported from before six months. The children were identified through a newborn hearing screening program, so include children with deafness categories from mild to profound, so more similar to the range of deaf children in the ADPS survey. Yoshinago-Itano et al. (1998) found that the early intervention program CHIP (Colorado Home Intervention Program) appeared to have a protective effect in mitigating the negative consequences of poverty evident in many other studies: children identified as deaf before 6 months old had better language outcomes than late regardless of the families' socio-economic status.

None of the studies discussed above analysed the achievement of the whole range of deaf children; some groups have been excluded because the children are hard to find, or they are receiving minimal support. Importantly most of the studies discussed suggest that level of deafness category does not make a significant difference to educational outcomes when we look at the range moderate to profound. Results suggest that the category 'mild' is likely to have a small influence on educational achievement. In the US, it is now clear that results which show that moderately to profoundly deaf students perform similarly has been found with GRI data. This dataset however is known to be biased toward students with greater hearing losses. Research using the more representative National Longitudinal Transition Study 2 database and other sources yields a very different result in which children with mild hearing losses are struggling academically (e.g. Marschark et al., 2014; Moeller et al., 2007). Marschark et al. (2014) suggested that this finding may reflect students with lesser hearing losses obtaining less support in school simply because their better spoken language ability (incorrectly) gives the appearance that they do not need it (see Figures 17 and 18).

Studies about school achievements for cochlear implant (CI) users

From the early 1990s profoundly deaf children in the UK have been offered cochlear implants, and more recently bilateral implants. Over the last 20 years the average age of implantation has dropped. For example the ADPS database of deaf children (2000-2005) shows that over this period older children in secondary school were implanted later at a mean age of 7 years 7

months (7;7) than the primary aged children in the study, who were implanted at a mean age of 3;2 (Thoutenhoofd, 2006). This study used English language test results to report on academic outcomes for the sub-group of 152 pupils with cochlear implants. Comparisons were made between deafness categories, with the implanted group achieving similar reading scores to the severely deaf group.

Fortnum et al. (2006) showed how a first wave of cochlear-implanted children differed from profoundly deaf non-implanted children by being from more affluent backgrounds, having fewer additional disabilities and having a later onset of deafness (i.e. they were more likely to have been deafened after they had acquired spoken language). The results of this study suggested that children with implants only showed significant positive effects on achievement when they were implanted under the age of 5 and had used their device for more than 4 years.

Researchers from the Nottingham Cochlear Implant Centre (Beadle et al., 2005) followed the progress over 10 years of the first generation of implanted children in the UK. They used two common measures to monitor listening and speaking skills: the Categories of Auditory Performance (CAP) for functional listening and the Speech Intelligibility Rating. A third of this group were deafened after the age of 30 months, which means they probably had normal progress with speaking and listening before this event. The CAP scale does not judge achievement with listening in an educational environment. Level 6 is 'understanding conversation without lip reading with a familiar listener' but we do not know in what sort of acoustic environment this means or the technicality of the conversation. Given this, it is probably safer to look only at Level 7 on the CAP scale as showing real ability to follow a conversation without lip-reading. Nine of the 30 participants could do this after 5 years of implantation and 18 could after 10 years, which shows a steady growth of listening skills.

In reviewing a large number of studies investigating progress with reading for children with CIs, Marschark et al. (2010) noted that many studies do not compare implanted with non-implanted children. The outcomes of the studies show that while the implant may benefit phonological processing, it does not show convincing benefits in reading comprehension. Implanted children often do better at reading than other deaf children, but so do children who are mildly deaf, and deaf children from deaf families. The authors call for a wider examination of the reading process for all deaf children. They conclude that the experience of being mildly deaf warrants closer study. Audiologically, implanted children could be regarded as similar to the mildly deaf group; they also experience the same difficulties in noisy classrooms. Most deaf children with CIs have the additional impact of the period before they were implanted, which may delay their spoken language development. Whatever the reason, Marschark et al. (2014) found no significant differences in achievement scores between secondary school students with and without cochlear implants, a finding similar to previous studies involving that age group.

Prevalence of mild / moderate deafness in the child population

Studies on the prevalence and possible implications of mild or minimal deafness dating from the 1960s have found contradictory results, often due to different audiological definitions used in individual studies. Results comparing academic achievements of this group also differ a great deal.

In the USA Bess et al. (1998) investigated 66 children with minimal hearing loss, by which they meant 20-40 dB unilateral, bilateral or high frequency. Most of the children in this study had not known they were deaf and were not receiving any specialist services. A critical finding was that for the 66 minimally deaf children, a third had had to repeat a year at school compared to 5% for hearing children. Using these criteria the study found a prevalence rate for minimal hearing loss of 5.4%.

Tharpe (2008) provides a useful overview of 40 years of research in this area and concludes that it is important to identify if there are factors which could predict which children with a mild or unilateral loss are at risk of academic difficulties. Most neonatal screening programs include the category of mild deafness, but the condition may also develop over the childhood years.

In an Australian study (Wake et al., 2010) a survey of a large group of parents focused on possible risk factors before their children were audiologically screened. They found a prevalence rate of 0.88% for slight or mild sensorineural deafness in the school age population they sampled. This study excluded conductive deafness. Again, the differences between the US and Australian studies are most likely to be due to the different audiological definitions of the mild and unilateral categories. The 55 children from their random sample of Melbourne school children were more likely than the wider population to be Asian, to be living in poverty, to be male and from a single parent family. This suggests there may be socio-economic links to mild / slight deafness.

Another US study (Shargorodsky et al., 2010) compared the prevalence of mild deafness in secondary age children over two periods: 1988-94 and 2005-6. They found an increase in bilateral deafness of all types from 3.8% in the first period to 5.5% in the second. In the more recent time-frame the prevalence of bilateral deafness between 15 and 25dB was 4.7%. While the researchers did not distinguish between sensorineural and conductive deafness they found that prevalence of mild deafness was statistically significantly affected by poverty in the more recent time period.

Given the likely extent of mild or slight deafness in the school-age population, where most of the children who are affected are unaware of their condition, it seems probable that those mildly deaf children who are identified and supported may be deafer or have other factors which contribute to their difficulties at school: they have been noticed by schools and audiology services.

Monitoring progress in the Scottish education system

It is useful to address how the educational achievements of Scottish pupils have been monitored, and particularly what is known about groups of low attainers because deaf pupils are often in these groups.

The Scottish School Leavers' Surveys provided evidence of change in the context of Scottish education since the 1980s (Croxford, 2009; Howieson and Iannelli, 2008; Raffe, 2003). As an increasing proportion of young people stayed on at school after age 16, attainment has risen, which has benefited pupils from less-advantaged backgrounds. This presents a challenge for schools and colleges as they now have a much more diverse intake than in the 1980s. Croxford (2009) was able to compare the factors leading to academic success at age 16 and 18. Over time the social class differences in attainment at age 16 narrowed slightly, but differences in attainment at age 18 widened. Females had higher achievement than males, and the gap increased over the period 1980-2005. By 2005 over 50% of students at 18 had SCQF level 6 or 7, allowing entry to higher education.

A study of low attainment at S4 (aged 16) by Howieson and Iannelli (2008) looked at 25% of the S4 year group i.e. those who achieved no Standard Grade passes at grades 1 to 3. These were young people who had left school between 1992/3. The parents of these low attainers were more likely to have left school at 15 with no qualifications themselves, compared with the parents of the high attainers. As the low attainers increasingly stayed on at school or college, the proportion that had gained no qualification at ages 18 to 23 dropped to 16%. Early unemployment led to more chances of unemployment three years later and the opposite was true: early employment led to better chances of remaining in employment. The effect of low attainment at S4 was severe and affected the young person financially for many years. These findings confirm the strong effect of educational experience of parents and social class on Scottish young adults.

A further way in which Scotland differs from the rest of the UK affects pupils who use BSL. In Scotland deaf pupils who use BSL can take their SQA examinations using this language i.e. the question paper is signed to them by a teacher of deaf children or interpreter, and the candidate can choose to sign or write their answer. This does not apply in England where only the rubric and questions can be signed in examinations (Burns, 2011). These arrangements have been in place since 2003, so were available to most of the deaf pupils in the ADPS and our follow up study. Similar arrangements are not available in England, however, where it is only possible to have the paper translated into BSL, and technical terms must not be translated (Joint Council for Qualifications, 2014, p. 64). Very few Scottish deaf candidates actually choose to take their examinations in BSL. As a result of these differences in the way examinations operate, the achievement of deaf pupils who use BSL may have been better in Scotland than in England.

Summary

Issues which were identified as an important gap to explore based on the literature review included socio-economic status, because it was not consistently reported on in deaf education studies and it has a very important influence on the achievement of all pupils in Scotland. Although there is already good evidence that precise level of deafness category is not important in educational outcomes for deaf children, the research team wanted to explore whether this extended to mildly deaf children as this group was well represented in the ADPS database. We were also interested to see how the first generation of cochlear-implanted children were achieving at secondary school, as the ADPS database gave us an opportunity to track this group.

Method

Sample collection and inclusion criteria

The ADPS database contains 2,086 valid records, of which 1,607 (ADPS S4 population) had reached at least S4 (16 years of age) by the end of the academic year 2011. We decided to focus on school achievement in public examinations in the fourth year of secondary education in Scotland because after this point S4 pupils may choose different pathways and leave to find work, go to college, or stay on at school. As a consequence this is the final school year where the whole cohort will be educated together.

A data sharing agreement was made between the Scottish Qualifications Authority and the University of Edinburgh, School of Education. The exam board was able to provide the research team with SQA examination results for 981 deaf pupils of the ADPS S4 population (61%). Preliminary analyses show that in terms of deafness category and additional disability, the group of pupils for whom the research team held enough information to ask SQA about results was representative of the wider ADPS S4 group.

The SQA tariff score allows comparisons between different types of qualifications. A higher tariff score represents a better achievement at school. Appendix 3.2 shows how we found the sample of 540 pupils who are reported on in this chapter.

Representativeness of the sample

The research team checked how representative the 540 verified S4 pupils with SQA examination results were compared to the ADPS S4 population of 1,604. Table 1 below shows that there are some significant differences between them.

Table 1
Comparing the 540 pupils with the ADPS pupils

Factor	*Was there was a significant difference between the 540 S4 pupils and the wider ADPS population?*
Gender	No
Age	Slight: pupils from recent years, i.e. younger, more likely to be in SQA sample of 540.
Socioeconomic status	No
Deafness category	Yes: there were significantly fewer profoundly deaf pupils in SQA 540 sample.
Additional disability	Yes: significantly fewer in SQA 540 sample had an additional impairment.

Preliminary analyses indicated that in terms of age, degree of hearing loss, and socioeconomic status the group did not differ significantly from the wider ADPS S4 group, but fewer of the 540 individuals had additional disabilities. We therefore need to be cautious about commenting on findings from the SQA analysis group, as in some respects they cannot be applied to the wider group of deaf young people. Socio-economic status, age and gender, however, do account for much variation in educational achievement, and as we have seen from the literature reviewed, deafness category is not as important as expected.

The tariff score

Scottish Government publications on SQA attainments use tariff scores in order to compare different types of qualifications. The tariff score is the sum of points obtained by a pupil for each award reached until a determined point in time.

Based on this scale the tariff score until S4 i.e. the sum of tariff points of awards gained before and the same year as the pupil was in S4 was calculated for each pupil.

SCQF levels

All Scottish public examinations have been levelled on the Scottish Credit Qualification Framework scale (SCQF, 2014). For each of the 540 pupils, we calculated the number of qualifications obtained at a certain SCQF level up to

and including S4. Until 2014 pupils in Scotland took Standard Grades in S4, but there was a wide range of qualifications available.

Findings and Discussion

Investigating the effect of deafness category on tariff score

First we report the differences in tariff score between the different deafness categories within the SQA analysis group. The mean tariff score by deafness category is illustrated in Figure 14 below. The descriptive statistics show a gradient of achievement from pupils with CIs as the nearest to the All Scotland means; pupils in the moderate, severe and profound categories perform least well, and at similar levels. The results for the unilateral group should be treated with caution, as it is a very small group (n=17). Despite being a much bigger group (n=144), the mild group also has a very large tariff score range.

Figure 14
Mean Tariff Score by Deafness category

SQA analysis group n= 499, All Scottish pupils n= 59,936 (weighted average across 2003-2010)
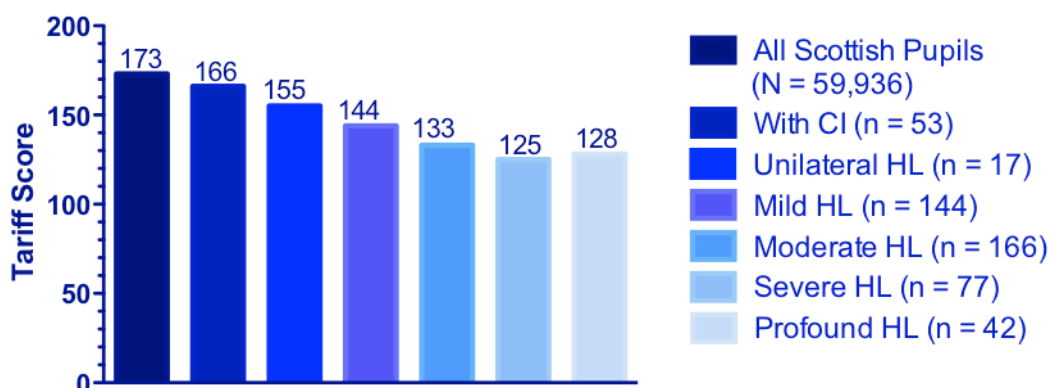
We then consider how significant these apparent differences actually are. There is a statistically significant difference in tariff scores between deafness categories[10] and we found significant difference between pupils with a CI and pupils in the severely deaf category. Pupils with a CI had a significantly higher tariff scores. [11]

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[10] $F_{(5, 107.27)} = 2.58$, $p < .05$. This effect was found by calculating a one-way Analysis of Variance (ANOVA).

[11] Pupils with a CI have higher tariff scores (M = 166.38, SD = 74.12) than pupils in the severely deaf category (M = 125.40, SD = 67.94). The effect size for this significant effect was d = .58.

Investigating the effect of deprivation levels on tariff score

The socio-economic status of the pupils, is significantly related to their achievement at school, measured by the tariff score[12]. After controlling for the effect of the socio-economic status, the deafness category of the pupils has no significant effect on their tariff score.[13]

There is a significant relationship between socio-economic status (SIMD) and tariff score[14]. We found significant differences between pupils from families with a low socio-economic status and pupils from families with a high socio-economic status. For example, pupils from the most deprived decile have a mean tariff score of 112.7 whereas pupils from the least deprived decile have a mean tariff score of 204.4.[15]

Figure 15 below illustrates the strong relationship between school achievement and socio-economic status for the deaf pupils in the study. It is also relevant that the most deprived 50% of deaf pupils seem to have uniformly depressed tariff scores compared to the deaf pupils from the more economically advantaged 50% of the population. It could be that additional support from school counteracts the effects of poverty (see also Yoshinago-Itano et al., 1998)

Figure 15
Mean Tariff Score plotted against Deprivation Decile of Deaf Pupils (n=370)

Figure 16 below compares the mean tariff score by five quintiles of the SIMD with the distribution of deaf and hearing children's tariff scores at the end of S4. The means show that both deaf and hearing children's tariff scores are reduced by the effects of poverty, but that there is still a gap in the mean score at all levels of socio-economic status. The gap is smallest for the most deprived quintile. The gradient of the deaf pupils' line in the range of the most deprived 60% is not as steep as that for the whole population. One possible explanation could be the mitigating effects of early family support and additional support at school for the deaf group.

Figure 16
Comparison of Mean Tariff Score by 5 Socio-economic Quintiles for Deaf and Hearing students by S4
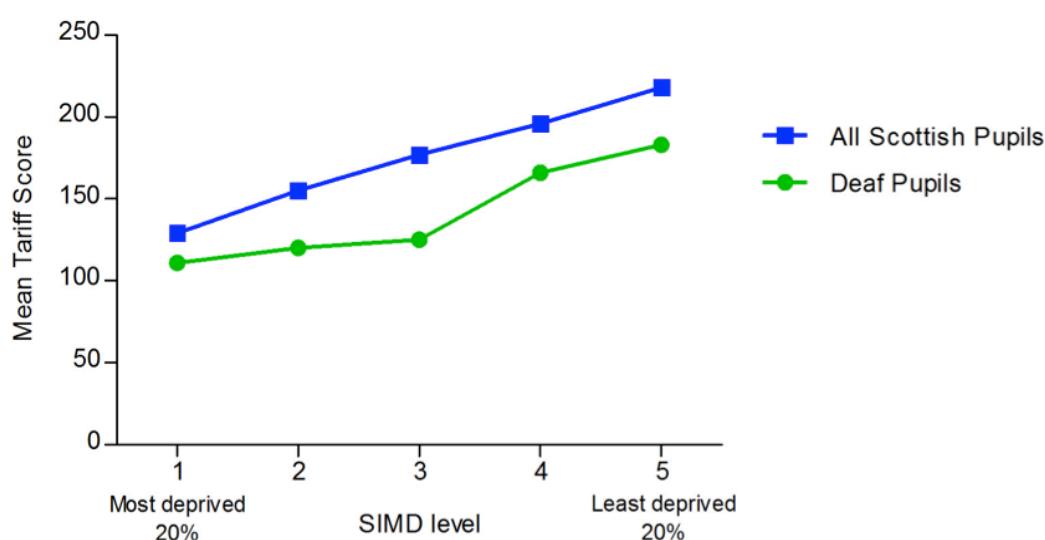
Deaf Pupils with S4 examination results and SIMD information, n= 370 Weighted average across 2004-2010 of all Scottish pupils, N = 59,258

The above is in keeping with findings of other UK based research (e.g. Croxford, 2009; Powers et al.,1998). We built on the findings of Powers (2003), who found that degree of hearing loss in the range moderate to profound was not strongly associated with academic success at the age of sixteen. The present study extended the range to mild and includes the CI group. Long-term results of pupils with CIs were not available in Powers' 2003 study. Our results confirm that socio-economic status may be an important influence on academic achievements at this age for all deafness categories.

Investigating whether pupils in some deafness categories are entered for more or fewer examinations

Powers' (2003) research indicated that pupils in the profoundly deaf category are likely to be entered for fewer qualifications, which negatively impacts on their tariff score. It is common in secondary schools for a deaf pupil to be

exempt from one timetabled option in order to provide specialist teacher support in the other subjects.

To answer the question whether pupils from different deafness categories are entered for different numbers of examinations an ANOVA (n = 482) was conducted with the deafness category (grouped in 3 categories) as the independent variable and the number of examinations entered for as the dependent variable. Crucially we found a significant relationship between the deafness category of a pupil and the number of examinations a pupil is entered for.[16]

There was a significant difference between pupils with CIs and pupils with a severe or profound hearing loss ($p < .05$). As shown in Table 2 below, pupils with a CI were entered for more examinations than pupils with a severe or profound hearing loss.

Table 2
Three deafness categories by number of examinations entered and tariff score

Deafness category	N	Mean number of examinations entered	Standard deviation	Mean tariff score
Cochlear implant	53	7.2	1.8	166
Mild and Moderate	310	6.8	2.5	138
Severe and Profound	119	6.3	1.9	127

In comparison, the population of all Scottish S3 and S4 pupils were entered on average for 7.7 National Qualifications up to and including the S4 year (SD= 1.6).[17] Table 2 suggests that the number of examinations entered may have contributed towards the level of the tariff score, as Powers (2003) suggested.

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[16] $F_{(2, 147.3)} = 4.42$, $p < .05$.
[17] Scottish Government roll figures 2004-2010; average N = 62,822.

