Summary Report

Achievement and Opportunities for Deaf Students in the United Kingdom: From Research to Practice

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From Research to Practice**

Introduction

In the complex mosaic of raising and educating children who are deaf and hard-of-hearing (DHH),[1] there are only a few issues on which there is unanimous agreement. One of the points of agreement is that DHH children comprise a far from homogeneous population, and that the large individual differences observed among them create real challenges for all stakeholders in what is commonly referred to as "deaf education". This heterogeneity explains, in large part, the reason that special schools and programs for DHH children typically involve small class sizes, with as few as 6-10 students. Even in classes of that size, teachers will be confronted with several different levels of language fluency, content knowledge, learning styles, and social maturity. Those students will come from different cultural and linguistic backgrounds and between 2 and 4 of them will have neuropsychological, physical, or learning challenges associated with their hearing losses (Knoors and Marschark, 2014, ch. 2). None of this variability disappears when DHH children are in regular classrooms. The issue there becomes whether the teachers in those classrooms, supported by peripatetic teachers of the deaf and other professionals, have the skills and resources to build on the strengths and compensate for the weaknesses of their DHH students. At a more basic level is the question of whether teachers and even the parents of DHH students fully recognize those strengths and needs and understand how to accommodate them.

Against this backdrop, a second point of agreement in educating DHH children is that their chronic underachievement in the United Kingdom and elsewhere (e.g., Hendar, 2009; Powers, 1999, 2003; Qi and Mitchell, 2012), has gone on much too long. Although there are several perspectives on the causes of DHH children's academic challenges, decades of research and interventions have failed to close the achievement gap between them and their hearing peers. Calderon and Greenberg (2011) pointed out that there is no one main factor that determines outcomes for DHH children, but many, including the family and community support system, the personal characteristics of the people involved, and the different types of services which schools offer deaf children. They suggested that "Instead, there is a need to conceptualize the multiple, reciprocal interactions among persons and environment that determine healthy, competent behavior" (p. 197). Archbold (in press) similarly noted that "Defining the characteristics of deaf students, and their needs, is inherently messy and complex; any attempt to simplify this group in order to carry out what might be considered robust research, does not recognize their complexities, or the number of variables to be taken into account in what is a low incidence population". These cautions aside, most

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[1] The term *hearing impaired* is often used in the United Kingdom and several other countries to refer generally to individuals with a wide range of hearing thresholds or more specifically to those with mild hearing losses. Here, we follow the 1991 joint statement by the World Federation of the Deaf and the International Federation of Hard of Hearing People rejecting *hearing-impaired* in favour of *deaf and hard of hearing*.

discussions of the development and education of DHH children today focus on the "main factors" language, literacy, and/or cochlear implants.

The introduction of sign language and bilingual education into the classroom after a century of enforced spoken language education improved academic outcomes for some DHH learners. The vast majority of relevant academic studies have examined only reading abilities, and the gaps there and in mathematics have remained (Marschark and Lee, 2014; Pagliaro, in press). Indeed, the lack of documented success of bilingual programming in the United Kingdom and Scandinavia, among the earliest adopters, has been a contributor to its rapidly decreasing popularity (Bagga-Gupta, 2004; Swanwick et al., 2014).

The reduced emphasis on sign language in educating DHH students has been profoundly affected by two other factors as well. One of those is the dramatic shift over the past 30 years from most DHH students being educated in special settings to their now being educated primarily in regular school classrooms (see below). Contrary to the expectations of many, however, "mainstream" education has not closed the achievement gap between DHH students and their hearing classmates (McCain and Antia, 2005; Marschark, Shaver, Nagle and Newman, in press). The other large factor contributing to a resurgence of "oral" education for DHH students has been technology. Rapid advancements in hearing-related technology – digital hearing aids and cochlear implants – has led to many more DHH children having (better) opportunities to acquire spoken language than ever before. Yet, largely unexplained variability in spoken language outcomes (e.g., Niparko et al., 2010) and increasing achievement gaps with age (e.g., Geers, Tobey, Moog and Brenner, 2008) have left the long-term benefits of pediatric cochlear implantation less clear than was originally foreseen (Archbold, in press).

If the three biggest changes in deaf education over the past 40 years have not closed the achievement gap (Qi and Mitchell, 2012), where are we now? On the positive side, most educators, investigators and parents of DHH children have come to recognize that there are no simple answers to the questions confronting stakeholders in educating those children. Both the complexity of the issues and the heterogeneity of the changing population of DHH children is such that the notion that there is an academic panacea just waiting to be discovered has been tempered by the reality of the global evidence base (Knoors and Marschark, in press). We know that deaf children who receive cochlear implants early, at around one year of age, are showing better academic outcomes than those who receive them later (Archbold et al., 2008), but we do not know if the levels of hearing and spoken language ability those children acquire will be sufficient for the more complex, nuanced language they will encounter as they get older (Archbold, in press). We know that DHH students can learn as much as their hearing peers when they are taught by teachers who recognize and can accommodate their diverse needs (Marschark, Sapere, Convertino and Pelz, 2008), but we do not know what kinds of adjustments to methods and materials those teachers use to achieve that end. But one large piece of the mosaic has not yet been mentioned.

To this point, we have not mentioned perhaps the most significant change affecting the raising and educating deaf children in the past century: the introduction of universal newborn hearing screening (UNHS) and early intervention programming. UNHS in the United Kingdom and around the world has led to dramatically earlier identification of hearing loss and the earlier provision of family-centred early intervention services (Leigh, Newall and Newall, 2010; Yoshinaga-Itano, 2003; Young and Andrews, 2001). Surprisingly, however, 40 years into the early intervention movement, we have little understanding of its impact beyond the early school years.   UNHS and early intervention have been found to reduce parental stress related to having a DHH child and improved early language outcomes for DHH children. Longer term outcomes associated with regard to schooling, employment, and quality of life remain to be explored.

From UNHS to postsecondary education and employment, stakeholders in deaf education face a variety of challenges in seeking to improve achievement and opportunities for DHH children. If we want them to fully share the possibilities of their hearing peers, however, we first need to discover and sort out relations among child characteristics, home environments, school settings, language, and learning. Only then can we support them in achieving their full potentials. The substance of this summary report, the *Achievement and Opportunities for Deaf Students in the United Kingdom: From Research to Practice* project (henceforth Achievement and Opportunities) is only one step in this direction. But, as the Chinese proverb reminds us, a journey of 1000 miles begins with a single step.

Achievement and Opportunities for Deaf Students in the United Kingdom: Background and Overview

As noted earlier, deaf education in the United Kingdom is similar to other Western countries insofar as most DHH children are educated in regular schools, including special classrooms within those schools, rather than separate schools for the deaf (or hard-of-hearing, as in the Netherlands and, formerly, in the United Kingdom). Until the identification of signed languages as true languages in the 1960s, research involving their linguistic and psycholinguistic implications of the 1970s, and the importation into classrooms in the 1980s, the language of instruction in deaf education was almost exclusively through spoken language – and remarkably ineffective (Geers, 2006). Confounding the relation between language and learning, however, were poor quality analog hearing aids and low expectations of many parents and teachers for academic outcomes for DHH youth.

The dominant approach to educating DHH children during the 1950s and 1960s, as with most children with disabilities, was generally one of protection and separation. In the United Kingdom, as in many other countries during the same period (see Lang, 2011), most children with disabilities thus were educated in segregated settings (Rieser, 2006). For DHH children, however, the advent of UNHS meant that many more children with lesser hearing losses were identified, fitted with free hearing aids, and increasingly

supported by peripatetic teachers in local schools. As a result, by 1968 in England and Wales, almost 50% of DHH students were enrolled in mainstream settings, almost 30% were in schools or units for hard-of-hearing children, and less than 25% were in schools for the deaf (DES, 1968, p. 8). These proportions are likely to have been similar to Scotland, and by 2012, only about 10% of Scottish DHH children attended special schools (Weedon, Ahlgren, Riddell and Sugden, 2012).