Investigating the amount of support received in period 2000-05 and deafness category

The present study collapsed many of the ADPS categories and counted all types of support which pupils received during the period 2000-2005, whether from health, education or social services, into a weekly support figure per pupil measured in hours (See Figure 17 below). A one-way ANOVA was constructed of average hours of support per week by deafness category. We found a statistically significant difference between groups.[18]

Figure 17
Mean hours of support per week from all support staff by deafness category
(n=369)
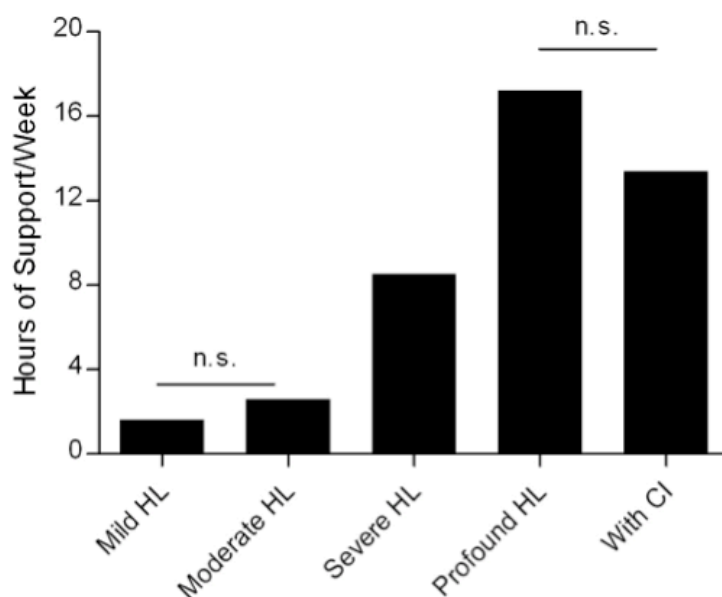
For all other differences p ≤ .05

Table 3
Mean total hours of all support per week by deafness category

Deafness category	n	Mean hours of all support	Standard deviation
Mild	119	1.6	4.4
Moderate	133	2.6	5.5
Severe	54	8.5	8.0
Profound	29	17.2	11.2
CI	34	13.4	9.3
Total	369	5.3	8.3

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[18] Since the assumption of homogeneity of variance was not met (Levene's $F_{(4, 364)}= 30.78$, $p < .001$), the Welch's adjusted F ratio is being reported. Significant difference as determined by the one-way ANOVA (n = 369), $F_{(4, 95.12)} = 30.96$, $p ≤ .001$

There were statistically significant relationships between the amount of support and the deafness category, except for the mild versus moderate groups and the profoundly deaf versus the CI group.[19]

These relationships were also true for the amount of support provided by teachers of deaf children per week and the deafness category[20] (see Figure 18).

There were statistically significant relationships between the amount of support from teachers of deaf children and the deafness category, except for the mild versus moderate groups and the profoundly deaf versus the CI group.

Figure 18
Mean hours of support per week from teachers of deaf children by deafness category
(n= 417)
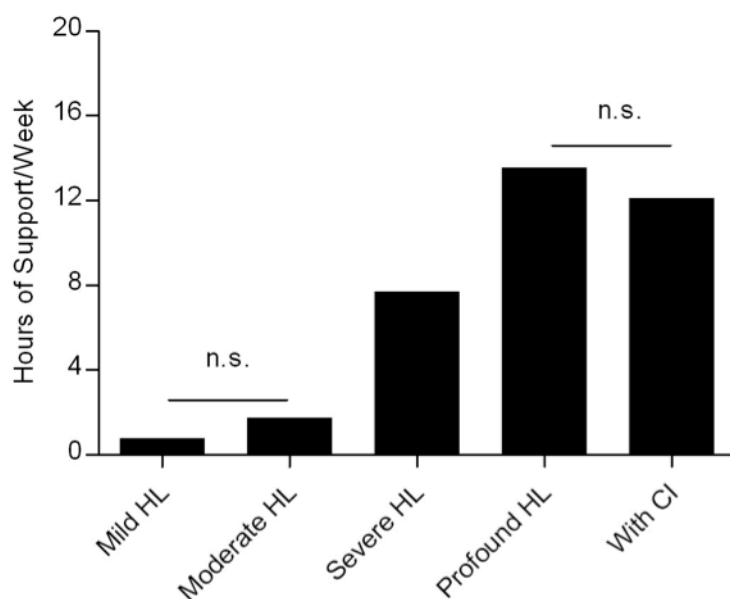
For all other differences $p \leq .001$

Fortnum et al., (2007) found that the total number of support hours for pupils with CIs and profoundly deaf groups was the same (12.8 hours per week), but the pupils with CIs had less time from teachers of deaf children, so the cost of their support was cheaper. Our results show significantly more support per week for both groups compared to the other deafness categories and no statistically significant difference between the number of hours' support from a teacher of deaf children between these two groups. For this first cohort of

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[19] Shown by post-hoc tests using Bonferroni procedure.
[20] A one-way ANOVA (n = 417) was constructed of average hours of support per week by deafness category.

implanted pupils support services in Scotland may have been cautious because how the CI group would fare academically or socially in school was unknown.

It is worth highlighting the small amount of weekly support mildly and moderately deaf pupils receive from specialist teachers of deaf children. It maybe that mildly deaf pupils that are identified have more support needs than those who remain unidentified.

Investigating the relationship between passes in English at different SCQF levels and deafness categories

The Standard Grade (SG) examinations Scottish pupils take in and leading up to S4 include English, which may be passed at SCQF level 3, 4 or 5. Level 3 means Foundation Standard Grade, achieved by 94% of the S4 year group. Level 4 means General SG, achieved by 90% of the S4 group. Level 5 means Credit SG, achieved by 41% of the S4 year group.[21] So for the whole school population it is much easier to achieve SCQF level 4 than level 5.

Standard Grade SCQF Level 3 reading involves straightforward passages relating to personal interests and showing a basic understanding of the author's purpose. Achievement at SCQF Level 4 means reading with fairly good understanding, passages which are still quite straightforward and related to the candidate's likely interests. At SCQF Level 5 reading involves texts which come from other cultures, times or places so that the context is not necessarily familiar to the candidate and there may be a much broader vocabulary used (SQA, 2012). Figure 19 below shows that all categories of pupils find Level 5 challenging. SCQF Level 4 is the level expected for pupils in S4. However, SCQF Level 5 English is often required by schools for progression to Highers, and is an important qualification to allow access to university.

Figure 19 shows the passes by SCQF level and deafness category at S4. There is no significant association between the category of deafness and whether or not pupils pass English examinations at SCQF level 3 or better.[22]

In summary, young people with all levels of deafness from mild to profound and including children with CIs experience lower scores than the general hearing population in English by the time they finish S4. The precise category of deafness makes no significant difference.

One implication of this finding could be that teachers of deaf children should move away from the medical perspective on deafness common in the UK and not attach so much importance to deafness category. This could result in a

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[21] Data about All Scottish Pupils S4 English from Education Analytical Services Scottish Government Education Directorate. The national figures given here are weighted averages from 2003-2010.

[22] χ^2 (4) = 7.40, *p*> .05. However, the standardized residuals of 2.3 for profoundly deaf pupils indicate that profoundly deaf pupils often (26%) fail to pass English at SCQF level 3 than pupils from other deafness categories (weighted average: 12%).

reappraisal of how support and access arrangements are decided, especially for studying English.

There are several reasons why the English achievement of deaf pupils is restricted across the deafness range: a shallow depth of vocabulary knowledge and less breadth leading to poor reading comprehension is likely one important reason. Another is likely to be poor classroom and school acoustics, affecting nearly all deaf children in the UK. There are implications for governments and teachers, discussed further in Chapter 5.

Figure 19
Passes in English by SCQF level and deafness category in S4
(Deaf categories n= 482, All Scottish pupils N= 59,936 weighted average for
2003-10)

English SCQF Level 3 or better
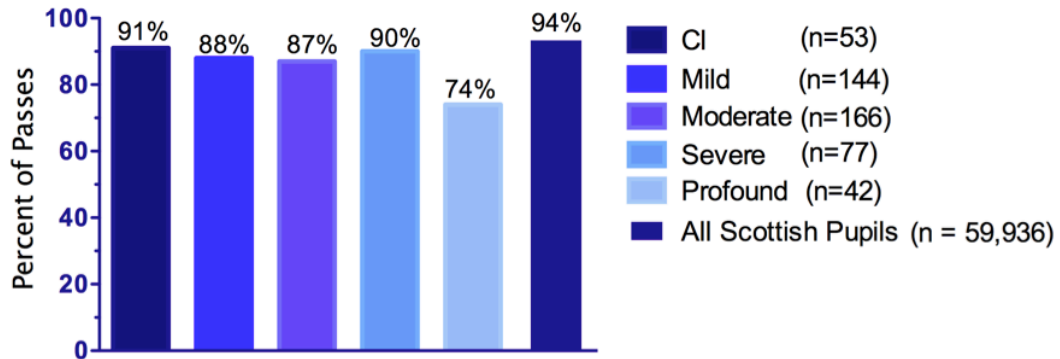
English SCQF Level 4 or better
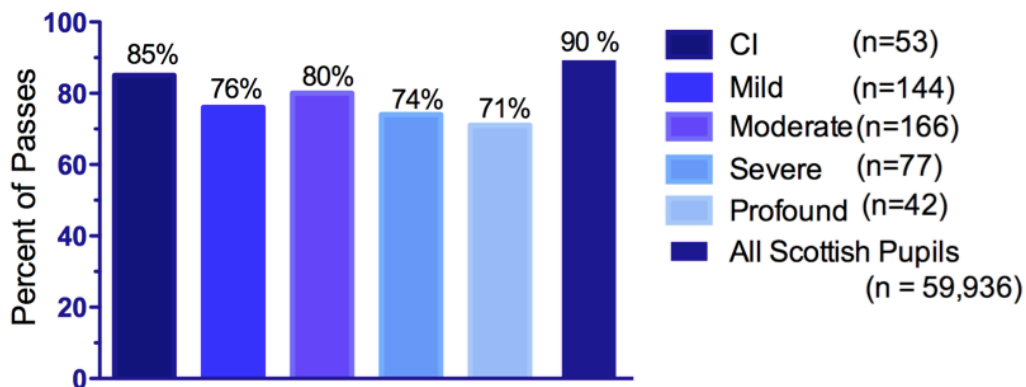
English SCQF Level 5 or better
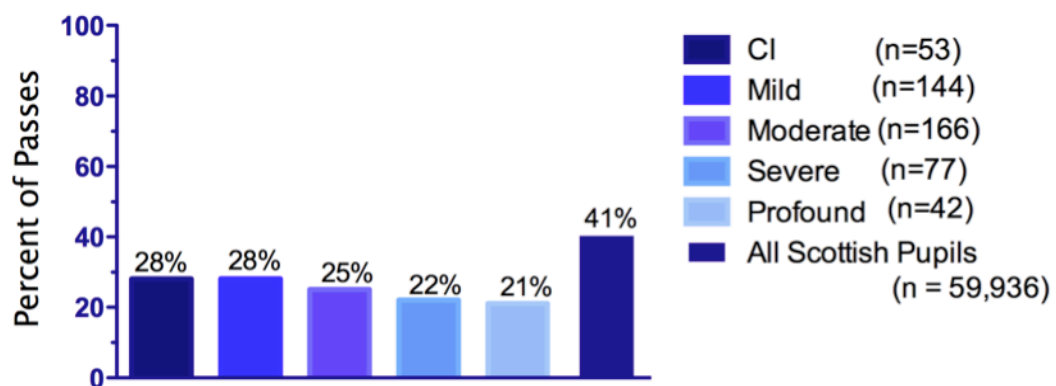
Data about All Scottish Pupils S4 English from Education Analytical Services Scottish
Government Education Directorate, weighted average for years 2003-2010.

Passes in five or more awards – investigating Government benchmarks

The Scottish Government monitors the progress of pupils at S4 in relation to a number of key indicators:

- The percentage of pupils achieving SCQF level 3 or better in English and Maths.

- The percentage achieving 5+ awards at SCQF 3 or better.

- The percentage achieving 5+ awards at SCQF 4 or better.

- The percentage achieving 5+ awards at SCQF 5 or better.

Deaf pupils perform less well than hearing pupils on all of these indicators, although the gap is most evident at SCQF level 4 (See Figure 20 below). Pupils with CIs are marginally more likely to achieve the targets at level 3 and 4 than pupils in other deafness categories.[23]

Figure 20
Percentage of passes at different SCQF levels at the end of S4
(Deaf pupils n = 499; All Scottish pupils N= 53,246 weighted average over 2002-10)

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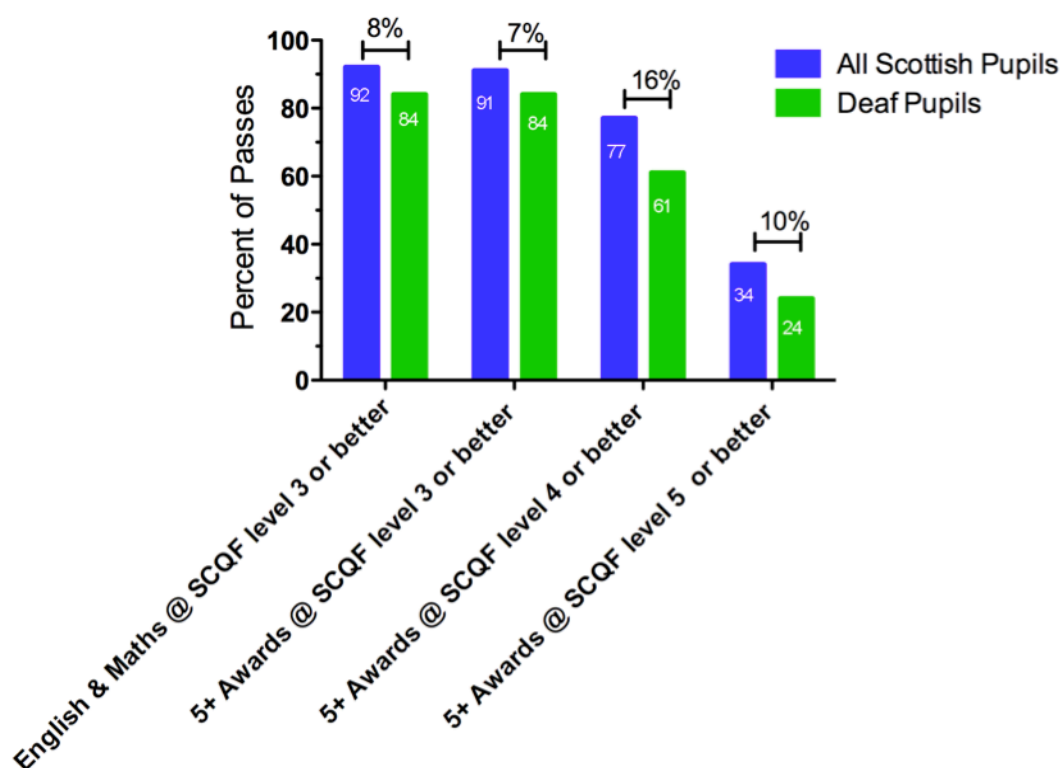
[23] At SCQF level 3 the standardized residuals of -1.9 for pupils with CI indicate that pupils with a CI (6%) obtain 5+ awards at SCQF level 3 more often compared with pupils from other deafness categories (weighted average: 17%). For passes at SCQF level 4, the standardized residuals of -1.7 for pupils with CI indicate that pupils with a CI (25%) obtain 5+ awards at SCQF level 4 more often compared with pupils from other deafness categories (weighted average: 42%).

Comparing examination results from countries within the UK is challenging, because the range of qualifications on offer and how they are counted towards national benchmarks differ considerably. The most comparable results from the period in England are from the National Sensory Impairment Partnership survey (NatSIP, 2011).[24] The Department for Education (DfE) figures for 2009-10 showed 53% of all pupils achieving 5+ awards at GCSE Grades A*-C in England; the rate for deaf pupils collected by NatSIP was 46% (NatSIP 2011, p. 3).[25] In Scotland there was stability in the SCQF Level 5 rate, but there was considerable inflation in England because of other changes to examinations and the education system.

Tariff score by gender

Previous research for the whole school population in Scotland and the UK, as well as deaf pupils has noted there is a gender gap in public examinations, with girls out-performing boys (Croxford, 2009). Figure 21 shows that there is a difference in the median and the distribution of the tariff scores between deaf male and female pupils.

However, the gender gap is not statistically significant. Gorard and Smith (2004, p. 212) argue that there 'is currently no sizeable or consistent gender gap at the lowest level of attainment in any public examination for any subject for any Key Stage'. Their evidence from England suggests that where there are differences between boys' and girls' achievement these are likely to have been influenced by the introduction of more coursework assessments in exams at secondary level.

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[24] The proportion of deaf candidates who achieve 5+ qualifications in England at Grades A* - C is often taken as equivalent to Credit Level at Standard Grade in 5+ subjects.

[25] Only 41 out of the 152 Local Authorities responded to the NatSIP survey. This survey reports on data collected for the year 2009-10, whereas the results reported in Figure 25 above were from the years 2002-2010.

Figure 21
Median Tariff Scores of S4 pupils by Gender
(n deaf pupils = 499; N all Scottish pupils = 53,246 weighted average over 2002-10).
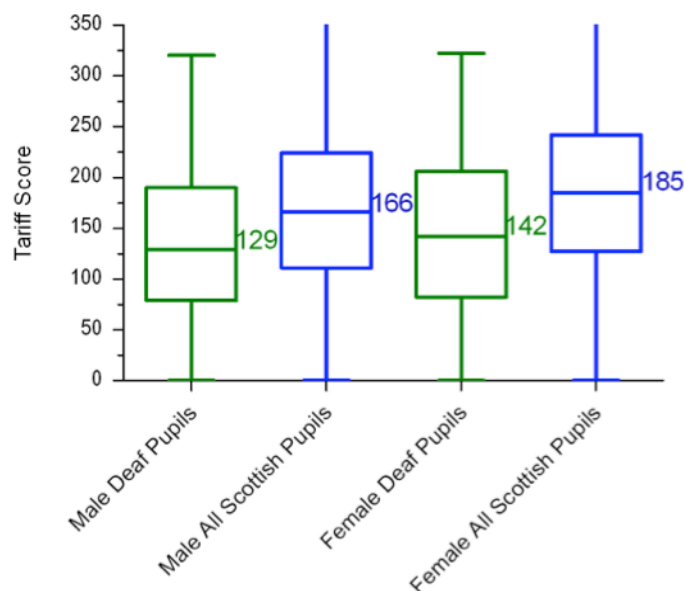
Tariff score by age of pupils in S4

English studies of educational attainment find that older children do better (Crawford et al., 2010). However, in Scotland the tariff score data consistently show that pupils over the age of 15 in S4 gain lower tariff scores than 15 year olds, and pupils younger than 15 achieve better scores. There could be several reasons for this, for example in Scotland children start school between the ages of 4.5 and 5.5. Children with difficulties may be held back to start in a later year. Younger entrants for examinations may be a sub group from S3 who are particularly talented and who are being entered early. In our study, deaf children who were older than expected for their school year did less well in public examinations (M=116.2, SD=78.1) than the expected age group (M=144.9, SD=79.3). This difference is significant.[26] Figure 22 shows the difference in the median and the distribution of the tariff scores between the different age groups.

The recent 'Growing Up in Scotland' longitudinal survey found that 9% of pupils entering primary school are over 5.5, i.e. older for their year than expected (Scottish Government, 2012b). If this level applies to S4, then we would expect about 9% of pupils entering S4 to be older than 15.5. The weighted average over the period 2002-10 for the population of Scottish pupils resulted in 6% of the S4 pupils being older than expected. In contrast we found that the proportion of deaf pupils who are older than expected in S4 was much higher at 21%. This could be due to parents or schools deciding to hold deaf children back a year at some stage in their school career. There is

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[26] Independent samples t test, t(497)=3.33, p<.001

a possibility that many of these children started school late because there were medical issues or young children's spoken language was not developing as expected. This might explain why they were held back and the resultant impact on school achievement (see Tymms et al., 2005; Squires et al., 2012).

Figure 22
Median Tariff Scores of S4 Pupils by Age
(n deaf pupils = 499; N all Scottish pupils 53,246 weighted average over 2002-10)
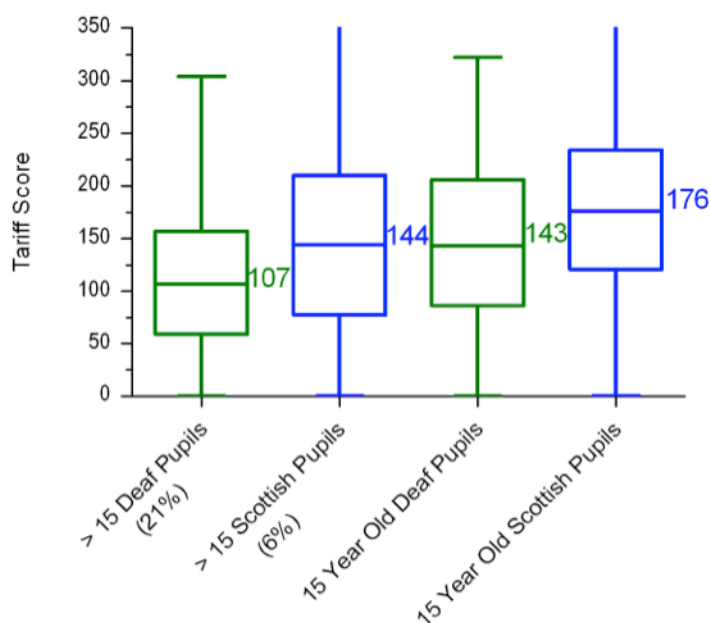
Investigating tariff score by Additional Support Needs

We excluded results from all special schools because Scottish Government look at S4 pupils with additional support needs separately. The present study therefore used ADPS study data to re-code a new variable: having Additional Support Needs.[27]

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[27] When records existed in ADPS for an Individual Educational Programme (IEP) *or* a Record of Needs, *or* attendance at a special school then the pupil was coded as having an additional support need (ASN). Schools were then manually checked to establish whether they were special schools. If the ADPS record recorded no to two out of three of these criteria, the pupil was coded as *not* having ASN. Given the extent of missing data in ADPS from cohorts in S4 in 2008-9, we compared the tariff score median with the whole of Scotland for 2003-2008 period.

Figure 23   Median Tariff Scores of S4 pupils by Additional Support Need
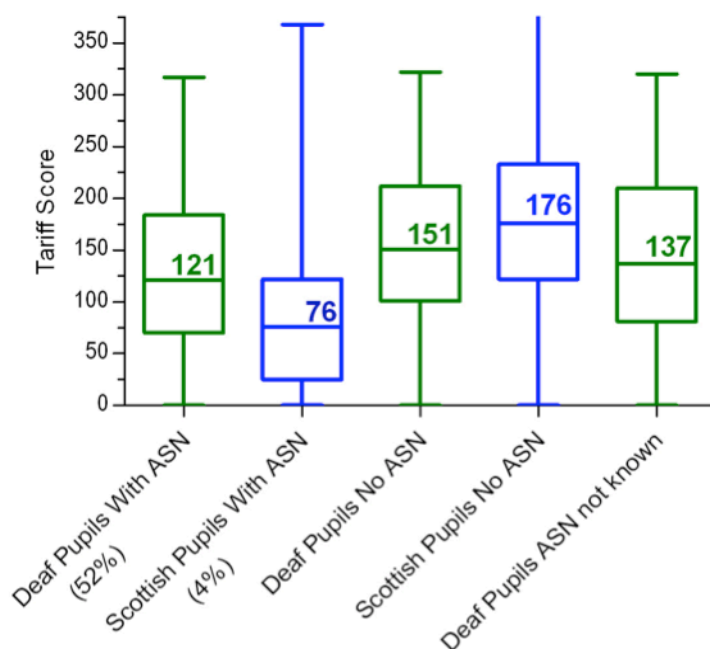(n deaf pupils = 499; N all Scottish pupils 60,492 weighted average over 2003-8)

Figure 23 shows a very low median tariff score of 76 for all Scottish pupils with Additional Support Needs, which is because other types of impairment, such as global learning delay or autism, have a much more negative effect on achievement scores than deafness. Approximately half of the deaf pupils did not have a record or IEP and their median tariff is much higher. There is considerable variation across Scotland about the proportion of children with additional support needs with a Record of Needs or an IEP, which makes the Additional Support Needs (ASN) category less useful.

Tariff score by additional disability

In Figure 24 below, the deaf population has an additional disability, whereas the all-Scotland group has one or more disabilities. The effect on attainment of having one or more disabilities in addition to deafness is serious. Only 1.3% of Scottish pupils are recorded as having a disability, using the definition of impairment in the Equality Act, 2010 and from the Education Analytical Services Scottish Government Education Directorate.

Figure 24
Median Tariff Scores of S4 pupils by (Additional) Disability
(n deaf pupils = 499; N all Scottish pupils 59,786 weighted average over 2005-10)
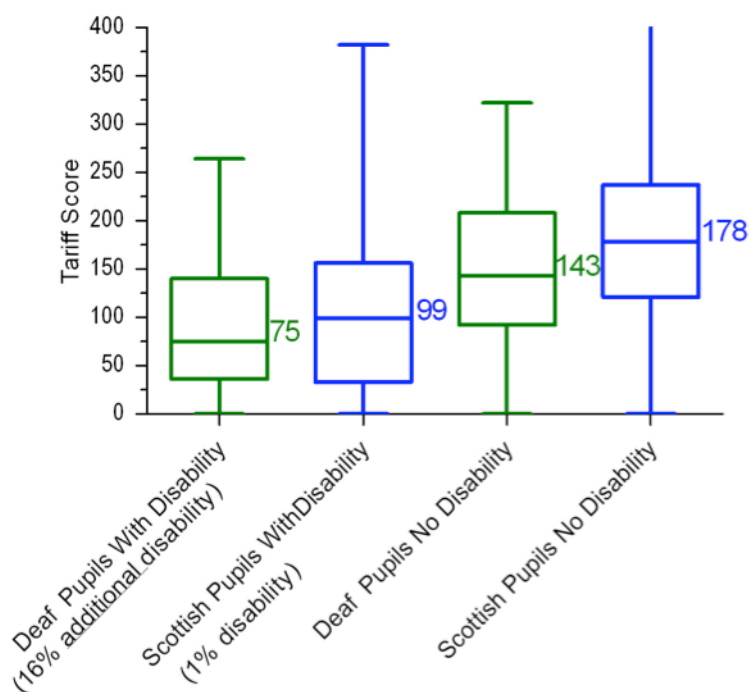
We found deaf children with an additional disability did less well in public examinations than deaf children without an additional disability and this difference was significant.[28] A comparison of Figures 23 and 24 suggests that recording additional disability is a more meaningful measure than the label ASN. Almost any deaf child may be described as having ASN, leading to a median Tariff Score of 121, not very far below the median for the group without ASN. In contrast, having an additional disability has a significant effect on educational attainment as shown by the depressed median tariff score of 75 compared to 143.

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[28] Additional disability: (M=85.7, SD=64.9) compared to deaf children without an additional disability (M=147.9, SD=78.3): t(477)= -6.52, p<.05

Summary of Findings from Chapter 3

(RQ1) How do the academic, social, and vocational outcomes for deaf children compare to those in the wider population of children / school leavers in Scotland?

- Deafness across all categories, including mild, moderate and pupils with a cochlear implant has a negative effect on achievement.

- Socio-economic status has an important relationship to the outcomes of deaf children's achievement, as it does for the whole population. Deaf children from the more deprived half of the socioeconomic spectrum perform better than might be expected, but the reason for this is unclear. It could be due to the mitigating effects of early additional support.

(RQ2) What patterns of intervention, support, and educational methods lead to the most successful outcomes for deaf children?

- Severely and profoundly deaf pupils were entered for fewer examinations than the pupils with a CI between 2001 and 2011.

- Deafness has a negative effect on deaf pupils' English grades for all categories of deafness, including mild.

- Deafness category appears to be at least partly the basis on which support was allocated to pupils in Scotland during the period of the ADPS study (2000-2005).

- There is no significant difference between deafness categories in the percentage of pupils who have five passes at SCQF levels 3, 4 and 5.

(RQ4) What are the characteristics of deaf young people in these various groups?

- There are significant differences in tariff score between pupils with cochlear implants and those who are severely deaf. But after controlling for the effect of the socio-economic status, the deafness category of the pupils has no significant effect on their tariff score.

- The mean tariff score for deaf boys and girls at S4 differs, with girls out-performing boys, although the achievement gap is not statistically significant.

- Deaf pupils who are too old for their year, possibly because they have been held back at some stage in their school career, do significantly worse in examinations than pupils who are in the correct year group.

- Deaf pupils with additional support needs do not achieve as well as those without.[29]

- Deaf pupils with additional disabilities perform significantly worse than those without.

Limitations

The original ADPS database had a number of limitations which made it difficult to work with during the Achievement and Opportunities for Deaf Students study (2010-13). The ADPS team had decided to collect a great deal of information about each pupil, hoping then to be able to examine many possible variables which might influence achievement. Although the ADPS pupil questionnaire had a very good response rate, the completion rate for certain fields such as ethnicity or additional disability was poor. Teachers wrote in comments which were then entered as text into the database and no coding book existed.

The large number of fields and the way data were entered as text fields rather than as codes meant that the present project team had to spend many months recoding and simplifying the dataset with coding rules. Rules were recorded carefully, but nevertheless a few margins of error were likely. For example the additional disability field was variably completed. Teachers were given clear guidance during the ADPS project about how to record diagnosed or undiagnosed disabilities, but for other issues such as emotional and behaviour difficulties guidance was lacking. The DAS research team made decisions about coding in relation to the severity of additional impairment which may be incorrect. We simplified the very complex information collected about language use at home and school.

Summary

In this chapter we focused on academic outcomes as measured by SQA examinations taken at the age of 15 or 16 in Scotland in year S4. We have established that the effects of poverty have a profound impact on deaf children's achievement. While some services for deaf children have in place helpful schemes to support families living in poverty, deaf education practitioners have tended ignore this important issue.

Deaf children from the poorer half of the school population achieve less than their hearing peers from the same socio-economic background, but the impact of poverty on their achievement appears to be less than expected (see Figure 17). This is possibly because of the mitigating effects of additional support and warrants further exploration.

We have already highlighted the fact that there is an important negative effect of deafness on academic outcomes at this age, and that the differences between all categories of deafness are not significant. This builds on previous

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[29] However, the ASN category is not very robust.

research findings (e.g. Powers, 2003), and now it is possible to include new categories, i.e. pupils with mild deafness, or at least those mildly deaf pupils who are supported by school services in this assessment.

We also identified patterns of support from teachers of deaf children which suggest that allocations are largely based on deafness category. Given the finding that all levels of deafness have a similarly serious effect on educational achievement, this practice is not justifiable. In Chapter 5 we discuss further implications of the research, relating to the type of support which could be provided to mildly and moderately deaf pupils in mainstream schools.

Chapter 4

Deaf young people's views of their education and transition to adult life

The project made contact with as many as possible of the deaf young people from the first ADPS study who had now left school. We aimed to find out about their academic success and achievements, whether they were in work, what their experience of college, university and training were and their well being as young adults. Our intention was to compare our findings with information already known about all young people in the whole population of Scotland.

It was also important to include particularly vulnerable deaf young people who had left school but who were not in education, employment or training, the group called 'More Choices, More Chances' in Scotland. We aimed to establish if this sample of deaf young people was a similar proportion of the age cohort for the wider population. Given young people in this NEET category often experience difficulties in finding work and establishing an independent adult life it was crucial to find out more about this 'hard to reach' group. Finally, we wanted to ask deaf young adults to reflect on their experience of education, and gather their views on the support they had received.

The Research Questions we are addressing in this chapter are:

(RQ1) How do the academic, social, and vocational outcomes for deaf children compare to those in the wider population of children / school leavers in Scotland?

(RQ2) What patterns of intervention, support, and educational methods lead to the most successful outcomes for deaf children?

(RQ3) What proportion of deaf school leavers in Scotland are not in education, employment or training (NEET)?

Transition to adulthood for deaf young people: the literature

Changing ideas of transition and identity

The idea of what transition to adulthood involves is changing. Traditionally, it has been seen as a period of movement between longer and more stable periods of settled activity as an age cohort moves from school to college, and some to higher education then to work, moving out from the parental home and starting a family. However, studies over the past ten years have challenged the linearity of this process, arguing that transitions are rarely so one-way, that they are much more individualized and that they occur over a longer time-period (Ecclestone et al., 2010). As young people move, in a less certain way than in the industrial past, they experience setbacks and make choices, but within limits imposed by their circumstances. They *achieve*

agency, as Ecclestone et al. argue; that is, they have some choices but these are constrained by social and economic conditions.

Valentine and Skelton (2007) highlight the fact that the young people may have quite different definitions of independence than the sociologists who study them. Their study assumes that the journey will include a growing understanding of how the deaf young person fits into a Deaf community, partly because of the group of deaf young people they interviewed. Ladd (2003) has explored the idea of a journey to Deafhood, as deaf young people find out individually how they fit into a wider Deaf Nation, or group identity.

On the positive side, their identities seem to be less constrained by that tradition's 'Deaf-Hearing' divide, less insular and therefore able to negotiate some new paths and inroads into majority society. These identities have become multiple...' (p. 446).

Listman et al. (2011) discuss different types of 'capital' or social resources which minority communities, such as the Deaf community, offer to assist young people in moving through discrimination and positively adapt to independence as a resilient deaf adult. They neglect the fact, however, that many deaf people may develop an identity, unrelated to sign language or other deaf people.

A study in Cyprus (Hadjikakou and Nikolariazi, 2007) found four types of identity amongst deaf adults: deaf (i.e. who prefer to use speech), Deaf (who prefer sign language), bicultural (who use both sign and speech confidently) and marginal. Identity is explored by McIlroy and Storbeck (2011) in their discussion of a fluid postmodern identity where deaf young people are not defined in an essentialist way by their impairment. Interviews suggested that deaf young people actively chose their identities, finding spaces in between both deaf and hearing cultures and identities and creating dialogue between them. The binary choices which have so dominated life for deaf people in the past between oral methods or sign or between living in a hearing or a deaf world no longer apply: young deaf people can choose several paths, worlds and identities.

Quantitative longitudinal studies

Longitudinal studies pre-date the approaches above and focus on statistical patterns of variables in the data they collect. Lam et al. (1994) questionnaire study included 592 deaf young people and 101 parents who answered on behalf of their grown-up deaf son or daughter. They explored sub-groups of individuals who did not go to college with others who went to college, and compared testing results and related outcomes. This study produced a predictive model on likely outcomes for young people. The significant predictors of success (measured by the attainment of a full-time job) were sex and ethnicity. Significantly being female and having a minority status were associated with less success at transition. In addition, experiencing a mix of academic and vocational courses at secondary school and integrating with hearing children while learning was found to be a positive predictor of success (op. cit., Chapter 5).

Another US study (Bullis et al., 1997) compared a group of 222 hearing young adults with 88 profoundly deaf people who had been to mainstream school and 129 who had been to residential school. Using a highly structured interview, face to face with the deaf participants, they found that there was a marked gender effect, and that women from mainstream education settings had a much higher rate of employment than men from the same setting and than either sex from residential schools.

An important UK study by Powers (2003) drew on data collected in England about 747 deaf pupils over two years. This study raises important issues: that not all deaf children will be supported, and therefore not all reported on by teachers, that the way in which we code examination results affects the results, and how to report on missing data. The measure used for reporting on socioeconomic status was teachers' recording of parent occupation and free school meals entitlement. Occupational coding is complex and the level can be hard to code from a very short description of a job.

Transitions and Higher Education: studies about deaf university students and graduates

As deaf people have increasingly entered Higher Education, there have been studies about their experiences and their transition after university to adult life. Two linked Australian studies (Punch et al., 2007; Hyde et al., 2009) used a questionnaire to explore the views of deaf graduates from Griffiths University in Queensland, the first in Australia to have a comprehensive support service for deaf students. The researchers asked if the deaf students had made themselves known to the support service at university (Hyde et al., 2009) and compared drop-out and achievement rates for those who did and did not declare. They found that the open-ended questions were answered by all respondents and in great detail, which gave useful qualitative views about their university experience. The study on the graduates in the workplace (Punch et al., 2007) had 54 participants, all graduates and 19 of them Australian Sign Language users; they had a wide range of different levels of deafness. Lack of assertiveness in the workplace was a theme from this study; the more assertive graduates obtained the adjustments they needed at work, but many did not ask for them.

A study from Scotland (Brennan et al., 2006) interviewed 22 deaf students, as well as a wide range of disability advisors, teaching staff and assessors for disabled students' allowance. The research explored the experience of deaf students applying, being assessed, studying, working with support staff and socialising at university. They found that there was a lack of awareness from most Higher Educational Institutions of the wide range of needs of deaf students.

A gap in previous research is that the definition of a successful transition has not been sensitive to the voices of the deaf people themselves.

The sample characteristics of deaf people being researched vary greatly between the studies discussed above. The present study contacted a wide range of deaf young people, from those who received support at school every

day to those who were seen just twice a year by support services by using the ADPS database.

These studies informed the way in which research team accessed deaf ex-pupils, the way we designed the bilingual online questionnaire and the analysis of data

Methods used in this part of the research

Using the ADPS database

The ADPS project had tracked every pupil over five years, which meant that pupils entered and left the school system over the period. This was the largest database of deaf pupils in Europe, with records of 2,086 deaf children. Unfortunately the pupils themselves and their parents were not asked for their consent for the data about them to be held, although many parents received newsletters about the project. Significantly, the data were collected by the teachers, not the parents so it is likely that some data may be less trustworthy (e.g. ethnic identity). We aimed to make contact with as many deaf young people as possible represented in the ADPS database to ask permission to use these data and to report on their current achievements.

Developing a questionnaire

In order to access the young people a questionnaire was developed for deaf young people aged 16-28 who had left school. We calculated from the ADPS database that if the oldest pupils still at school were 18 in 2000, by 2010 they would be aged 28. Similarly, the youngest pupil from the earlier project who had left school at 16 could have left in 2010. We calculated that approximately 1,379 pupils from the original study would now have left school.

Questions for the questionnaire were developed from the literature which looked at transitions of young people from school to adult life. The questionnaire was piloted with three young deaf people from the target age group who provided us with useful comments about how to improve the design of the website, and made suggestions for streamlining the questionnaire. The survey started on 21.9.10 and closed a year later. As an incentive to participate we offered a monthly prize draw for a voucher. The questionnaire is available in written English and in BSL and can still be found online, though it is no longer available for completion (see Appendix 4.1.).

Contacting deaf young people aged 16-28

We used a multipronged approach to contact deaf young people within our target age range. In addition to the Internet questionnaire, we produced a paper version and sent copies with stamped addressed envelopes to the local authority school services across Scotland. These services had made returns to the ADPS research team during 2000-5. School services were often able to identify their former pupils from the details we held. Local authorities were

sent survey packs to send on to last known addresses and we did this twice in order to boost response rates. This yielded 41% of our sample.

Deaf young people from across Scotland completed the survey online, and this provided 30% of the sample. We also set up a Facebook site and put links on the websites of other deaf-related organisations in order to direct people to the online survey. The team also employed three outreach workers to specifically target deaf young people who use BSL in three areas of Scotland: Glasgow, Dundee and Dumfries and Galloway. Two of these outreach workers were deaf themselves with fluent BSL skills and the third was a BSL / English interpreter. The outreach workers were careful to phrase the BSL questions in the same way as they are online. The outreach workers had access to particular venues where Deaf young people met such as a deaf football team or an Asian deaf club. This approach brought in 5% of the sample.

The team asked the National Deaf Children's Society to send the packs out to members who were in the relevant age group (8%). We made a data sharing agreement with Skills Development Scotland (SDS), the national organisation which provides careers and advice for young people moving from school into further education, training or work. As a result we found 5% of the sample using paper questionnaires sent to home addresses of deaf clients of SDS. We also worked with Action on Hearing Loss, a charity which has a project to assist deaf young people into employment (4%). Many of the client group are deaf and have an additional disability, so would perhaps not have responded to a paper survey through the post.

Further strategies to access deaf young people were undertaken (e.g. an article about the survey in Metro, the free daily paper read by many people in Scotland; press releases, and survey packs sent to audiology clinics and the cochlear implant centre). Together these other methods yielded 7% of the sample.


Respondents who were not in the ADPS study

The total number of respondents was 258 of whom 188 were in the ADPS study. An additional 70 respondents regarded themselves as deaf but were not in the original study. These 70 returns from non-ADPS respondents were not analysed further.

The 188 young people reached of the 1,379 deaf young people in the original ADPS study represent 13.6% of the original group. In Appendix 4.2 we discuss how representative this sample was of the wider ADPS population. Although it was representative in terms of age and level of deprivation of the home area, it was not representative in terms of deafness category, additional disability, gender or tariff score. For this particular survey it is not possible to make generalisations about the wider group of all deaf young people in Scotland.