The extent to which the mainstream diaspora in the United Kingdom has been of benefit to deaf education, and to DHH children in particular, remains to be determined. Clearly, however, disaggregation of DHH schoolchildren from centralized academic settings has made relevant research considerably more difficult. The primary goal of the Achievement and Opportunities project has been to enhance our understanding of the academic achievement, social, and personal growth of DHH young people in the United Kingdom in the current context. Armed with an understanding of the population, the project also is aimed at serving as a bridge between research and practice in raising and educating DHH children.

The Achievement and Opportunities project is a follow-up to the *Achievements of Deaf Pupils in Scotland* (ADPS) study conducted from 2000 to 2005 at the University of Edinburgh, funded by the Scottish Executive. The ADPS project sought to examine factors associated with academic success for DHH students. Data were collected for every deaf child in Scotland who received at least two visits from a teacher of the deaf each year.[2] As a result of the inclusive approach of the ADPS project, the resulting data set included information about over 2000 children with a very broad range of hearing thresholds including children with and without cochlear implants, mild or unilateral losses, and some who had only temporary losses. Among the 1740 students with identified levels of hearing loss, approximately 28% had mild or unilateral hearing losses, 33% had moderate losses, 28% had severe to profound losses, and 11% used cochlear implants.

Throughout the ADPS project, parents and deaf young people themselves were kept informed of the study's progress through newsletters and events organised by voluntary networks and organizations (e.g., National Deaf Children's Society, NDCS). However, the information collected was from the perspective of teachers of DHH children working in local authority school services. Teachers completed ADPS surveys annually with a detailed individual return,[3] although some of the children with lesser hearing losses received only occasional monitoring visits from school services.

The ADPS project came to a halt in 2005 with the untimely death of its leader and primary investigator, Dr Mary Brennan. Although several reports based on ADPS data emerged (e.g., Grimes, 2009; Grimes, Thoutenhoofd and Byrne, 2007; Thoutenhoofd, 2006), when the remaining project staff dispersed, the database was left incomplete and undocumented. The Achievement and Opportunities project was initiated in order to

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[2] The criteria for such visits were based on educational need rather than audiological definitions.

[3] Surveys sometimes changed from year to year making longitudinal comparisons difficult.

preserve the existing data, identify as well as possible individuals in the database, and conduct a follow-up study and extension of ADPS to address four questions:

1. What patterns of intervention, support, and educational methods lead to the most successful outcomes for DHH children in academic, social, and personal growth?
2. How do the academic, social, and vocational outcomes for DHH children compare to those in the wider population of children and school leavers in Scotland and the UK?
3. What proportion of deaf school leavers are/are not in education, employment, or training?
4. What characteristics of deaf young people are associated with these various outcomes?

These questions are not mutually exclusive but overlap historically, practically, and methodologically. Their treatment below thus is overlapping, and no attempt is made to artificially separate them; nor should there be. However, the questions did require tapping somewhat different sources of information and different ways of looking it. These are described briefly below. The full project report, including descriptions of methodologies and additional background literature can be found on the Achievement and Opportunities website http://www.blendedlearning.me/DASS/site/.

Achievement and Opportunities for Deaf Students in the United Kingdom:
Parents' Views of Their DHH Children's Education

Two of the overlapping central questions addressed by the Achievement and Opportunities project involved parents' views of the education provided to their DHH children:

• What patterns of intervention, support, and educational methods lead to the most successful outcomes for deaf children?
• What characteristics of deaf young people are associated with various outcomes?

The deaf education literature historically – and today – has involved a large number of studies asking parents of DHH children for their views with regard to not only their children's needs, but also their children's wants, desires, and views about schooling and quality of life. Findings from the United Kingdom and the United States reported by Marschark, Bull, Sapere, Nordmann, Skene, Lukomski and Lumsden (2012) call some of those studies into question, having found that parents' reports of their DHH children's perspectives on academic and social functioning in school were less congruent with each other than the perspectives of parents and their hearing children. Parents' views of their DHH children's education in the Achievement and Opportunities project thus was considered only part of a larger mosaic, as were the teachers' perspectives offered by the original ADPS project.