Characteristics of the questionnaire sample

The average age of the respondents was 21, with the oldest 27 years of age. [30] In this group there was a slight over-representation of female respondents (54% vs. 46%). Comparing the SIMD using postcodes for the ADPS period, there is little difference in socio-economic status over time. Most young people had remained in the same family home. Participants were asked about their ethnic origin (see Figure 25). The participants who responded to the School Leavers' survey were more diverse than the general population. [31] The deaf population may have a different ethnicity structure compared to the wider Scottish population because of the higher prevalence of deafness in some minority ethnic groups.

Figure 25
Ethnicity of the deaf young people
(n=185)

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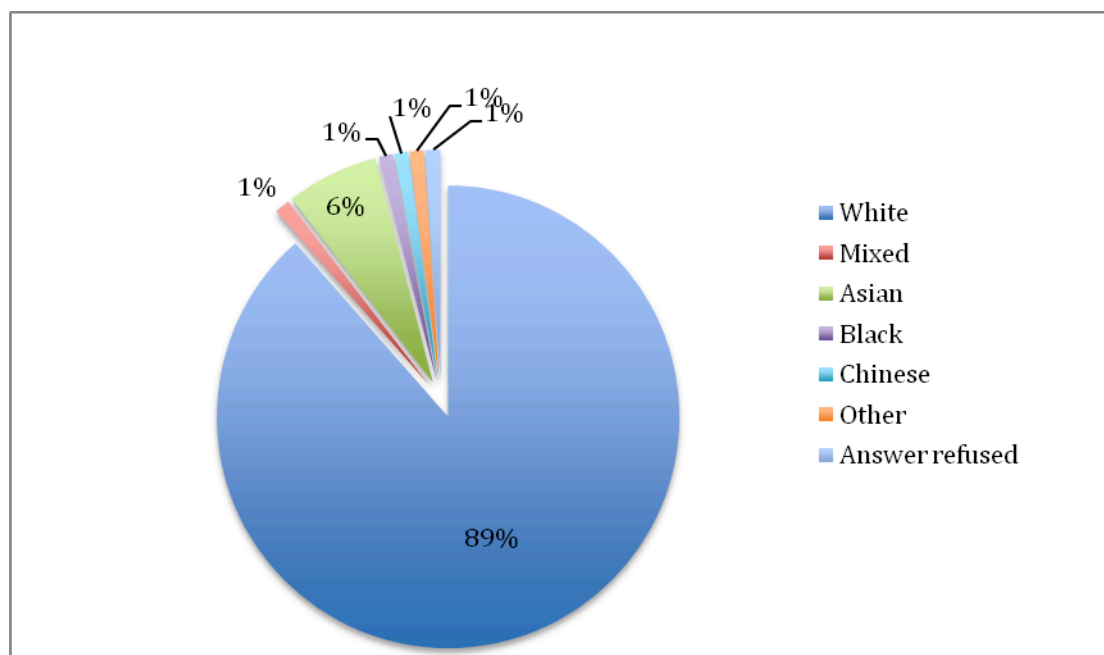
[30] It is possible for 15-year-olds in Scotland to leave school; for example if their sixteenth birthday is in February they can leave at Christmas prior to this.
[31] The results of the 2011 census (Scottish Government, 2013) show a white population of 96%.

School attended

Young people were asked to identify which school they attended last so, using knowledge of the Scottish deaf education system, we were able to classify schools into categories of school for deaf children, resource base in a mainstream school, mainstream school and special school (i.e. for another impairment issue, not deafness): see Figure 26.

Figure 26
Type of secondary school attended by deaf young people
(n=181)
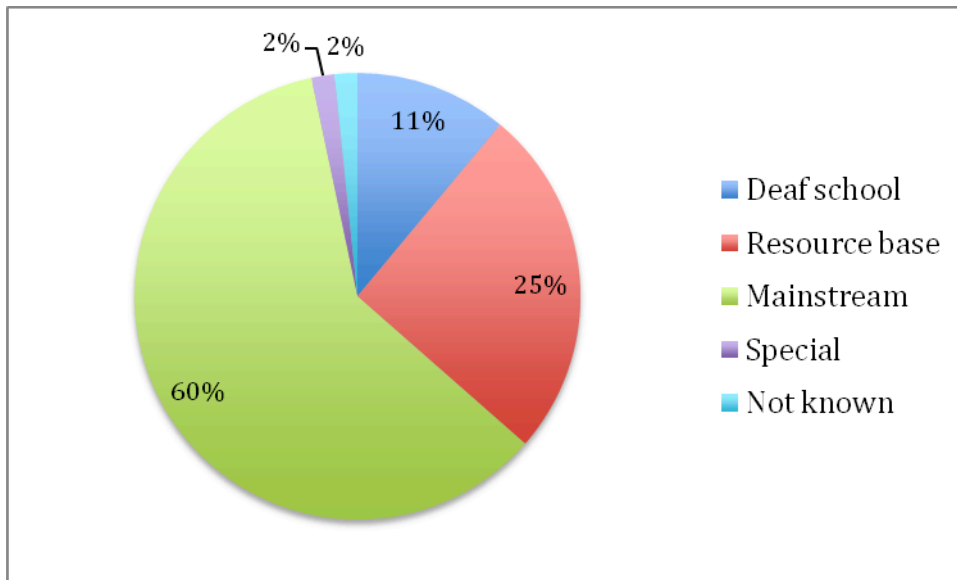
Most local authorities (20/32) in Scotland do not provide a secondary resource base for deaf children so deaf children in these authorities attend their local mainstream school, or sometimes go out of the local authority for their education. This means it is likely that 53% of the deaf population had access to a resource base secondary school within their local authority in 2011. This has consequences when we look in the next section at the language preferences of the respondents' communication preferences.

Figure 27 below shows that the proportion of respondents who prefer some type of signing most of the time is 24%. It is likely that the profound non-implanted group (19% of the respondents) may be particularly represented in the group who preferred BSL.

Figure 27
Communication preferences
(n=181)
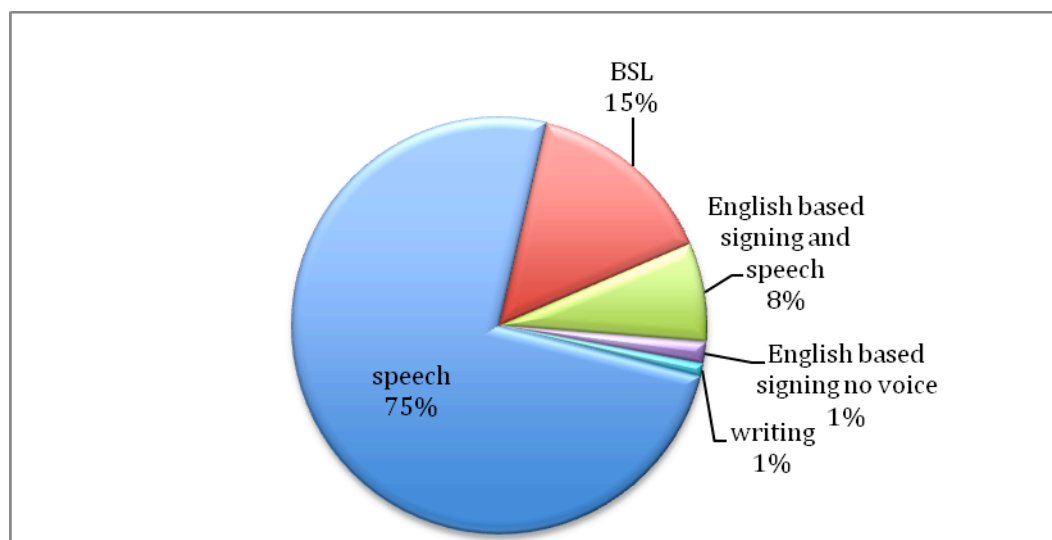
We compared school type with communication preference and unsurprisingly found a strong relationship between going to a deaf school and use of BSL. Young people who had been at mainstream schools with resource bases were most likely to use speech, followed by an English based signing system with speech or BSL.

When we examined results broken down by deafness category, respondents with CIs report that they are scarcely using any sort of signing as their preferred mode. In contrast, a majority of respondents in the profoundly deaf group prefer to use some sort of signing, whether it is BSL or English-based signing (21 of 31 respondents). Deaf young people with CIs who responded to the survey were among the first cohort of children who were offered implants, and implantation often occurred late for them, for example at five years of age. This is now considered very late. Evidence suggests best outcomes for spoken language occur if the implantation occurs before the age of 12 months (Ching et al., 2009) and most paediatric implants occur before the age of two. There is no data available in Scotland at the moment about the proportion of profoundly and severely deaf children who are offered implants.

Additional disability

Figure 28
Combined data on disability from ADPS and School Leavers' Survey
(n = 177)
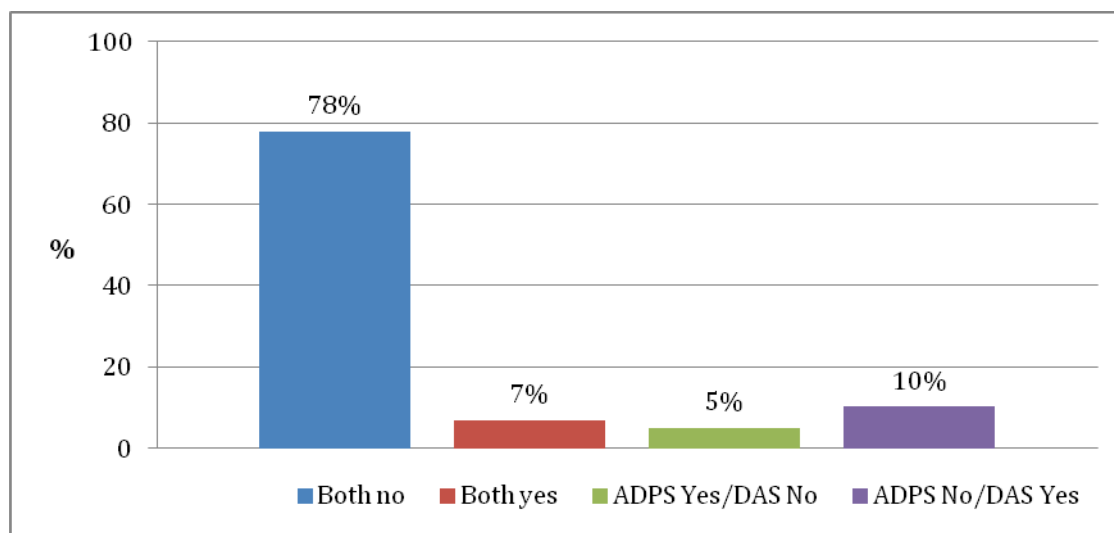
Of the School Leaver respondents, 177 agreed to us using the ADPS data held on them. We established that they were less likely to have an additional disability or learning difficulty compared to the wider ADPS group. In Figure 28 above, DAS is the questionnaire for deaf school leavers. The maximum proportion of additional disability is 22%, but there is disagreement between responses from teachers when the child was young compared to the young adults' own reports after leaving school.

Previous research on the proportion of deaf children with additional disabilities has been patchy. The UK benchmark study (see Fortnum and Davis, 1997) found a prevalence rate of 40%, but the definition of disability included conditions which do not necessarily affect learning, such as eczema. A recent review conducted by the Ear Foundation (2012) found few reliable prevalence studies. The ADPS database indicated that there was a great deal of variation amongst teachers in the way visual impairment was understood; therefore we recoded responses to record significant impairments.

Living situation

Most young people were living at home with their parents (72%), as Figure 29 shows. The older respondents are more likely to have established themselves independently. A small number of 25-28 year olds, 19% of the 185 who responded to this question were more likely to be living on their own or with a partner. Comparison statistics are not for exactly the same age group. The Office for National Statistics (2011) using Labour Force Survey statistics looks at young people aged 20-34 and finds an average of 28% of young people in the UK in this age group living with their parents.

Figure 29
Young person's living arrangements
(n=185)
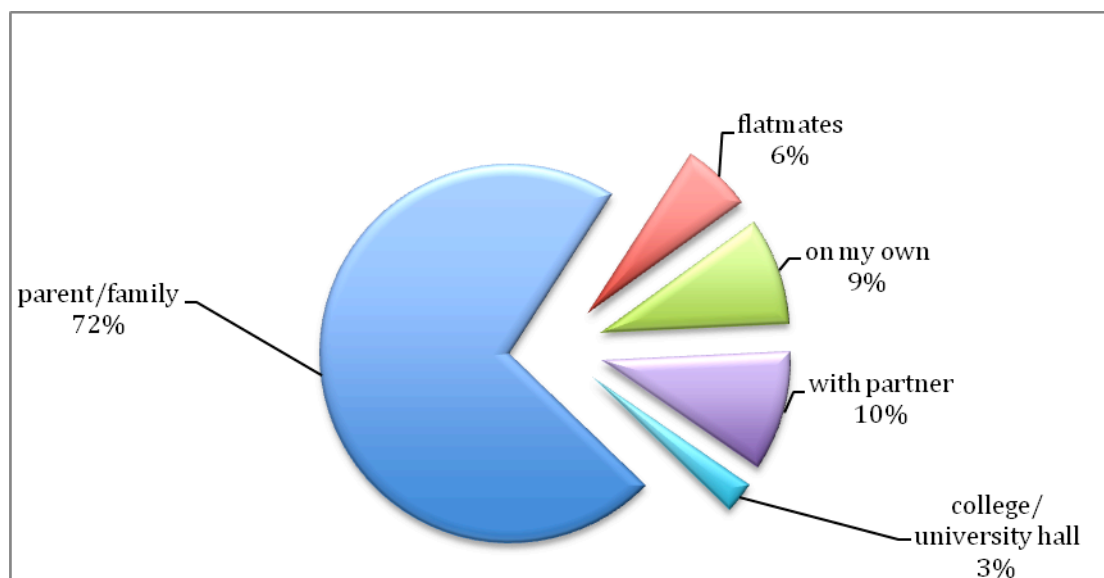
Participation in work preparation training programmes

There are four Skills Development Scotland programmes for unemployed people in Scotland: Get Ready for Work, Training for Work, Skillseekers and Modern Apprenticeships (Skills Development Scotland, 2012). We asked participants if they had been on any of these schemes, or if they planned to do so. Participation is often compulsory if young people want to stay on unemployment benefit. Often there are considerable barriers to access to such schemes. For example, the absence of a budget for BSL interpreting or funding for a radio hearing aid (FM system), or a minimum level of English and Maths needed in order to complete some schemes. Information available online is more specific about additional support available for disabled trainees in England (Dept. for Business Innovation and Skills, 2012) than it is for Scotland (Scottish Government, 2011a).

Table 4
Summary of participation in employment training

	Get ready for work [for 16 – 19 year olds] (n=167)	*Training for Work [18+] (n=162)*	*Skillseekers (n=162)*	*Modern Apprenticeship [16+] (n=164)*
Have done/doing training	17%	18%	12%	8%
Have not done this training	76%	74%	80%	85%
Not sure if have done training	7%	9%	9%	7%

Skills Development Scotland commissioned a review of Skillseekers and Modern Apprenticeships (Cambridge Policy Consultants, 2006) within the period in which these participants were involved with the employment training. They report a very low proportion of trainees with a disability (0.23%) but it remains unclear how trainees declared a disability on entry to the scheme and definitions of disability vary between employment and education agencies.

The higher status Modern Apprenticeship was taken up by 6.3% of the Scotland 16-19 year old cohort of all young people (Fuller and Davey, 2010). This report also noted the highly gendered nature of modern apprenticeships, with few girls represented in the scheme.

Participation at college

We asked participants if they were at college at the time of the survey, how many years they had been studying, the name and length of their course and the qualification being aimed for. We asked this same information about courses completed at college. By seeking detailed information about the qualification aimed for we were able to distinguish courses taken at Further and Higher education occurring in colleges. Young people in Scotland can study at both further and higher education level in local colleges. This is a strength of the Scottish system, allowing students to progress to a Higher National Diploma (HND) at a nearby college, for example, then transferring to the third year of a degree course at a university.
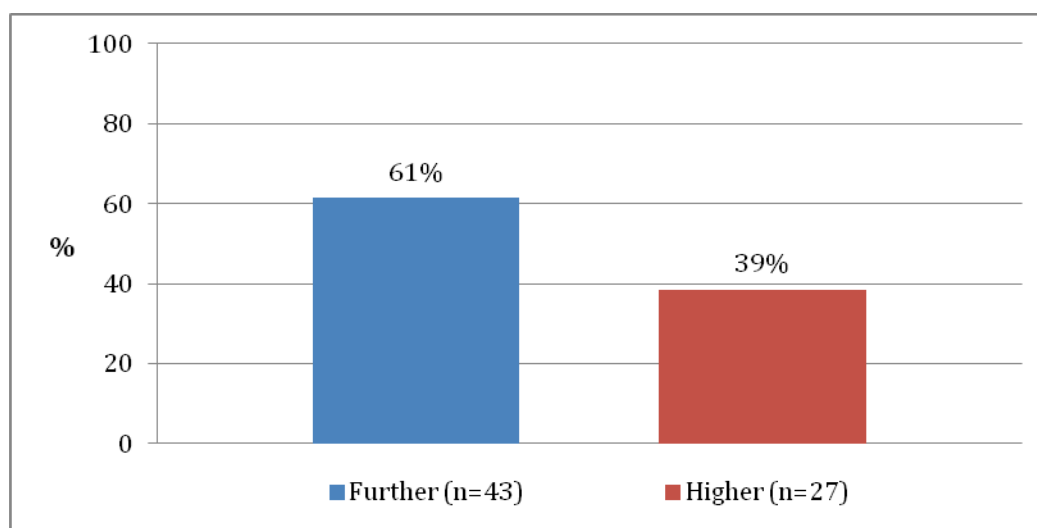
Figure 30
Attendance at college now and in the past
(n=178)
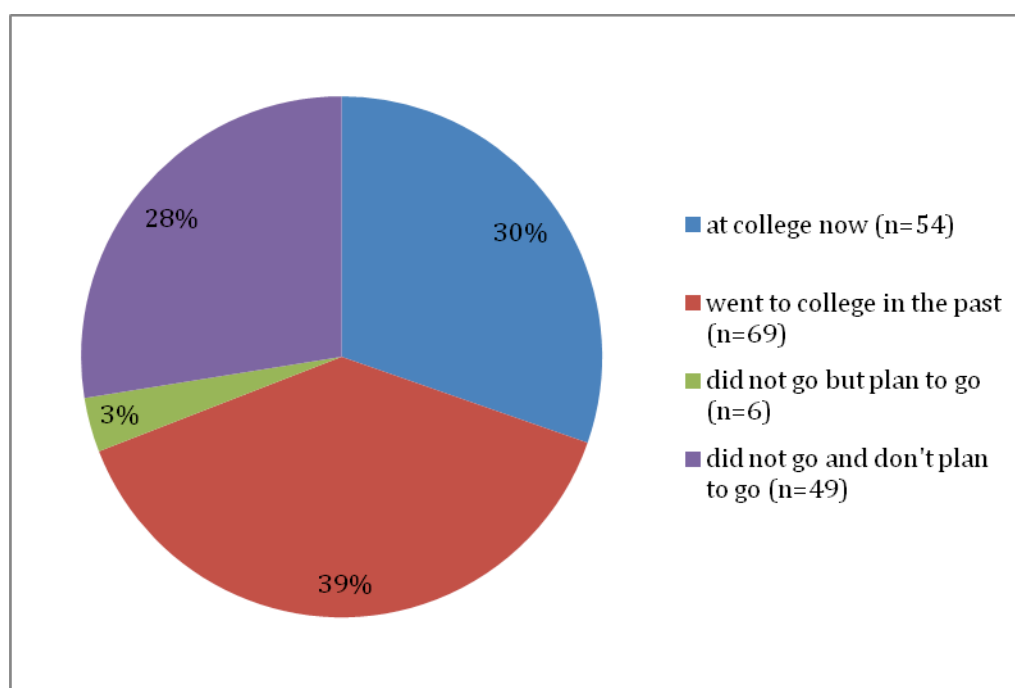
The rate of people in the 17-29 year old age group at college in 2010-11 in Scotland was 34% (Scottish Funding Council, 2012, p.210). The sample of deaf school leavers is very similar at 30% currently at college (see Figure 30 above).

Official Government data suggests that large numbers of deaf school leavers attend college. From the initial school leaver destination data (Scottish Government, 2011c), there were 92 'hearing impaired' school leavers classified as having Additional Support Needs who left school in 2011. Of these, 17% entered Higher Education (compared to 38% of school leavers without ASN); 42% entered Further Education (compared to 26% without ASN) and 20% entered employment (the same percentage occurs for school leavers without ASN).

Figure 31
Study at college by FE or HE level
(n= 70)

The period referred to in Figure 31 above is 2001-2009. Many Scottish students attend their local college to gain Further Education (FE) then lower level Higher Education (HE) qualifications, then often go on to complete years 3 and 4 of a degree at a university. The Higher National Certificate (HNC) and HND are the most popular forms of HE qualification taken in colleges (Cannell and Thompson, 2010). In Scotland over the period 2007-11, the proportion of HE enrolments by headcount in colleges ranged between 14 to 19% (Scottish Funding Council, 2012). For our sample of deaf students, a much larger proportion of them studied at college for an HE qualification (39%; Figure 31). Colleges have lower entrance requirements and often have more accessible support arrangements than universities.

Participation at university

We asked participants if they were at university at the time of the survey, if they went in the past, or if they planned to go. Similar questions about length of time studying and details about the course studied were asked as for the college section above.

Figure 32   Information about going to university
(n=163)
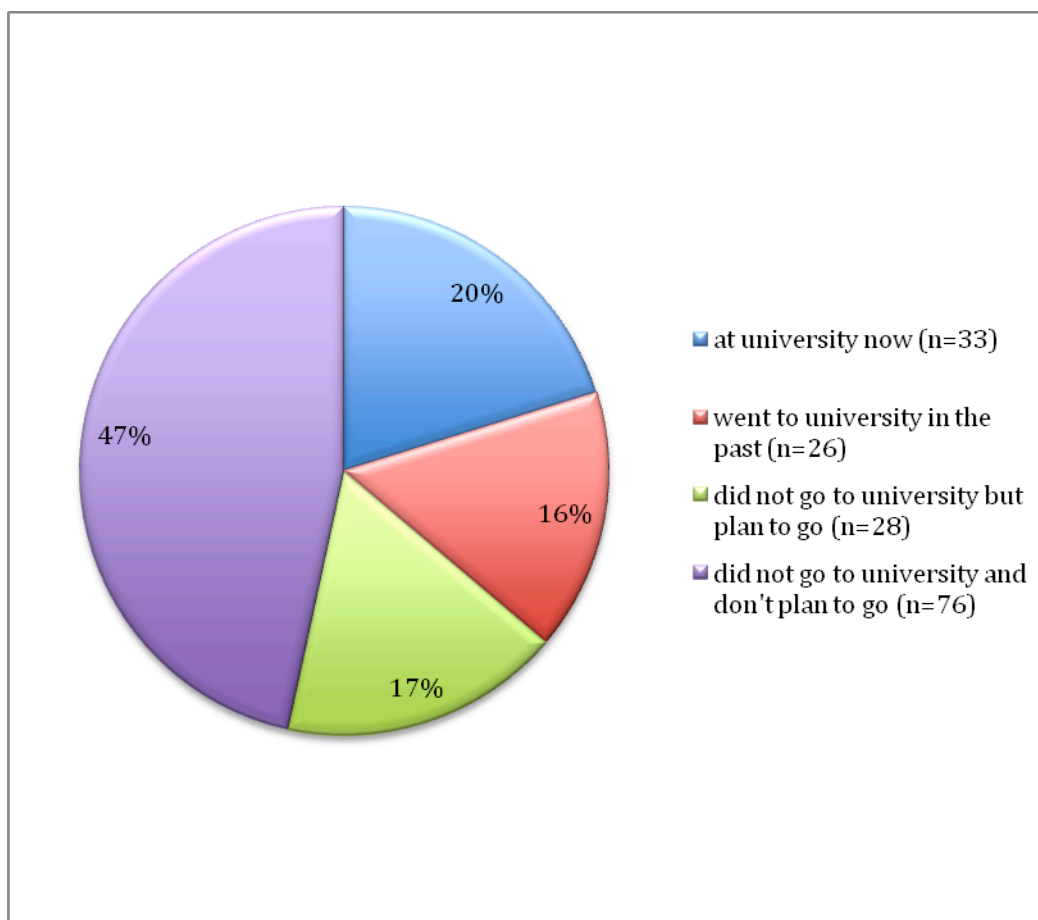
We have seen that a larger proportion than expected of the respondents were participating in Higher Education by attending college. This question asked about attendance at university. Of the 33 deaf students at university now (Figure 32 above), only eight had previously been to college. This suggests for these deaf students at university, most went straight from school, which is confirmed by Scottish Government statistics about destinations of school leavers. This shows that 17% of the 92 deaf school leavers per year in 2011 went straight to university (Scottish Government, 2011c, Table 3.3). Data collected by Skills Development Scotland indicates that the proportion of deaf school leavers entering Higher Education is approximately half that of school leavers without any ASN (17% compared to 38%, Scottish Government, 2011c).

The Scottish Government also collects data about Scottish domiciled students in Higher Education, including information about impairment. The number of deaf students receiving Disabled Students' Allowance has risen slowly from 80 per year in 2001/2 to 105 in 2010/11 (Scottish Government, 2011d, Table 11). At a time when the number of Scottish undergraduates has increased by 8% over this decade, the numbers of deaf students increased by 31% (Scottish Government, 2011d, Table 5).

Figure 33
Level of qualification awarded from university
(n=33)
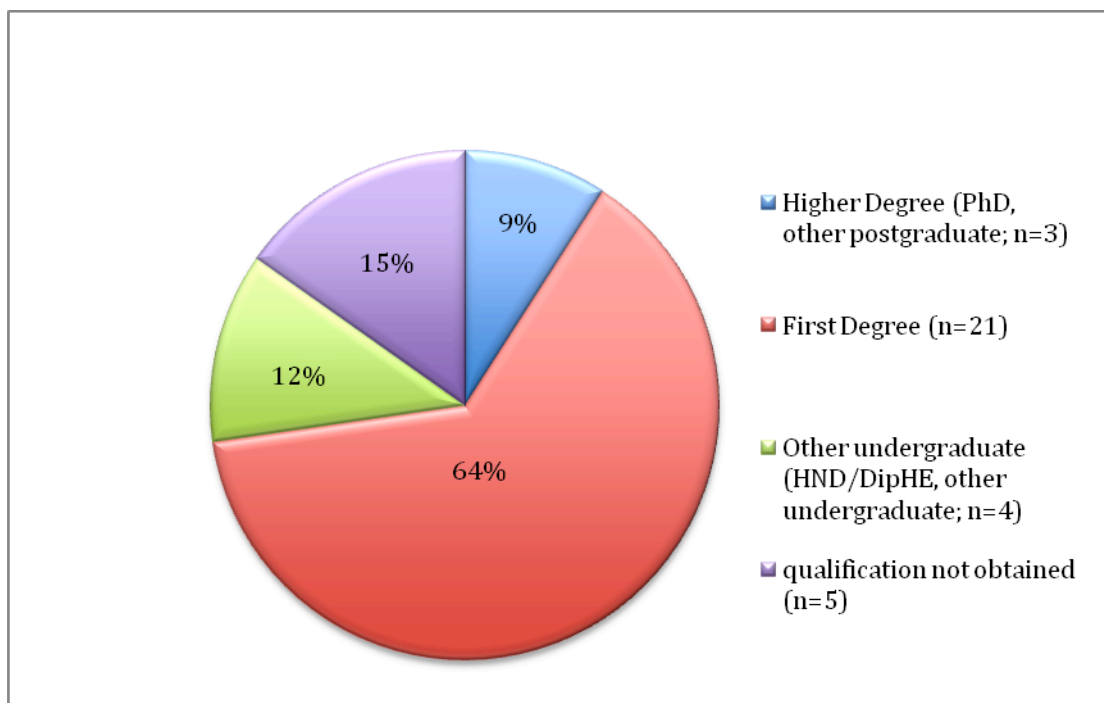
The levels shown in Figure 33 above can also be expressed in terms of the SCQF Framework. An HND or Diploma in HE is at level 8; Undergraduate degrees are at levels 9 and 10; Higher degrees are at SCQF levels 11 and 12. Figure 34 below shows how deaf students achieve these levels both in College and at University. Just over 60% of the deaf young people who told us about the qualification they achieved after leaving school gained an undergraduate degree. The overlap at SCQF levels 7 and 8 in Figure 35 shows that many of the respondents went to college to gain lower level HE qualifications.
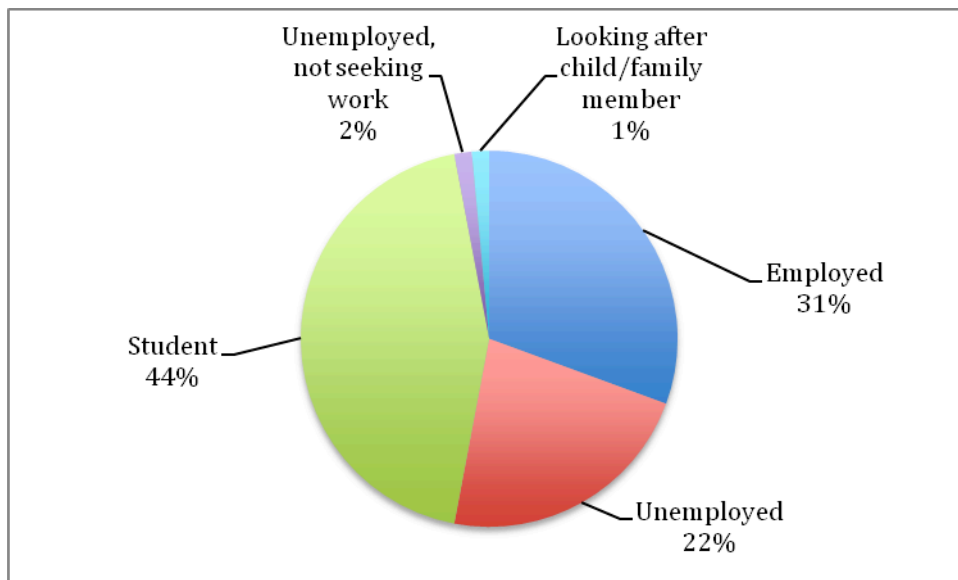
Figure 34
Scottish Credit Qualification Framework level achieved

Figure 35
Deaf young people's employment
(n=134)
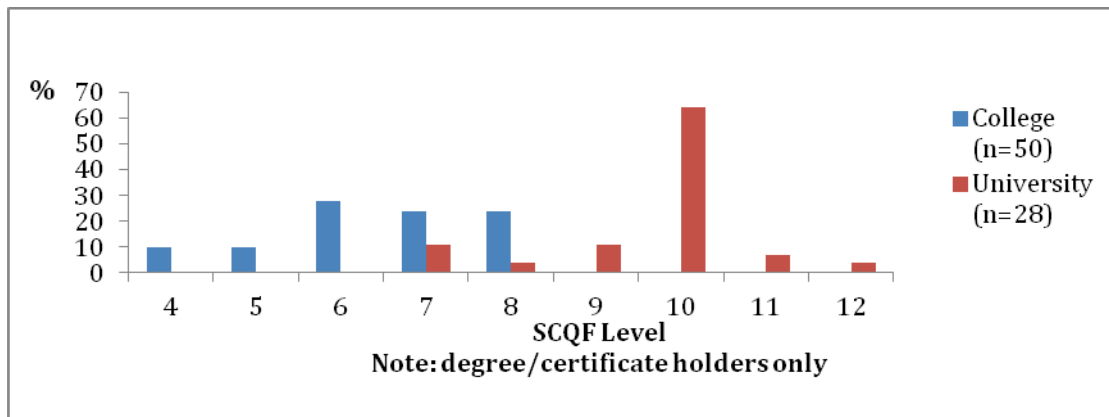
Employment

This section of the report examines the responses that deaf young people made about their experiences in or out of work.

Taking January-March 2011 as the reference period, the Scottish Youth Unemployment rate was 19% (as opposed to 22% for the deaf respondents). The Scottish Youth Employment rate was 53% as opposed to 31% for the respondents in the 16-24 year old group (p. 3, Scottish Government, July 2011). The comparison shows that the deaf group was less successful in finding work.

At this point in the recession in 2011, only half of young people in Scotland were in the labour market and deaf people are experiencing an even more difficult time. Many appear to be continuing with education as a buffer, to prepare for a time when more jobs will be available.

Of the 63 respondents to our survey in employment, 60% were in full time work. Amongst the respondents, 68% of the women were in part-time work compared to 32% of the males. This highlights the possibility of underemployment for deaf young people. For the working age population of Scotland as a whole, women are more likely to be in part-time employment than men (21% female part time compared to 4% male, Scottish Government, 2012c, Table 5.1, but this is for all adults aged 16-64). In our sample we found considerably more part-time employment than in the wider Scottish population, which could be related to the high proportion of students who are studying and working part-time.

Figure 36
Frequency of different occupational areas
(n=64)
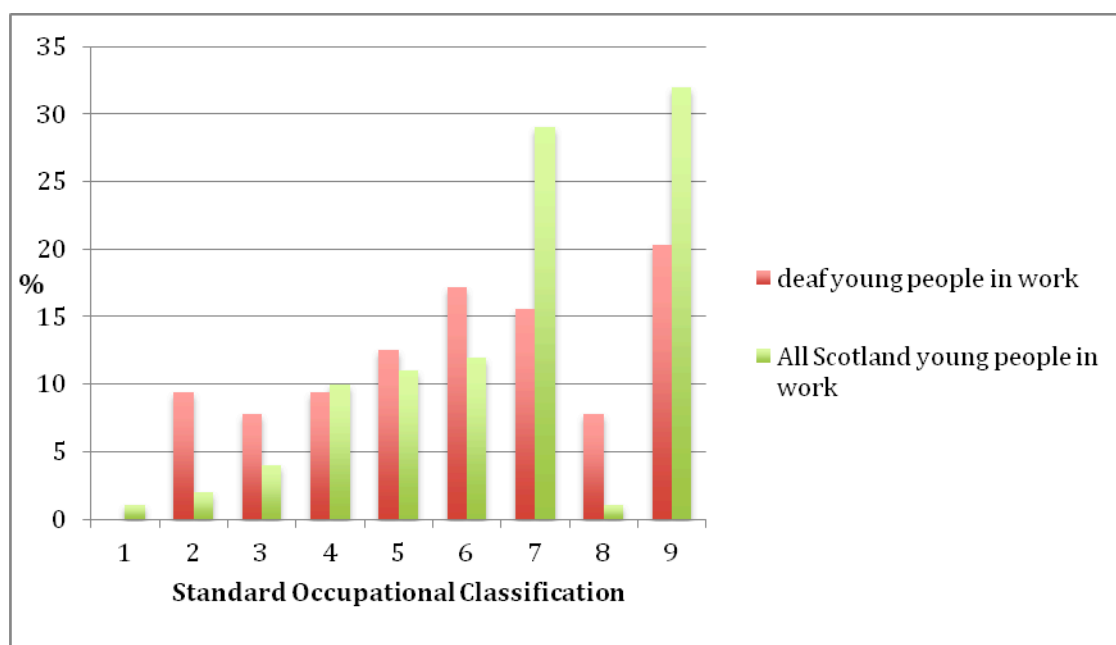
Scottish data source: Office for National Statistics (2013)

Figure 36 compares the types of employment found by the deaf young people aged 16-28 with adults of aged 16-24 in Scotland. As expected, there are few people in the Scottish 16-24 age group who have attained managerial positions (SOC1). The much higher proportions in the whole population in SOC 7 and 9 may reflect the higher educational levels of this sample of deaf young people.

Table 5
Employment status by highest qualification level
(n=148)

Highest SCQF level	% In employment	% Unemployed or inactive	n
SCQF level 4 or below	27.6	72.4	29
SCQF level 5 – 6 Standard Grades and Highers	24.6	75.4	61
SCQF level 7 + HNC, HND or degree	48.3	51.7	58
			148

Table 5 shows the distribution of respondents by the highest level of qualification they hold and their employment status. Of Scottish people in the 16-65 year old age group holding a degree (level 8 +), only 3% were unemployed in 2010. Of the Scottish population holding an HNC or HND (level 7) 80% were employed. The results show that even with Higher Education qualifications, deaf young people are much less likely to be in work.

Figure 37
Happiness at work
(n=63) UK data: Nebosh, 2011

The comparison in Figure 37 is between adults of working age in the UK (Nebosh, 2011) with the DSLR sample. The proportion of workers happy or extremely happy with their jobs is very similar (67% DSLR, 70% UK -wide).

Support at work

Only 11% of the young people in work have Access to Work (AtW) funding; a further 31% do not have AtW and remain unaware of what it is. Access to Work is a UK-wide government funded scheme which allows people with disabilities to claim funds to make sure they can participate equally at work (Department for Work and Pensions, 2013). The mean level of support per year is £2,600 (Sayce, p. 14). Fifteen percent of people claiming AtW are deaf or hard of hearing (op.cit. p. 82). The Sayce Review admitted that AtW is 'the best kept secret in Government' (op.cit. p.18). Data from the Department for Work and Pensions (2011, Table 4) show that in the UK, four times fewer disabled people aged 16-24 receive AtW than those aged between 25-54. It seems likely that young people with disabilities do not find out about their right to this funding to support them at work.

We found no link between category of deafness and having Access to Work. The group of workers in the moderately deaf category have the least knowledge of the scheme. Adjustments through AtW for this group of workers could be, for example, employing a note-taker at staff meetings or training events. These facilities are rarely available in schools, so young people would not expect them at work.

Experience of voluntary work

We asked the participants about their experience of voluntary work. Responses to: 'Have you ever done voluntary work?' indicated that 59% of the 179 respondents had done voluntary work. No connection was found between employment and undertaking voluntary work.

Social engagement

Young people were asked to reflect on their experience of school, clubs and activities in the past, and how this compared with their involvement as young adults. First, we asked them how happy they had been at school (Figure 38 below). Results indicated that most were happy at school. The number of young people who used both sign language and speech at school was evenly distributed across the different happiness levels.

**Figure 38**
Happiness at school
(n=182)
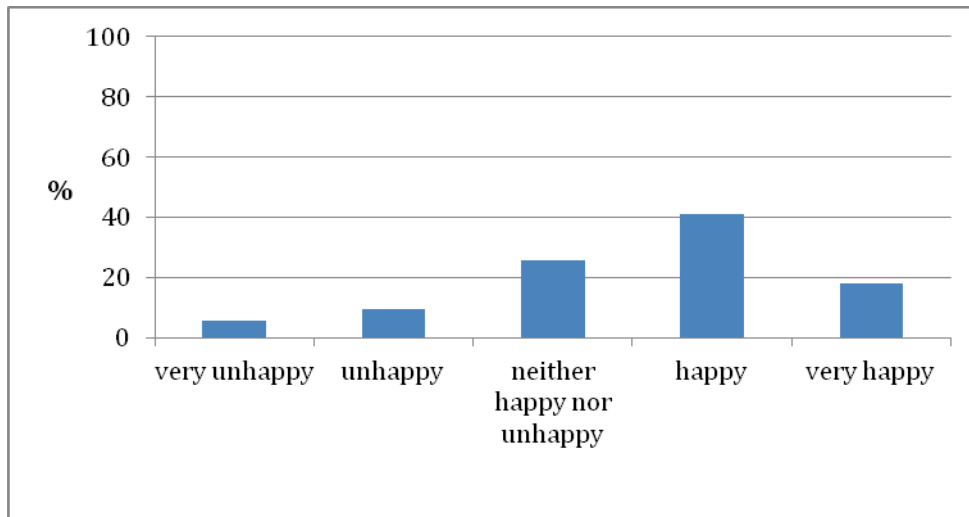
Figure 39
To what extent the respondents reported that school prepared them for the future
(n=183)
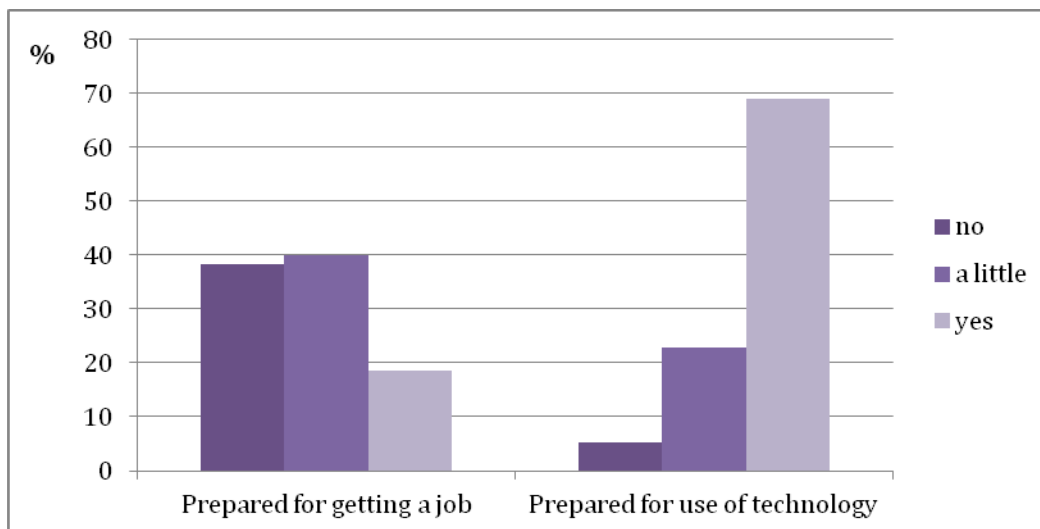
Interestingly, respondents indicated that their schools had prepared them for using technology much more effectively than they had prepared them for getting a job (see Figure 39). With the exception of NDCS Families magazine there is a lack of published materials available for deaf young people in the UK in relation to careers advice. Teachers of deaf children and school Guidance staff rarely know about 'Access to Work', and this is likely to influence the quality of careers advice given to students.