When the ADPS project began in 2000, deaf education in Scotland was organised into 32 local authority services. There was one national deaf school, Donaldson's College (now Donaldson's School), funded by central government, and five remaining day schools for DHH children. There also were six primary and eleven secondary resource bases for DHH children. Consequently most were supported by peripatetic teachers of the deaf who visited their school regularly. The highly devolved structure in Scotland and throughout the United Kingdom led to variations in provision, although strong professional links between teachers of deaf children continued to collaborative learning (e.g., via DEAF-ED-NET@JISCMAIL.AC.UK today). For parents, navigation of this educational system is often challenging.

In the United Kingdom, as elsewhere, parents of DHH children frequently have found themselves feeling under-informed with regard to decision-making and powerless in the face of seemingly monolithic school systems. In the United States, the Education of All Handicapped Children Act of 1975 was designed to give parents specific and powerful roles in their children's special education, roles later enshrined by the Individuals with Disabilities Education Act (known, with its reauthorization, as IDEA). Despite this legal requirement, many U.S. parents still feel intimidated or left out of the process (see http://www.educatingdeafchildren.org). In a benchmark study within the UK, Gregory, Bishop, and Sheldon (1995) examined the views of deaf young people, aged 18 – 24, and their parents. Parents reported frequently feeling powerless in the education process, being told which school their child would attend and the communication approach that would be used. 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 approximately 10% of all children in England left school without qualifications; for the group of DHH young people in the Gregory et al. study, the figure was 50%. More recently Heineman-Gosschalk and Webster (2003) surveyed 100 parents and teachers of deaf children in the United Kingdom on their views about early literacy. A majority of parents (60%) did not think they had received enough advice about how to read with their child at home. Watson and Swanwick (2008) similarly found that parents of DHH children were offered little advice about how to support early literacy through shared reading, whereas parents of hearing children received quite specific guidance and support. While many investigators lament the lack of information available to parents of DHH children, Russell and Granville (2005) found that a "silent majority" of Scottish parents with hearing children also saw their roles in their children's education as rather limited: making sure their child arrived at school each day dressed appropriately and attending music events and parents' evenings. Parents reportedly were alarmed to discover the potential impact that parents have on school achievement – or not.

The Achievement and Opportunities project was more focused than previous studies in asking parents specifically about support services and educational methods associated with successful outcomes of their DHH children. Of central interest was how such associations varied with other factors including children's additional disabilities, family socioeconomic status, ethnicity, and students' engagement in social activities and other

aspects of community life as preparation for post-school participation in society. Toward this end, a parent survey was created and distributed as a postal survey in English (print) and British Sign Language (BSL via DVD). The parent survey also served a methodological function, and centred on four issues:

- whether their DHH child was in the ADPS database and whether parents would give permission to use those data[4]
- determination of children's ethnicity and disability status
- information concerning how DHH children currently prefer to communicate at home and school so as to allow comparison to ADPS data
- parental views on their DHH child's experience in school
- children's after-school clubs, activities and friendships with DHH and hearing children.

More broadly, open-ended questions sought to learn more about the parents' hopes for their DHH children's futures and about satisfaction with school in terms of preparation for adult life. The parent survey and methodological details concerning the contacting of parents can be found in the full online report together with a fuller description of the findings beyond those summarised below.

Of the 1740 deaf children in the ADPS database, calculations indicated that just over 550 remained at school. Because data originally had been provided by teachers rather than parents and children were not identified in the database, services for DHH children in local authorities were asked to forward paper-based surveys to those parents for whom addresses were known. Often, only the date of birth for children or birthdates and initials were listed in the database, so authorities were not always able to locate an address.

Addresses ultimately were obtained for 375 of the 557 DHH students in the ADPS database believed still to be at school. Surveys were returned by 131 parents, a response rate of 35%. Preliminary comparisons of respondent and non-respondent families on the basis of the ADPS database indicated that DHH children of respondents to the parents' survey were very similar to the children of the non-respondents in respect of age, gender, age at referral for support services, socio-economic status, additional disabilities, degree of hearing loss, and language used at home. The two minor areas of difference were an overrepresentation in responses from parents of children with cochlear implants, generally a very involved group, and from parents with higher socioeconomic status. Taken together, the results indicated reasonable confidence in generalising the findings of the parents' survey to the whole of the original ADPS group.

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[4] Because the ADPS data were provided by teachers, preserving DHH children's anonymity, informed consent initially was not sought from parents. This study did not utilize existing ADPS data without first obtaining such consent.

Communication

Consistent with the focus on communication in the development and education of DHH children, parents were asked how their DHH child prefers to communicate most of the time (at home) and the mode of communication used in school. As can be seen in Figure 1, the overwhelming majority of ADPS students still in school were reported to use speech as their primary mode of communication. Together with sign supported English (i.e., BSL signs in English word order) English was preferred by over 90% of deaf children. One issue of potential interest for further study was the finding that almost 10% of the time, children's preferred mode of communication did not match that used in school. This may indicate parents' lack of understanding with regard to terminology used in deaf education (Shaver, Marschark, Newman and Marder, 2014), students' metacognitive shortcomings with regard to language comprehension (Borgna, Convertino, Marschark, Morrison and Rizzolo, 2011), and/or the failure of schools to accommodate children's communication needs.
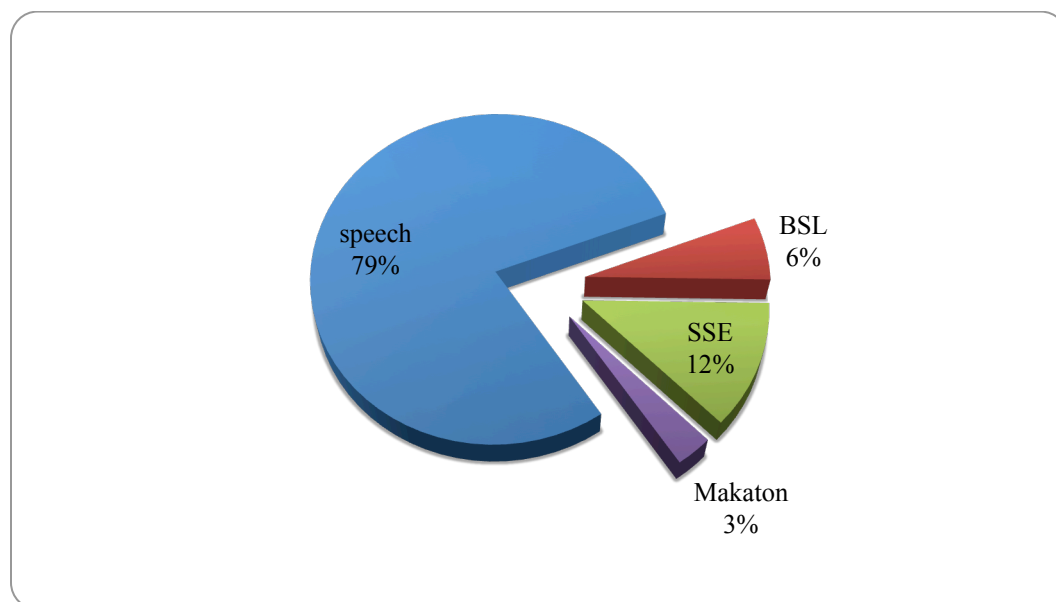
Figure 1. Parents' report of children's preferred mode of communication at home

Not surprisingly, DHH children's purported preferred mode of communication was related to their level of hearing loss. Only among children with profound losses was the preference for BSL close to that for English. It is noteworthy, however, that many of the profoundly deaf children in the current sample had cochlear implants and thus would be more likely to use spoken language that historically would have been the case.