Figure 40   Participation in clubs and activities
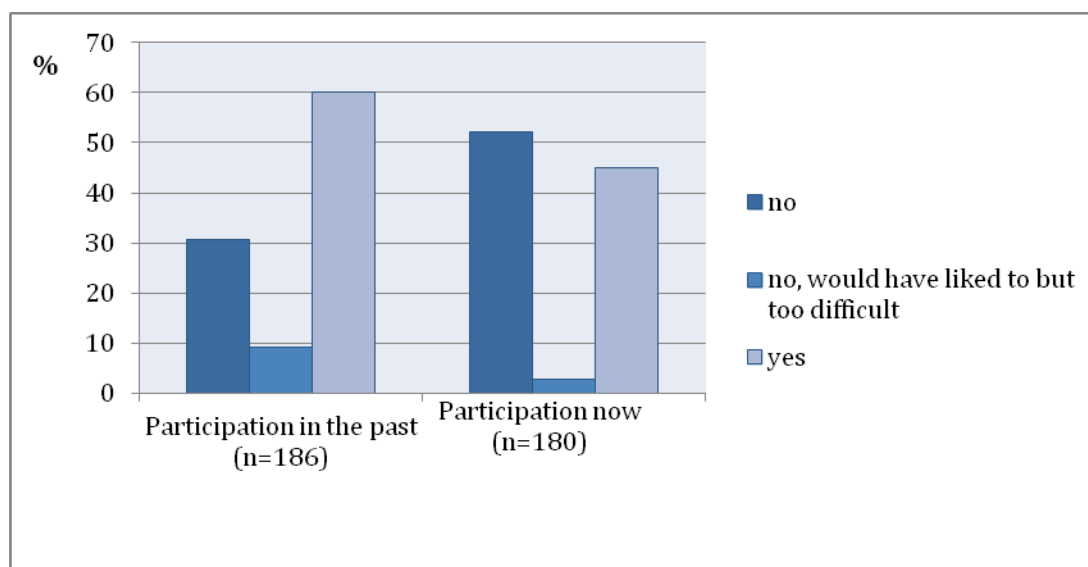
We sought information about participation in clubs at school because often deaf children are taxied to school, which makes it difficult to join after-school clubs. Nine per cent of the respondents reported such difficulties when at school while only 3% encountered similar barriers after leaving school (Figure 40).   The Scottish Government (2011b) asked in its 2009-10 Scottish Household Survey about participation in sporting and cultural activities. They found there was higher participation in all cultural and sporting activities for people from areas of less deprivation.

Grimes (2009a) explored the barriers to participation in school clubs and activities with the parents of some of the children from the ADPS study. Of the 180 cases of deaf children, 24% of parents of this group[32] reported 'at least one category of difficulty relating to deafness which prevented their child's full inclusion in activities' (op. cit. p.167).

An overwhelming majority of the respondents felt that clubs and activities at school had been important for them (73%) and even higher proportion (86%) thought that their current involvement in clubs and activities was important for them now.

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[32] The group excluded children with learning difficulties.

Community engagement

This section explores the extent to which the deaf young people were engaged as citizens, consumers and members of the wider community.

Our results suggest that there may be some under-registration amongst deaf young people (see Figure 41). In the population as a whole aged 15 and above (Scotland's census, 2012), 90% are registered to vote. Evidence from the Electoral Commission (Wilks-Heeg, 2010) suggests that metropolitan areas such as Glasgow have a considerable gap between the number of young people over 16 and those registered to vote. One explanation given for the shortfall in registration in a constituency is tracking a mobile population; household mobility peaks when people are in their early 20s (op. cit, p. 55).

Figure 41
**Political participation: is the young person registered to vote?**
(n=178)
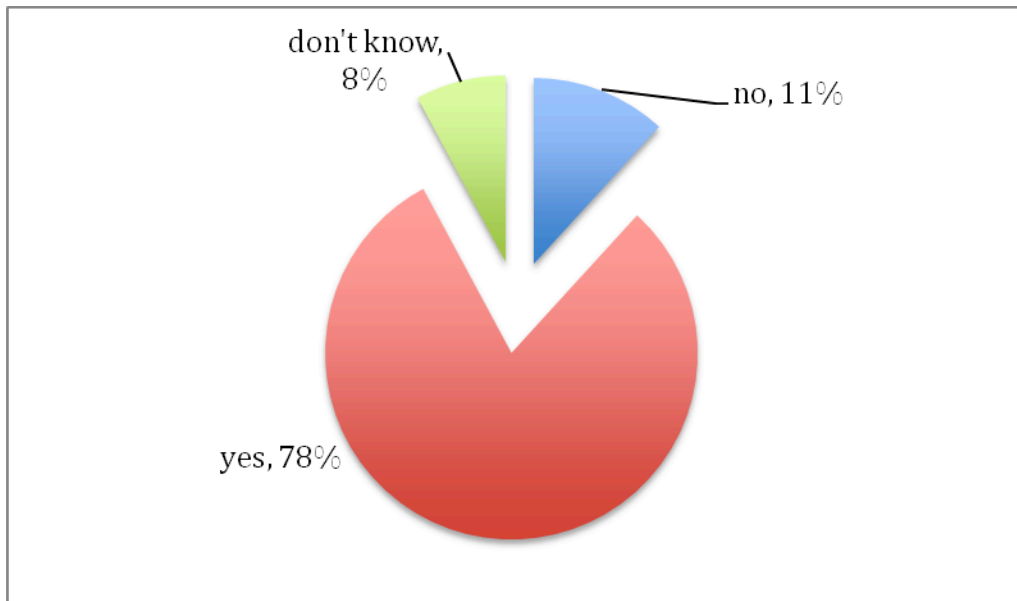
Being registered to vote does not guarantee that the young person will vote. Young people may prefer other forms of political engagement and involvement with their community.

Figure 42
Learning to drive and holding a driving licence
(n=178)
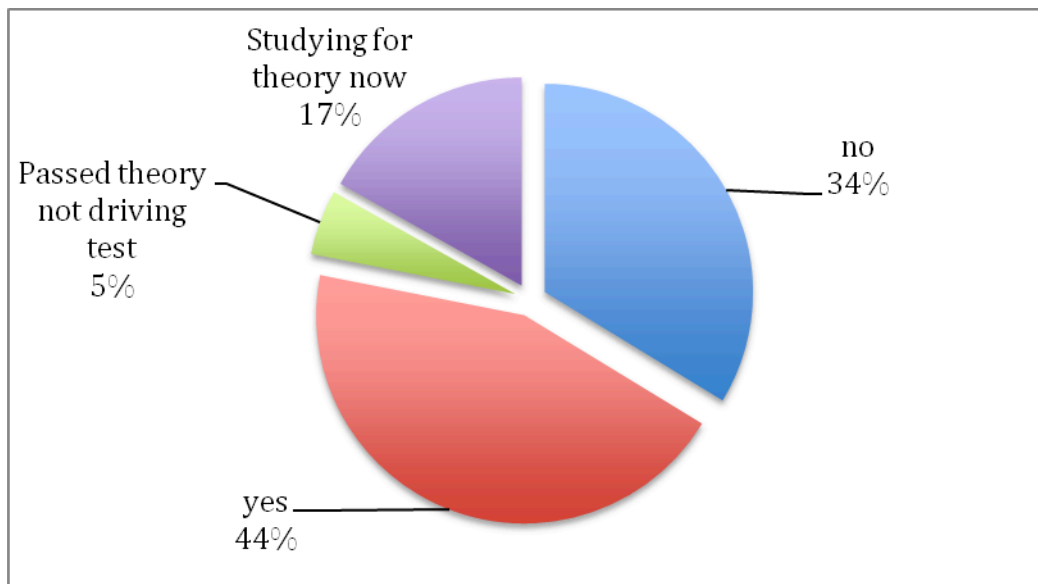
Holding a driving licence opens up better opportunities for work and allows drivers to maintain friendships and engage in a wider range of activities (Transport for Scotland, 2012). In the population as a whole, 50% of the 17-28 year old group hold a licence (FOIR, 2012), whereas for deaf participants it was slightly lower (44%).

Figure 43
Does the young person use text messaging, and if so who do they contact?
(n=179)
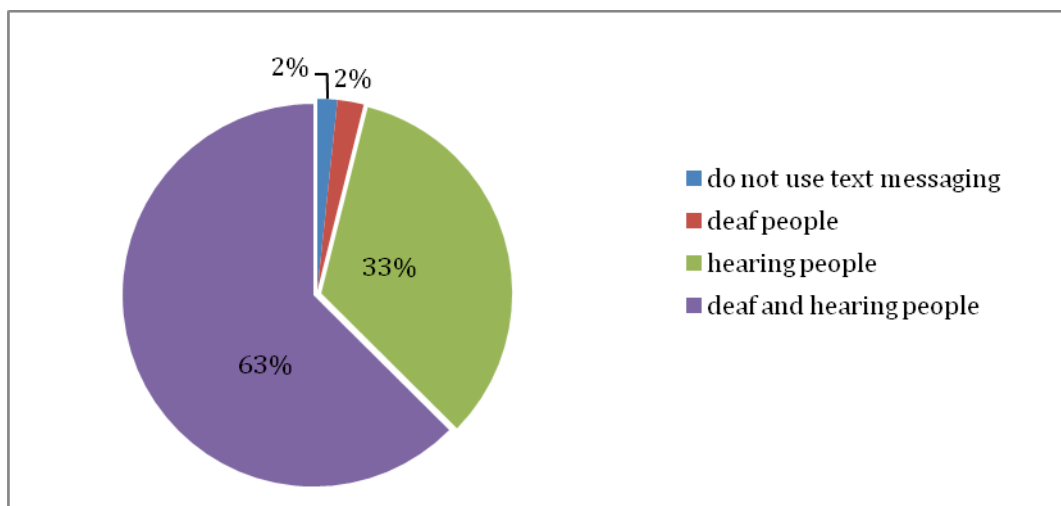
Participants were asked if they used SMS and who they texted (see Figure 43). This was a way of accessing information about friendship networks, and the options 'both deaf and hearing people', were selected by 63% of the sample.

Figure 44
Use of SMS by deafness category
(n=163)
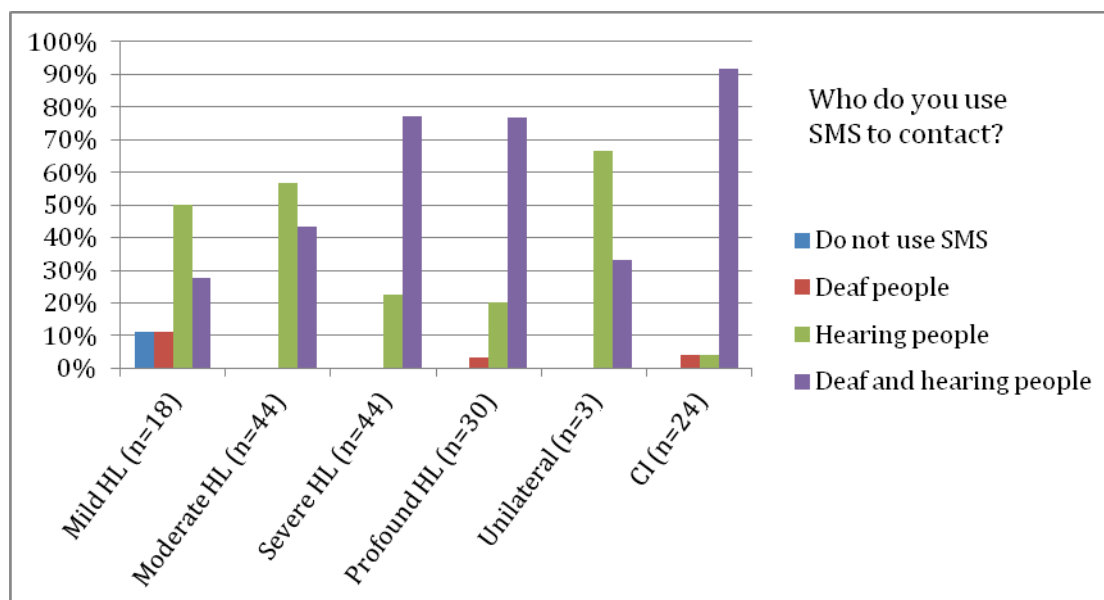
In relation to deafness category it was clear that young people with CIs reported that they had both deaf and hearing contacts (Figure 44). This was also true for the severe and the profoundly deaf group. The 20% of severely and profoundly deaf young people who only use SMS to contact hearing people suggests that they may not have any deaf friends.

Young people Not in Education, Employment or Training (NEET)

Throughout the UK there are some young people who are difficult to engage in employment or training; the government defines this group as aged 16-19 and not in education, employment or training. In Scotland the group is rather euphemistically called 'More Choices More Chances' (MCMC).

Table 6
More Choices More Chances rate
(n=13)

	MCMC Rate	*MCMC rate from deaf respondents*
2004	11.7%	
2005	13.9%	
2006	11.7%	
2007	11.0%	
2008	11.4%	
2009	12.8%	
2010	13.7%	
2011	12.4%	18.3%
2012	13.3%	

Source: Scottish Government (2012d)

There were 13 people amongst our survey who were in the MCMC category, representing 18.3% of the larger group of 71 respondents who are aged 16 - 19, a higher rate than the Scotland average of 12.4% for the same year, 2011. This data highlighted the following characteristics:

- While they were from a range of socio-economic backgrounds none of this group came from the better off 20%.

- Nine were unemployed and four economically inactive.

- The mean SCQF level by highest qualification is 4.5, i.e. Intermediate 1 / N4 / low grade GCSE.

- Nine studied at college in the past, four for less than 1 year.

- Nine preferred to use speech and three BSL.

- Most came from urban areas, with one from a remote rural area.

- Only two of this group could drive.

It is established that the NEET group in Scotland may constitute several groups: some genuinely hard to reach and needing intensive support, some who need to improve their employability skills and others who are in transition between FE and HE and just having a break (Scottish Government, 2006). From the 13 MCMC deaf young, the four who went to college for less than a year suggests that a poor transition to college might have contributed to their MCMC status. Commentators such as Adams (2012) have pointed out that the pathway for less academic young people in Scotland from school to college to work is not as easy as the usual one from school to university then work. With fewer entry-level jobs in the economy, young people with poor qualifications are expected to negotiate the complexity of qualifications in Further Education largely on their own.

Advice to deaf children still at school

Finally, we asked, 'If you could give advice to deaf schoolchildren now, what would you say to them about school?' Young people engaged very effectively with this question and it was well completed by participants.[33]

Theme A: Personal qualities will lead to success

Both those educated in mainstream schools and those in units or schools for deaf children highlighted personal attributes as the most important issue. They advised deaf children at school to be confident, assertive, to keep trying, be ambitious and have self-confidence in themselves.

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[33] Here we used the constant comparative method to identify key themes and categories (Thomas, 2009). In order enhance reliability, team members undertook this independently and then cross checked and corroborated our findings.

Work hard. You will need to work harder than hearing people. Be yourself. Do what you want. Enjoy school. Be confident.

Deaf people are equal to hearing. Deaf people are beautiful and strong. Help each other. Imagine and plan the future

Deaf people are always beautiful and full of aim in the future.

Stand strong.

If anyone is giving you grief for being deaf it's a feature of you to be proud of! You will have to work harder than your classmates but this hard work will pay off.

Enjoying every minute in school.

Theme B: Ask for, and take help

This topic emerged from young people who went to mainstream schools as much as from those who went to units or deaf schools. Support was seen as vital for success. Deaf young people thought it was very important to make the most of available support, actively request it, and know what you are entitled to. As with the general population, social support from family and friends was seen as vitally important. Within this theme the young people acknowledged how hard it is to access and absorb the information you need as a deaf person in a hearing learning environment.

You are not lonely, need help, get help.

Do not be stubborn, ask for help.

Take all the support and advice given. If I did not I wouldn't be where I am now.

Asking for help is not negative.

Do not be embarrassed or scared to ask. There is always someone who can help.

Participants advised deaf pupils how to survive in a hearing environment:

Do not be afraid to ask for help or for teachers to repeat things.

Talk to teachers and parents about any concerns, check you got the right info (e.g. about homework)

Ask for a repeat.

Do not say sorry if you can't hear.

Do not say you understand if you do not.

Theme C: Take control of your access arrangements

This theme emerged more from young people who had experienced a mainstream education. They suggested that deaf pupils should adapt the physical learning environment to support better communication, aim high, work harder than others and use all opportunities to gain experience and develop skills. Young people supported a strong self-advocacy approach, suggesting that for some, they should rely on no-one but themselves.

Mainstream school prepares you better for examinations and work focus. But if you cannot understand speech make sure you get a signing interpreter of the right level to support you.

Always carry spare batteries and a paperclip!

Make sure they choose subjects that they actually want to do without teachers / CSWs' influences.

Make sure you put in for your SAAS Disability Fund ASAP. I dropped out because I did not get the support I needed.

Fight for your rights and never ever let them drag you down, and show them what you are made of!

Grab any (new) teachers first thing as you come in and explain to them about your disability etc.

Your teachers need deaf awareness. Do it yourself. Get an early assessment of need. Choose the type of school carefully. Tell people you are deaf - they often forget.

Sit at the front. Find a quiet place to talk to friends. Get the right technological support. Qualifications of teachers and support staff matter. Struggle and fight to get the right support.

Theme D: Relationships with hearing people

Again, this finding was more evident in deaf young people who had been in mainstream schools. There were many indirect references here to bullying from hearing peers and being disparaged by some members of staff. The importance of self-reliance was also stressed:

Ignore people when you're getting bullied and if you do say to a teacher, as I got bullied all through out High School by myself. I did not tell teachers as thought they would laugh.

Never let anyone tell them they won't succeed.

Join in with activities and let people see you are no different from them just because you are deaf.

Do not let anyone get u down about your deafness, just smile and walk away. Never show them that they have hurt you by calling you names - report.

Mix with hearing friends. Join clubs and activities.

Take all opportunities. Ignore bullies.

Do not show your true feelings to bullies.

Ignore hearing people who do not know what it's like to be deaf.

Do not let teachers put you down.

Theme E: Relationships with deaf people and BSL

While mentioned infrequently these ideas came from young people who had been in the full range of educational placements. It could be argued that a strong sense of deaf solidarity and pride runs through all the themes. It is interesting that young people who had been to mainstream school mentioned BSL more than people who had been to resource bases or schools where signing was used. Tensions were evident in young people's responses, with some participants asserting that being with other deaf people was very helpful, while others saw it as isolating.

I would advise deaf children it's important to have higher education and learn to sign (BSL) to keep language.

Do not hide in the deaf base all the time especially at the start of term.

I would advise them to join deaf community and joining sports etc, football, deaf club.

Learn sign language.

Teach your hearing friends to sign.

Join in Deaf clubs.

Do not just have deaf friends - it's isolating.

Responses gave us important insights into the beliefs of young people who participated in the School Leavers' questionnaire. They indicated that they had a strong sense of self-advocacy, recognising they are equal but that education is not always going to be easy. A picture of deaf identity emerges, but not necessarily linked to the use of BSL. As Ladd suggests (2003) young people seem to be negotiating new pathways for themselves.

Summary of findings from the young people's questionnaire

(RQ1) How do the academic, social, and vocational outcomes for deaf children compare to those in the wider population of children / school leavers in Scotland?

- The proportion of the sample of deaf young people who are at university now is 20% and a further 16% attended in the past. A much lower proportion of deaf young people went straight from school to university (17%) than for all Scottish pupils (38%). The Deaf School Leaver Respondents were studying broadly the same range of subjects at Higher Education level as all UK university students do.

- In the 16-24 age group, 31% were employed, compared to 53% for Scottish young people of the same age. Of those 16-28 year olds who are in work (n=63) many are in part-time work: 68% of women and 32% of men. This is a much higher proportion in part time work than for the Scottish working age population (21% women, 4% men).

- The majority (72%) of the deaf respondents lived with their parents, though older respondents were more likely to live on their own or with a partner. Comparing the 20-27 year age group with UK data, there is a considerably larger proportion in the sample of deaf young people living at home, although this may be due to the way in which respondents were recruited.

- The proportion of deaf young people who had a modern apprenticeship or were undertaking one at the time of the survey was 8%. This is comparable to the Scotland mean of 6% for the 16-19 year old age group.

- The proportion of respondents at college now is 30%, comparable to the Scottish rate of 34% for the 17-29 age group. Of those who are, or have been at college, 40% of our sample studied for Higher Education courses in colleges, double the rate of Scottish HE enrolments in college.

- When compared to the proportion of Scottish 16-24 year olds in work the sample had a higher proportion of mid-income jobs (SOC levels 5 and 6) and a lower proportion of low-income jobs (SOC 7 and 9). These differences probably reflect the higher levels of education experienced by those who took part in the School Leavers' survey.

- Most people of working age in the UK are happy at work (70%) and the DSLR group of young adults in work is very similar (67%).

- A driving licence is held by 44% of the respondents (n=178), which is slightly less than the all Scotland group. Being registered to vote is confirmed by 78% of the sample group, which is similar to the rest of Scotland for this age group.

(RQ2) What patterns of intervention, support, and educational methods lead to the most successful outcomes for deaf children?

- The mode of communication preferred most of the time by respondents was speech (75%) with 24% preferring a sign based system, either BSL or SSE.

- Of those who had attended mainstream schools (n= 109), 94% used spoken English as their preferred mode of communication. For the 47% of deaf children who live in a local authority without a resource base, few opportunities are likely to be available to use sign language.

- Young people with cochlear implants are much less likely to use BSL or SSE (only 4 of 23) as their preferred communication method than the profoundly deaf group (21 of 31).

- Only 7 of the 63 deaf people in work (11%) have Access to Work. Moderately deaf people do not have it and half have never heard of it. While those with Cochlear implant expressed more awareness of it they said they did not use it.

- Voluntary work had been part of the lives of 59% of the group of deaf young people. Of the 33 who had done it and who had a job too, 17 were in related work, suggesting voluntary work may have been useful to them.

- Most of the respondents (n=182) were happy at school (59%) but they did not think that school had prepared them well for getting a job (40% said no and 41% a little).

- Of the sample (n=179) 63% saw their friends as both deaf and hearing people, whereas 33% did not report texting deaf people, suggesting they may not have any close friends who are deaf. The group who only contact hearing people by SMS are mainly from the unilateral, mild and moderate deafness categories (36/65).

- Young people indicated that personal qualities and individual effort would lead to success for deaf people at school. They thought it was important to ask for help, even though this is often difficult to do so. They proposed that young deaf people should take responsibility for improving their access arrangements at school.

- Deaf young people's attitudes towards hearing people show an expectation of equality, but also suggest widespread experiences of being bullied by them. A few respondents commented on BSL use or the Deaf community as being important for deaf school children, but not always positively.

(RQ3) What proportion of deaf school leavers in Scotland are not in education, employment or training (NEET)?

- The rate of people in the 16-19 age group who are not in education, employment or training (MCMC group) is higher amongst respondents (18.3%) than the Scotland 2011 rate of 12.4%

- The group of deaf MCMC come from all social backgrounds excluding the most affluent 20%. They reside mainly in urban areas and their mean highest SCQF level is 4.5. A failed transition to college was found to contribute to the MCMC status for some.

Limitations

It was challenging to build a sample where a balanced proportion of mildly deaf pupils were included because, we suspect, they probably have limited contact with deaf organisations and might not self identify as deaf. The word 'deaf' means the full range of hearing loss and cultural deafness too in the UK, but people who are in the mildly deaf group may actually not associate themselves with this label. Perhaps we might have reached this group by using the phrase 'hearing impaired', even though many deaf people dislike this term. This limitation has also been noted in other studies (NDCS, 2008).

We did not achieve a reliable response rate from the on-line questionnaire: a common problem with such web based methods. We could calculate how many paper questionnaires were sent out and returned, but we did not know how many reached deaf young people because many families had moved away. In some cases the new occupant returned the survey unopened, but it was unlikely this always happened. In a few local authorities we were not sure that the survey packs had actually been sent out and several authorities declined to participate.

There were three different methods of contacting participants: online, on paper and face-to-face. These methods could have led to three different sub-groups with systematic differences in the responses. It was not possible to explore these differences.

Summary

This part of the Achievement and Opportunities for Deaf Students research focused on the experiences of young deaf people who had left school between the ages of 16 and 28. It identified relevant findings about the pathways negotiated through Further and Higher education, into work and independent living. This specific group may, of course not be totally representative of all deaf young people in Scotland because of their higher academic achievement, fewer people with disabilities and fewer with mild deafness compared to the original ADPS population.

The responses of the 188 deaf young people offered a promising way of examining their world, the choices they have been able to make and the

constraints on them. The timing of the survey meant that the economic recession was having a huge impact on the employment prospects of young people in Scotland generally, and this was certainly true too for the respondents. Despite this, we can see that many deaf young people are succeeding in a wide range of jobs, showing great commitment to Further and Higher Education, and participating in clubs and societies. Socio-economic deprivation has a large impact on the choices available for deaf young people, as it does across the whole of the UK. This particular group appeared to be quite resilient and were continuing their studies in order, we guess, to be in a better position to compete for jobs in the future.

Chapter 5   Recommendations and conclusion

The Achievements and Opportunities for Deaf Students in the United Kingdom project raised many organisational and access-related challenges for the research team which tend to be associated with complex kinds of research and 'hard to reach' populations. However, there are many salient findings, which open up promising avenues for further enquiry. Implications for the deaf education field and families of deaf children have been previously discussed and here we highlight recommendations for each strand of this research project.

Recommendations from Chapter 2

The findings from the parents' questionnaire have implications for teachers of deaf children and additional support teachers in mainstream schools and how they work with the parents of deaf children.

- Parents from deprived social backgrounds indicated that they are much less confident about suggesting improvements in the educational support of their deaf children. This suggests that policy and practice should focus more on how to engage with this parental group and provide more tailored information on how the system works.

- Many parents, however, have informed and well-developed views about how to improve access to the education system for their deaf children. How these could be incorporated into the policy-making process, as well as practice at school-level warrants more attention.

- Some parents suggest they are ill informed about why their deaf child has difficulties with literacy. Specialist teachers should be supported to tackle this issue earlier so that parents can take steps to improve their children's chances of success.

- Teachers could address sensitive issues about 'looking different', standing out and the advantages of having deaf and hearing friends by broaching this with parents directly. This would require further training and support but is vitally important in terms of helping young deaf people integrate well in school.

There are important implications for all types of school settings (i.e. mainstream, resource base, special or deaf school) where deaf children are educated.

- Low expectations of teachers were identified as a key concern by parents. The view appears to apply to both staff in mainstream and specialist settings. Clearly this is an important issue that should be both integrated and addressed in Initial Teacher Education, as well as specialist and in-service training.

Organisations such as NDCS are already targeting support for hard to reach groups, such as ethnic minority parents of deaf children.

- Such work could be built on by providing parents, particularly those from deprived social backgrounds with specialist support including information about parental rights, and ways in which they can improve outcomes for their child by engaging with the school system.

Recommendations from Chapter 3

These are issues for the development of educational policies at Government level, local authority services for deaf children, organisations which support deaf education:

- Education and related services should maintain high expectations for deaf pupils who are severely or profoundly deaf and not implanted and where possible enter them for the same number of public exams.

- A reduced spoken or signed vocabulary is likely to be the cause of depressed English scores for deaf children from all deafness categories. An early years focus on vocabulary development might support better reading comprehension and English scores later at school.

- New ways could be developed in order to support deaf pupils more effectively. This could include better quality deaf awareness for class teachers and peers, and more rigorous acoustic standards in schools. This is likely to be of particular benefit deaf pupils with mild or moderate deafness who at the present time receive little support from school services.

- Services and schools for deaf children could focus much more attention and staff time on the needs of children who have mild and moderate deafness, which often functionally includes those with CIs.

- Services should consider and take into account how far a medical categorisation of deafness assists in allocating resources for deaf children and how it impacts on the ways in which staff support hours are calculated.

Recommendations from Chapter 4

The following are issues for Governments, local authority services for deaf children and Further Education colleges:

- Only 47% of the population live in local authorities which provide resource base schools for deaf pupils. Our findings suggest that without this option, deaf young people are extremely unlikely to use any form of sign as adults. Local authorities need to consider how to ensure that linguistic choices are available and that they are resourced.

- Young deaf people at school would benefit greatly from more in-depth and tailored careers guidance, particularly by the provision of materials which offer positive deaf role models about a very wide range of deaf people in the workplace.

- Deaf children at school, particularly those in the mild, moderate and unilateral deafness categories, would benefit from more contact with other deaf young people so that they find out more about their rights at work and so they can explore a deaf identity if they wish.

- Teachers of deaf children at school should continue to encourage and support self-reliance in making access arrangements.

- Teachers of deaf children, careers guidance and college / university disability advisors all require enhanced awareness and knowledge of Access to Work so that they can provide better advice to a wide range of deaf young people about their employment rights.

- Better transition planning is needed from school to college, particularly for those students who have less than SCQF level 5 (GCSE A* - C) by the time they leave school because they are a potentially vulnerable group at risk of joining the MCMC / NEET group.

- Guidance officers in colleges should track the progress of and encourage deaf FE students studying HE courses to articulate to a degree, rather than leave with an HND, to improve their employability.

The ADPS database was a huge achievement in the UK, but it is likely in future that official government databases will collect data on deaf children more effectively than they did at the time of the original study. Government collected statistics in all parts of the UK are now more accurate and hold fields relating to individual pupils such as socio-economic status and additional disability.

Issues for national Governments include:

- Improve and build on the system in place in England by collecting data on individual deaf pupils, including socioeconomic status, and develop more robust ways to count multiple impairments.

Final comments

Deaf children face considerable difficulties in learning to talk, which focuses the profession on early achievement. However, there are similar serious issues for children who are less deaf, masked by the fact that their spoken language often seems competent. The lack of breadth of vocabulary, and great difficulty in learning general information by overhearing it, and the very poor acoustic conditions in most schools are likely to be reasons for the poor achievement of mildly and moderately deaf children. Children with cochlear implants are now often functionally in this group. In England there are

building regulations (BB93) which mandate that all new school buildings should meet a minimum acoustic level (Department for Education and Skills, 2002). However, these rules do not apply to existing buildings and they do not apply in Scotland at all. The development of robust minimum acoustic conditions for all school buildings in the UK should be an urgent priority.

Because of the Equality Act 2010 it is possible to make reasonable adjustments to schools, for example re-timetabling a class to a room with better acoustic conditions. If pupil numbers were limited in classes with deaf pupils, and if at least two classrooms per school were acoustically treated to standards used for all classrooms in Sweden, this would go some way towards making reasonable adjustments. These structural approaches, along with more focus from teachers of deaf children providing better guidance to parents and mainstream teachers, are likely to raise attainment for deaf children.

The finding that mildly deaf pupils are just as seriously affected by deafness as the other deafness categories is particularly pertinent at a time of cuts in services in the UK. Many authorities have cut their support for children with mild deafness over the last few years because of reduced budgets. It is of course true that some deaf children will need much more in-class support than others, for example sign language interpreting or note taking. Our findings suggest that new methods are needed to support mildly deaf pupils. For example, earlier intervention, intensive spoken language and close collaboration with parents and speech and language therapists could raise the language levels of this group before they start school. Intensive language and reading support in the early years of school may boost their achievement later.

Currently support allocations in local authorities in the UK are often made using a scoring system which includes deafness categories; five marks are allocated to a mildly deaf and 15 to a profoundly deaf pupil in this model, for example (NatSIP, 2012). Given the lack of any significant difference after controlling for the deprivation level between deafness categories in terms of educational achievement, it may be a more accurate assessment to allocate points based more on poverty than on deafness category.

It is well established that socio-economic status is a key driver of educational advantage and disadvantage. It is important that school services for deaf children respond to work with families living in poverty in sensitive and supportive ways. Inevitably this would require more training for professionals. The Language Environment Analysis (LENA) project in the USA, for example, has recently challenged the assumption held by many teachers that parents from poor families do not talk enough to their children. Their research found instead that amongst families with low socio-economic status there was a large range of average daily adult word count in the presence of children (LENA, 2010). The researchers indicated that it is possible to pass on positive communication practices to parents.

Evidence suggests that progress made in deaf education has already had some impact on the effects of poverty, but services for deaf children should continue to engage with these issues as part of their continuing professional development to improve inter-agency work between health, education and

social services. Professionals could collaborate to a greater extent with parents and d/Deaf communities – assets in the community – which include families living in poverty. This broad-based and collaborative approach offers one way to raise attainment for deaf pupils in Scotland.

The Achievements and Opportunities for Deaf Students research project gave us the opportunity to follow a whole cohort of deaf pupils later on in the school system and into adult life. The survey of deaf young people and their parents revealed some important new findings: principally, that we need to work with colleagues across the education system to mitigate the effects of the many challenges deaf young people currently face in their lives. Significantly a substantive finding of the present study was that deafness has serious implications for their later academic achievement, even if this is classified as 'mild'. As this study has indicated, more targeted and tailored support for parents, better information and knowledge for deaf young people, improved classroom acoustics and developing enhanced awareness in teachers will all help improve the life chances of deaf young people over the longer term.

Appendices

Appendix 1 - see Chapter 1

Table 7
Summary of deafness levels and number of pupils in the ADPS database

ADPS total	2,086		
Unknown level	-322		
Within normal limits	-24		
	Total	1,740	
			Percentage % of 1,740
Deafness Category	Cochlear Implant	200	11.5
	Unilateral	61	3.5
	Mild	431	24.8
	Moderate	568	32.6
	Severe	290	16.7
	Profound	190	10.9
		1740	100

The descriptions of deafness category used in this study are those endorsed by the British Association of Teachers of the Deaf (BATOD): an average hearing threshold of 21-40 dB is mild deafness; 41-70 dB is moderate; 71- 95 dB is severe and above 95 dB is profound. Descriptors are based on the average hearing threshold at 250, 500, 1,000, 2,000 and 4,000 Hz in the better ear (BATOD, 2006). The decision to categorise pupils with cochlear implants separately from the profoundly deaf pupils proved to be a useful way of comparing these two groups (Grimes, 2005). There were little base line data on long-term academic outcomes for pupils with implants, so it was sensible to treat them separately until it became clearer how they were going to achieve at school in comparison with other groups.

The ADPS project was planned originally as a longer project, but unfortunately the director, Dr Mary Brennan, died in 2005 although several publications were subsequently published (e.g. Thoutenhoofd, 2006; Grimes et al., 2007; Grimes (2009b).

Appendix 2.1 - see Chapter 2

Questionnaire to parents

The questionnaire was laid out with more spaces for parents to respond.

QUESTIONNAIRE

This questionnaire asks several questions about your deaf child's schooling and activities. By deaf we mean any degree of deafness.
We would be very grateful for your replies.

About your child

1.	Child's name:

	First name …………………....	Surname ……………………………

2.	Child's date of birth:

	Day …………. Month …………. Year ………………….

3.	Child's gender (please tick)

	☐	Male

	☐	Female

4.	You / your child's address:	Post code

About your child's ethnic origin

5.	Which best describes your child's ethnic origin? (Please tick)

	White	Indian

	Black-Caribbean	Pakistani

	Black-African	Bangladeshi

	Chinese	Other (please state) ………………………

About communication

6.   How does your child prefer to communicate <u>most</u> of the time?

(Please tick one):

☐   Speech only

☐   British Sign Language (BSL) only

☐   English based signing and speech together

☐   English based signing with English mouth movement (no voice)

☐   Writing

Other (please state) …………………………………………

7.   What types of communication methods are used with your child at school, by his or her teachers?

About your child's education

8.   What is the name of the school your child attends?

9.   What year in school is he/she? ....

10.   If your child is aged 13 and above and has taken national (SQA-assessed) exams, we would like your permission to find your child's exam results from the SQA**.** Would you be happy to give this permission? (Please tick)

☐   **YES**, I give my permission for you to find my child's exam results

from SQA.

☐   **NO,** please do not find my child's exam results from SQA.

11. Do you feel that school is preparing your child well for adult life? (Please tick)

☐   Yes

☐   No

☐   A little

☐   Other comments? ....

12. Do you feel that your child is being taught the computing/multimedia technology he/she needs? (Please tick)

☐ Yes

☐ No

☐ A little

☐ Other comments? ....

13. Does your child have any additional disabilities (for example, dyslexia or autism)? (Please tick)

☐ Yes

☐ No

☐ Not sure

13a. If you answered yes, what are those disabilities?

14. What aspects of your child's education are going well?

15. What aspects of your child's education worry you?

Activities

16. Does your child join in any after-school clubs e.g. sports or other activities? (Please tick)

☐ Yes

☐ No

☐ He/she would have liked to but it was too difficult

☐ Other (please explain)

☐ …………………………………………………………

17. Please tell us what clubs, sports or other activities your child is involved in (if any)

18. If your child does join in with after school clubs, sports or activities, is this important in his/her life? (Please tick)

☐ Yes

☐ No

☐ A little

19. Does your child use SMS (text messaging) to send messages to: (Please tick all that apply)

□   Deaf people

□   Hearing people

□   He/she does not use text messaging

20. If you could give advice about schooling to other parents of deaf children, what would you say to them?

21. What are your hopes for your deaf child's future?

Your home postcode from 2000-2005

22. What was the postcode of the place your child lived in between 2000-2005?

Other comments

23. Please tell us if you or your child have any further comments to add about school, achievements, activities, etc.

24. Would you like us to send you a newsletter about the study results when the study is finished? (Please tick)

□   **YES**, please send me a newsletter about the study results.

□   **NO**, please do not send me a newsletter about the study

results.

25. May we contact you in future about more surveys? (Please tick)

□   **YES**, you can contact me again in the future.

□   **NO**, please do not contact me again in the future.

If you wish to be sent a newsletter or to be contacted about future surveys, please include your email address and / or SMS below:

Your email address: ....

Your SMS (mobile phone) number: ....

CONSENT FORM
Deaf Achievement Scotland Study

Please tick the statements you agree with.
If you agree with all of them just tick the bottom box.

❒ I have read the Information Sheet and I know how to contact you if I have any questions.

❒ I agree that my child's data from the 2000-2005 Achievement of Deaf Pupils in Scotland (ADPS) project may be kept and analysed as part of the research.

❒ My child also gives his/her permission for his/her 2000-2005 data to be kept and analysed as part of the research.

❒ I agree to fill in the enclosed questionnaire about my child's more recent schooling and I agree that this data may be kept in the University for the research.

❒ My child also agrees that a questionnaire may be returned about him/her and that the data may be kept in the University for the research.

❒ I understand that I/my child have the right to withdraw some or all of his/her data from the study at any time without giving a reason.

❒ I understand that I/my child cannot expect any direct benefit from this study.

❒ I understand that the information is confidential and that it is not available to any person outside the research team.

❒ I am happy to be entered for the Prize Draw of £100 in vouchers.

❒ **Yes I agree with all the above.**

Please indicate the Local Authority your child was at school in 2000-2005:
…………

Your deaf child's name   Child's signature

Parent's / guardian's name   Parent's / guardian's
                                                 Signature

Date

Appendix 2.2   Method used for gathering parental views

Accessing parents of the ADPS deaf children still at school

We liaised with the forum for heads of services of deaf children in Scotland to inform them about the study and ask for help. First we asked the authority if they knew whether the child was still at school, and if so, if they knew the family's address, then asked them to send out a survey pack on our behalf. We asked if they knew the family were deaf and BSL users if they would send out the version with the BSL translation on DVD. Authorities reported back to us when the surveys had been sent out.