School Setting

Most of the DHH children represented in the parent survey currently were at secondary school, about 85% of them in mainstream settings. In contrast to a common belief that

schools and programs for the deaf enrol a greater proportion of DHH children with additional disabilities (e.g., Holcomb, 2013), the proportion of deaf children with additional disability was very similar in mainstream school and resource bases. The number of children attending a school for the deaf was too small for reliable interpretation, but Shaver et al. (2014) found that in the United States, DHH children with additional disabilities were equally represented in mainstream and separate settings. School placement was associated with socio-economic status, however. Using families' postcodes to utilize the Scottish Index of Multiple Deprivation (2012), analyses indicated that higher socioeconomic status was associated with a greater likelihood of children being enrolled in mainstream settings. That association might be mediated by additional disabilities, as children living in lower socioeconomic status areas were more likely to have additional disabilities. Although hearing loss is frequently described as an "equal opportunity disability", this finding suggests that mothers with lower socioeconomic status may seek or receive less prenatal and perinatal care and/or generally be less healthy than mothers with higher socioeconomic status.

Preparation for Life after School

Over 75% of parents reported that school was preparing their DHH child well for adult life, with similar proportions reported by parents of children in regular and special school placements. Over 75% of parents also reported their DHH child's involvement in after-school clubs; over 85% of them believed that attendance at clubs and activities was important in the lives of their DHH children. Overall, such participation was primarily sports-oriented but did not vary by whether or not children had additional disabilities. However, rates of participation were associated with levels of socioeconomic status, as children from the least deprived areas were the most likely to be involved in three or more after-school activities per week.

Parental concerns about school

Parents were asked if there were any aspects of their child's education that worried them. Responses sometimes touched on several issues simultaneously, and in these cases they were multiply coded. Taken together, concerns comprised four general themes (n=164 from 129 parents).

- Concerns about the deaf child as an individual: As one might expect, common concerns of parents (35%) related to the individual needs of their DHH children. Parents were acutely aware that some aspects of learning are particularly difficult for such children but were unsure as to why this was the case. Parents often know their children's ways of learning, but expressed uncertainty about their levels of skill in the classroom (see Marschark, Bull, et al., 2012). Many such comments were from parents who had children with

additional disabilities, and they were concerned with specific issues regarding their child's health or behaviour.

- Concerns about the school system: Concerns of 28% of parents related to aspects of the school system that were not fully understood or thought to be inflexible and unresponsive to their child's needs. Concerns about teachers' low expectations of their children, examinations, and access to the curriculum were regularly mentioned as significant concerns (Antia, in press). Parents felt that schools and services for DHH children often do not fully explain examination arrangements. Parents worry about this several years before the actual examinations, even though the examination board in Scotland has very flexible arrangements that match the support usually provided in class (see Cawthon, in press).

- Concerns about the child's social relationships: Surprisingly, only a small proportion (9%) of parents reported concerns about the social skills of their deaf children and most of these were about relationships with hearing children in mainstream settings. This finding merits some caution, however, as Marschark, Bull, et al. (2012) found that this was the area of greatest mismatch between student and parent perceptions, as parents of DHH children in the United Kingdom and the United States reported their children to be more social and have more friendships than did the children themselves.

- Concerns about transitions and life beyond school: Some parents of older children (6%) were worried about how their deaf child would cope after school in adult life or higher education or work contexts (see below). Some expected that their children would be in control of access arrangements at the next stage of their education, a finding also corroborated by views from deaf school leavers (see below). Consistent with previous findings, responses suggested that parents thought schools and services for DHH children could do more to provide information to parents about learning issues and why these often occur (Marschark and Knoors, 2012).