Response rates

We asked the local authority services for deaf children whether the ADPS pupils were still at school; in many cases the service was unsure because the child was no longer being supported by a teacher of deaf children or had moved. We identified 557 pupils still at school. Of these the address was known for 385. We received 10 returns from the post office, i.e. the school service held an out of date address. The response to the survey of parents was therefore 131/375 = 35%.

In this section we examine how representative the sample was. We compare information about the deaf children in the group of parents who responded to the survey with those children whose families did not respond.

Representativeness of the sample

In summary, the deaf children of the respondents to the parents' survey are very similar to the children of the non-respondents in respect of age, gender, age at referral, socio-economic status, having an additional disability, deafness category and language used at home. The two minor areas of difference are an over–representation of deaf children with CIs amongst families that responded and of families from the least deprived social groups. This means that we can be confident about generalising the findings of the parents' survey to the whole of the original ADPS group.

The original ADPS study had 623 deaf pupils in the group who were still at school in March 2011. We call this group the ADPS group. We split this group into two: those whose parents responded to the questionnaire (n = 131) and those who didn't (n = 492).

The samples are very similar in terms of age of the deaf child and age the child was referred. The age of referral will be much lower for most deaf children from 2006 when screening at birth was introduced in Scotland. The respondents to the questionnaire indicated that the children had the same mean age of referral; an earlier referral date would lead to an earlier start on language learning and family support, which could suggest differences in later educational attainment. The two groups are also relatively similar in terms of gender.

Figure 45
**Comparison of socio-economic status of parent respondents
and non-respondents whose deaf children are still at school**
(Respondents n = 125; Non respondents n = 224)
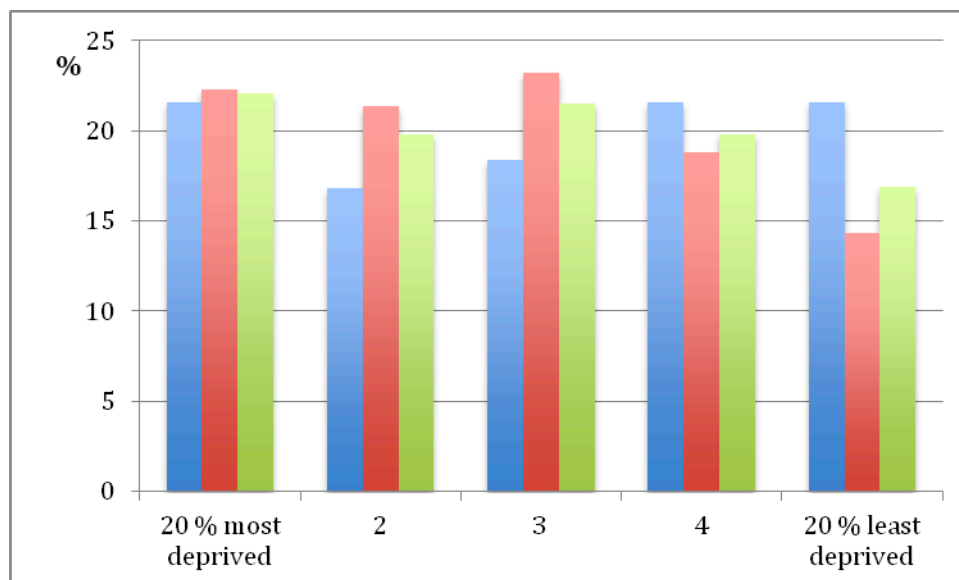
The whole ADPS group (i.e. the green bars in Figure 1 above, those for whom postcodes were known, and whose deaf children are still at school) are fairly evenly represented across the five quintiles of socio-economic deprivation. A quintile represents 20% of the wider Scottish population.

When we split those parents who responded to the questionnaire (blue bars) and those who did not (red), the two groups are very similar across most socio-economic quintiles. For the least deprived quintile a higher proportion responded (21.6%) than did not (14.3%). This is common in questionnaires, as the better off group often has better access to education and may be more interested in research. There was a significant difference between these two groups in the least deprived quintile.[34]

The proportion of deaf children in the parents who responded group who according to the original ADPS database have a disability is 21%. For the group who did not respond, the proportion is 23%. The proportions are not significantly different.[35]

When we compare the proportion of deaf children in each group by deafness category, again we find the groups are very similar. The non-respondent group included a very small proportion of families where the child had unilateral deafness, i.e. was deaf in one ear only or was within normal limits (2.4%). It is not surprising that these parents didn't respond: it is a very small group and also they may not regard their child as being deaf at the moment.

The original ADPS researchers looked at children with cochlear implants as a separate category, although they would have been classified as profoundly deaf before implantation (Grimes, 2005). For this group there is a significant

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[34] $z = 1.744$, $p < 0.1$
[35] $z = -0.430$

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difference between the proportions from the families who responded and didn't respond to the questionnaire, with more children with CIs in the responding group.[36]

A small proportion of the families were found to use sign at home (5.8% for the respondent group and 9.8% for the non-respondent group). This could be BSL or a combination of speech with sign, as recorded by the teachers in the original ADPS study. There was no significant difference between the two groups for the proportion using sign of some type at home.[37]

Appendix 2.3

Investigating the children diagnosed during the first year of life

Using both the ADPS database and parents' responses to the questionnaire we were able to look in more detail at a group of children diagnosed early, but before universal newborn screening started.

There is better information about age of diagnosis and whether the diagnosis was a result of a screening test. Before newborn hearing screening was implemented in Scotland in 2005, screening took place for a few children thought to be at high risk of deafness, for example, when there was genetic deafness in the immediate family, or the birth was premature, or there was an obvious additional disability at birth which alerted the doctors to possible deafness. However, many other deaf babies were diagnosed very early, during their first year of life. This could have been because of very alert parents, or premature birth, for example. For both screened and unscreened, the children could have a much better chance of developing good levels of spoken or signed language because parents were aware of the deafness from a very young age and also because the service for deaf children could start to support the parents. Potentially this group may achieve better at school than deaf children diagnosed later in childhood.

Currently we are not able to investigate this, but we may be able to return to this group of parents in the future to seek their permission to participate in subsequent research when a greater number of children have completed their examinations. The fact that the parents who responded are very representative of the wider ADPS group of the same age range is most encouraging.

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[36] $z = 1.747$, $p < 0.1$.
[37] $z = -1.353$

Table 8 below gives some demographic characteristics of this group of school-aged children who were diagnosed as deaf in their first year of life.

Table 8
Characteristics of the deaf children diagnosed in the first year of life
(n = 27)

		n	*Source*
Presence of an additional disability	yes = 5 no = 16	21	ADPS
Language of the home	22 = English 2 = English and another spoken language 3 = BSL or SSE	27	ADPS
Current age of those diagnosed during the first year of life	primary school= 13 secondary = 10	23	Parents' questionnaire
How many were screened	4 out of 23, all 4 high risk	21	ADPS
Preferred language of the child	speech = 15 BSL or SSE = 10 other = 2	27	Parents' questionnaire
Deafness category of the child	mild = 1 moderate = 5 severe = 2 profound = 1 CI = 6	15	ADPS

It is surprising that even though services have known about this group from the first year of their life, information about their deafness category was missing from the ADPS database in 12 of 27 cases. A higher proportion than expected (10 of 27 or 37%) used sign as their preferred communication mode than for the respondents as a whole (18%). There is a larger group of 39 deaf children diagnosed in the first year of life amongst the group of deaf young people in the ADPS database who have already left school.

Appendix 3 – see Chapter 3

3.1
Table 9
Investigated factors which may affect outcomes in deaf education

Sub group	Factor	Study
Student variables	Additional disabilities	Knoors and Marschark, 2014; Stinson and Kluwin, 2011
	Deafness category	Stinson and Kluwin, 2011; Goldberg and Richburg, 2004; Calderon, 2000; Moeller et al., 2007; Marschark et al., 2014; Shaver et al., 2014
	Cause of Deafness	Stinson and Kluwin, 2011
	Age at onset of deafness	Stinson and Kluwin, 2011
	Hearing aid use	Geers, 2006; Marschark et al., 2014
	Intelligence	Knoors and Marschark, 2014; Maller and Braden, 2011
	Use of sign	Allen and Anderson, 2010; Convertino et al., 2009; Knoors and Marschark, 2014; Marschark et al., 2014
Family variables	Socio-economic status of family	Kluwin, 1994; Pollard and Oakland, 1985; Swanwick and Watson, 2007; Marschark et al., 2014
	Whether parents deaf	Convertino et al., 2009; Powers, 2003; Marschark et al., 2014
	Home language	Allen and Anderson, 2010; Marschark et al., 2014
	Ethnicity	Allen and Osborn, 1984; Marschark et al., 2014; Shaver et al., 2014
	Parents' skills and involvement	Moeller, 2000; Calderon, 2000
	Parents' expectations	Marschark et al., 2014; Calderon and Greenberg, 1997
School variables	Early intervention	Yoshinaga-Itano, 2003; McCracken et al., 2005; Calderon and Greenberg, 1997
	Type of educational placement	Holt, 1994; Marschark et al., 2014; Shaver et al., 2014; Stinson and Kluwin, 2011
	Language approach at School	Allen and Anderson, 2010; Grimes et al. 2007; Knoors and Marschark, 2014
	Comprehension of language used in class	Marschark et al., 2008; Convertino et al., 2009
	Pupils' prior Attainment	Powers et al. 1998; Powers, 2003, 2006; Tymms et al., 2003; Convertino et al., 2009; Marschark et al., 2014

Appendix 3.2

Sample collection and inclusion criteria

The ADPS database contained 2,121 records of deaf school pupils collected between 2000 and 2005. Thirty-five records were removed or merged, as it could be determined with certainty that they represented duplicates of other cases or were completely blank. Thus the ADPS database contains 2,086 valid records.

The research team focused on school achievement in public examinations in S4, the fourth year of secondary education in Scotland. Our rationale for this is that it was the last time the whole year group remained together, because after S4 pupils may leave to find work, go to college, or stay on at school. Achievement at S4, therefore, gives the opportunity to examine the achievement of every pupil in the age cohort.

A data sharing agreement was made between SQA and the University of Edinburgh School of Education. First initiated by the ADPS research team, the agreement was extended to the current research team since it was continuing the earlier study. Based on names and dates of birth and/or the Scottish Candidate Numbers of the ADPS pupils (the Candidate Number was only available for 278 pupils out of the 1,607 = 17%), SQA was able to provide the current team with SQA exam results for 981 deaf pupils of the ADPS S4 population (61%). Out of the 626 missing cases, the ADPS database did not hold the required information (i.e. at least the name and the date of birth) for 461 cases. Thus SQA was able to provide exam results in 86% of cases where the ADPS database held enough information.

We compared these different groups to establish how representative they were. The results showed that in terms of deafness category and additional disability, the group of pupils for whom the research team held enough information to ask SQA about results was representative of the wider ADPS S4 group. In addition, within the group of the 1,146 pupils for whom SQA received enough information from the research team, there was no significant association between deafness level, the existence of an additional disability and whether or not SQA was able to find results for a candidate.

A data sharing agreement was also arranged with ScotXed, the Scottish Exchange of Education Data Unit, part of the Education Analytical Services of the Scottish Government to help the research team check the year group of the ADPS S4 group. The SQA tariff score allows comparisons between different types of qualifications. A higher tariff score represents a better achievement at school. The mean tariff score of the 544 pupils with a 3-fold S4 year match between ScotXed, SQA and ADPS was higher (M = 139; SD = 80) than the tariff score of the 406 pupils with mismatching S4 years (M = 73; SD = 81). This difference was highly significant ($t(948) = 12.47$, $p < .001$) and also represents high relevance in practice.

Given the fact that the accuracy of the S4 year is crucial for the accuracy of the attainment obtained from the tariff score up to the end of S4, the research team excluded all those pupils from the analysis for whom there was an incomplete match between the three sources (ScotXed, SQA and ADPS) for the S4 year. Although this meant a 43% reduction of the sample size, it heightened the validity of the results. A further four pupils who went to a special school at secondary level were removed from the analysis because the Scottish Government statistics on national tariff scores used for comparison do not include pupils in special schools. Although the resulting sample of 540 deaf pupils with S4 exam results represents only 34% of the ADPS S4 population, it represents a large sample in the field of deaf education research.

Table 10
Method for identifying the sample of 540 deaf pupils

Total ADPS records	2121			
Blank or duplicates	-35			
	Total valid records ADPS	2,086		
	Younger than S4	-465		
	S4 or older	1,621		
Died or requested not to be included	-14			
		Total S4 or older	1,607	
S4 information not available			-657	
S4 exam information available			950	
ScotXEd, SQA and ADPS Incomplete match (43% reduction)			-410	
		Final total	**540**	

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Further evidence is available which shows that the group of 540 pupils is representative of the wider ADPS S4 population in terms of gender and socioeconomic status. The mean age of the 540 group is slightly younger (in 2011) i.e. 20 years old as opposed to 21 for the whole ADPS S4 group. The proportion of pupils in the 540 sample who were profoundly deaf is 8% as opposed to 14% in the wider ADPS group, which is a significant difference.[38]

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[38] $\chi2$ (6) = 16.615, *p* <.05

Appendix 4 – see Chapter 4

4.1   Screen shot of questionnaire for young deaf adults available online and on paper
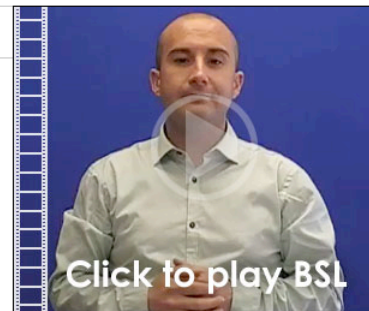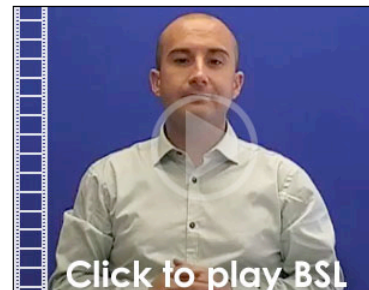
The survey for deaf young people is still available to view online, though not any longer available for completion:

http://www.blendedlearning.me/DASS/site/

Appendix 4.2

Representativeness: the young deaf adult questionnaire sample and the ADPS group

We were able to verify 188 respondents as being in the ADPS study but 11 said they did not want their ADPS data to be used further, leaving a sample group of 177.

The mean age of this group was 20.69, i.e. nearly 21. The mean age of the ADPS group who had left school was 21.22, i.e. slightly older but still 21. This difference was significantly different, even though it appears similar.

In terms of gender, the ADPS study had 43% females in the group which had left school, compared to 54% in our survey respondent group. In many other studies it has been shown that women more often fill in surveys and questionnaires than men (Smith, 2008; Volken, 2013).

The deprivation level of the ADPS school leavers and the survey respondent group was examined by using postcode data. In the UK the precise area people live in, as indicated by the postcode, can be correlated to levels of wealth and deprivation. In Scotland the method often used is called the Scottish Index of Multiple Deprivation (Scottish Government, 2009a). Postcodes were not well completed in the ADPS database: 58% of this data were missing in ADPS. However, this question was answered by everyone who completed a questionnaire. In comparing the levels of deprivation we used quintiles: five equal groups each representing 20% of the population. There were no significant differences in the distribution of socio-economic deprivation between the ADPS and the survey respondents. However, the respondent group were more often in the least deprived quintile, 24% as compared to 18% from the ADPS group. So although the survey respondent group came from slightly more privileged backgrounds than the larger ADPS group, the difference was not a statistically significant one.

The 177 survey respondent group had allowed the research team to refer to audiological data held about them in the ADPS database. We were able to compare the proportion of young people with particular levels of hearing loss with those in the wider ADPS group.

Not all the deafness categories used in this study are based on audiological criteria: the ADPS project also decided to collect information on pupils with cochlear implants separately from the profoundly deaf group to see if there were any differences in their school outcomes (Grimes, 2005). The ADPS database also held information about some pupils who were deaf in one ear only, and so from the BATOD descriptions above would have hearing within normal limits.

The young people who responded to the School Leavers' questionnaire were quite different from those in the original ADPS database. The over-representation of severely deaf, profoundly deaf and people with a CI in our sample could be related to the access methods we employed, i.e. we informed organisations working with and run by deaf people. The mildly deaf

group may not associate themselves with being deaf, and may have had limited contact with school services for deaf children, so there was less chance that we would find them to administer questionnaires.

The level of additional disability was also compared between the respondent group and ADPS. There were significantly fewer people in the respondent sample who reported an additional disability, 12%, versus the 28% recorded in the ADPS study. However, these were two different types of questionnaire. The respondent group was self-reporting, and may have learned to overcome issues which their teachers, earlier in their lives, regarded as significant. In addition the ADPS database contained a great number of reports of disabilities and impairments which were not all diagnosed ones. In relation to some issues, such as visual impairment, in some cases teachers recorded wearing glasses or having correctable vision as an additional impairment.

The final way in which the researchers compared the respondent group with those who had left school from the wider ADPS group of deaf people was by tariff score. The tariff score is a way of allocating points to all public examinations taken in Scotland so as to compare performance across different types of examinations (Scottish Government, 2009b; Annex A). Because the research team had a data sharing agreement with SQA, it was possible to look at the tariff score for 100 of the respondent group when they were in S4 compared to 440 of the ADPS group (with the respondent group extracted from it). There was a significant difference: the respondent average tariff score at S4 was 175 compared to 132 for the wider group. This shows that the two groups are not comparable, perhaps because individuals who are better connected by computer are more likely to be contacted and to answer questionnaires. So conclusions we draw about the respondent group cannot be applied to the wider ADPS group.

Abbreviations

ADPS   Achievements of Deaf Pupils in Scotland. A research project which ran at the Moray House School of Education, The University of Edinburgh between 2000-05, funded by the Scottish Executive.

ASL   Additional Support for Learning. The term used in Scotland as opposed to Special Educational Needs used in the rest of the UK.

ASN   Additional Support Needs.

AtW   Access to Work.

BATOD   British Association of Teachers of the Deaf, the professional association for specialist teachers in the UK.

BSL   British Sign Language, a natural language used by members of the UK's Deaf community.

CAP   Categories of Auditory Performance, a scale for measuring progress with listening skills.

CI   Cochlear Implant.

CRIDE   Consortium for Research into Deaf Education, a group which includes representatives from BATOD and NDCS.

FE   Further Education.

FM system   A radio hearing aid used with behind the ear hearing aids. It reduces background noise in the classroom or training venue, making the hearing aid much more effective.

GRI   Gallaudet Research Institute, USA.

GCSE   General Certificate of Secondary Education, the examination taken in England by nearly all pupils at the age of 16.

HE   Higher Education.

HNC   Higher National Certificate. A higher education one-year course at level 7 on the SCQF, taught in colleges.

HND   Higher National Diploma. A higher education two-year course at level 8 on the SCQF, often available in colleges.

IEP   Individualised Educational Programme.

MCMC	More Choices, More Chances: the Scottish acronym for NEET.
NatSIP	National Sensory Impairment Partnership which operates in England and monitors achievement for pupils with a sensory impairment.
NDCS	National Deaf Children's Society.
NEET	Not in education, employment or training. This is the group of 16 – 19 year olds who may be at risk of social exclusion.
n.s.	Not statistically significant.
S4	Secondary 4, the year group when Scottish pupils turn 16 and the last year the whole cohort is together. Used as a benchmark year by the Scottish Government for this reason.
SCQF	Scottish Credit and Qualifications Framework. A way of mapping all Scottish qualifications to 12 levels, allowing international comparisons. http://www.scqf.org.uk/
SD	Standard Deviation.
SDS	Skills Development Scotland, the agency which provides careers advice, guidance and vocational training in Scotland in an all-age service.
ScotXEd	Scottish Exchange of Education Data Unit, part of the Education Analytical Services of the Scottish Government.
SG	Standard Grade, an exam taken by Scottish pupils at the age of 16, now replaced by National 5.
SIMD	Scottish Index of Multiple Deprivation.
SOC	The Standard Occupational Classification set by the Office for National Statistics: 9 occupational classes are arranged from 1 (managerial) to 9 (unskilled jobs).
SSC	Scottish Sensory Centre.
SSE	Sign Supported English: signing and talking at the same time.
SQA	Authority.

Figures and Tables

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