Parent-to-Parent Advice

Finally, an open-ended question asked parents what advice they might offer about schooling to other parents of DHH children. Although parents from higher socioeconomic status backgrounds were more likely than those from lower socioeconomic status backgrounds to respond to this question, overall it yielded a high response rate (79%) with several broad themes:

- Parents as well-behaved consumers: Comments associated with this theme and the next came from over 50% of parents, but the two themes appeared to represent opposing poles on a continuum. The 22% of parents who advocated being "well-behaved consumers" appeared to be rational consumers who wanted to co-operate with schools to make their children's paths easier. They suggested asking for help, being proactive, checking all

the options available, school visits, and seeking support from other parents. They indicated beliefs in good communication and co-operation with the system.

- Parents as drivers and advocates of deaf education: Another group of parents appeared more radical in their approach to the education system. They recommended fighting for deaf children's rights and understanding and using the system to improve services. They reported being well-informed about how professionals should collaborate, and they recommended ways to ensure it was successful. It may be noteworthy that this group contained proportionally more parents whose children had cochlear implants, again, generally a very active group.

- Seeing the child as different: Parents often made comments which showed they recognized their child's needs as different from hearing children's (Knoors and Marschark, 2014), although a large group of them also balanced this view with recognition of the advantage of being in a mainstream school. There was recognition that an inclusive education may need more specialist resources, and that DHH children need to have DHH friends, too, for their mental well-being.

- Seeing the child as the same as hearing children: Some parents viewed their child as almost the same as a hearing child, sometimes because their children had only minimal or mild hearing losses. Their orientation was towards "normality" and local friendships, and not wanting their child to appear different; most of their children attended mainstream schools.

- Supporting the child: Comments from this group of parents often did not related to the above, but many had a very personal response to the question. They suggested love, support, patience, and not interfering too much in their child's life. Parents from the most deprived 20% of households represented 46% of the supporters of this viewpoint.

Key Findings

The present sample of parents was similar to parents of children in the ADPS database in the same age range. Consistent with results from the United States, 85% of the children in the present sample were enrolled in mainstream settings, either a local school or school with resource base. Findings indicated parents to believe that mainstream education settings are associated with higher teacher expectations, a view held both by parents who want their child to be seen as the same as hearing children and those who recognise that they are different. In general, expectations of parents for their DHH children were high; one of the most concerning areas for comment were the low expectations for DHH children held by some teachers. At the same time, parents were fairly sure that their child's school was preparing them well for adult life. Most of their school-aged children were involved with after school clubs and activities; the presence of an additional disability made no difference to the level of involvement. Children from higher socioeconomic status households attended a wider range of clubs,

however, while those from lower socioeconomic status households appeared to be benefitting more from the Government's targeting of funding for youth activities.

Of the 131 children represented in the parents survey, 27 were diagnosed as having a hearing loss in the first year of life, but only 4 as a result of screening and none from the Newborn Hearing Screening Programme (NHSP). A higher proportion than expected for this early-identified group use some sort of sign as their preferred mode of communication (37% compared to 18% for the whole group).

Achievement and Opportunities for Deaf Students in the United Kingdom: Educational Achievements of Deaf School Leavers

The four research questions noted earlier centre on relations among early family and educational factors and later achievements in school and the workplace. One aspect of the Achievement and Opportunities project examined DHH students' school achievements at the age of 16 compared to the wider school population.

As indicated earlier, international studies over the past several decades have investigated factors associated with academic outcomes of school-aged DHH children. Beyond the United Kingdom, the majority of such studies have been conducted in the United States (e.g., Antia, Reed, Jones and Kreimeyer, 2009; Blackorby, Knokey, Wagner, Levine, Schiller and Sumi, 2007). Marschark et al., in press; Mitchell and Karcher, 2011) and Sweden (e.g., Bagga-Gupta, 2004; Hendar, 2009; Rydberg, Gellerstedt and Danermark, 2009). Additional studies conducted primarily in the United States have examined predictors of learning, persistence, and graduation from postsecondary settings. Similar work at the postsecondary level has been conducted to a more limited extent in the United Kingdom, but is beyond the scope of the Achievement and Opportunities project (see Richardson, 2001; Richardson, Barnes and Fleming, 2004; Richardson and Woodley, 1999; see also, Brennan, Grimes and Thoutenhoofd, 2006).

The longest established survey of DHH children's achievement is the Gallaudet Research Institute (GRI) Annual Survey, which has been administered across all U.S. states since 1967 (e.g., Allen and Osborn, 1984; Holt, 1993; Traxler, 2000). However, data from the Annual Survey has been acknowledged to be heavily weighted toward students with greater hearing losses and those enrolled in schools for the deaf (e.g., Holt, 1993). Meanwhile, other studies have clearly demonstrated that even minimal to mild hearing losses have significant impact on children's academic achievement, particularly with regard to literacy (e.g., Goldberg and Richburg, 2004; Moeller, Tomblin, Yoshinaga-Itano, Connor and Jerger, 2007). The consequences of that bias in the achievement literature have become apparent with the U.S. Special Education Elementary Longitudinal Study (SEELS; www.seels.net) and the National Longitudinal Transition Study 2 (NLTS2; www.NLTS2.org). For example, whereas studies based on the Annual Survey have indicated greater hearing losses among secondary school students to be associated with lower academic achievement (e.g., Holt, 1993;

Karchmer, Milone and Wolk, 1979), recent studies based on the nationally-representative NLTS2 sample have indicated mild hearing losses to be associated with performance comparable to that among children with profound hearing losses, presumably because the former students receive lesser support in school (Shaver et al., 2014). In the United Kingdom, Powers (2003) collected demographic, school, and achievement data on 747 moderately to profoundly deaf students aged 16 and above between the years 1992-1996. Consistent with the Shaver et al. (2014) findings, he found no statistically significant relation between degree of hearing loss and educational outcomes.

Since 2004, the English Government has reported in detail about children with disabilities through the School Census. This has led to the establishment of a National Pupil Database, which may solve many of the issues about unrepresentative samples of the school-aged population of DHH children. Scotland has reported on school-aged children with impairments from 2003 (Scottish Government, 2004), and gradually this has led to a higher proportion of deaf children being identified. Throughout the United Kingdom, however, there are still issues about who fills in record sheets, how much information the school has from the local authority services for DHH children about hearing loss, whether enough information is collected, and how multiple disabilities are recorded (Weedon et al., 2012), an issue that created challenges for ADPS and the present project.

Academic Outcomes of DHH Students in the Achievement and Opportunities Project

The ADPS database contains valid records for 2086 DHH individuals, of which 1607 had reached at least S4, the fourth year of secondary education in Scotland, by the end of the academic year 2011. That was the last time the whole year cohort was together, because after S4 students may leave to find work, go to college, or stay on at school. The project therefore focused on school achievement in public examinations in S4 through a data sharing agreement between the Scottish Qualifications Authority (SQA) and the University of Edinburgh School of Education. SQA provided examination results for 981 deaf students of the ADPS S4 population (61%). 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, however, students for whom there was an incomplete match between the three sources of school data (ScotXed, SQA and ADPS) were excluded from analyses. The remaining 540 verified S4 students (information available on hearing loss for 499) were comparable to the larger ADPS sample in gender, age, socioeconomic status, and levels of hearing loss. However, fewer of the verified S4 students had additional disabilities.

As can be seen in Figure 2, there was a slight decline in tariff scores with increasing hearing thresholds. The only significant difference, however, was that between students with cochlear implants and those with severe hearing losses. As in the general UK population (e.g., Ahmar and Anwar, 2013), there was a significant relation between socioeconomic status and achievement but not between gender and achievement, both

as indicated by tariff scores. Students with an identified disability beyond hearing loss, on average, had significantly lower tariff scores than their ADPS peers.

Another indicator of academic achievement in the United Kingdom is the number of examinations entered. Powers (2003) found that profoundly deaf students were likely to be entered for fewer qualifications than those with lesser hearing losses, a factor that negatively affected their tariff scores. It is quite common in secondary schools for a deaf student to be
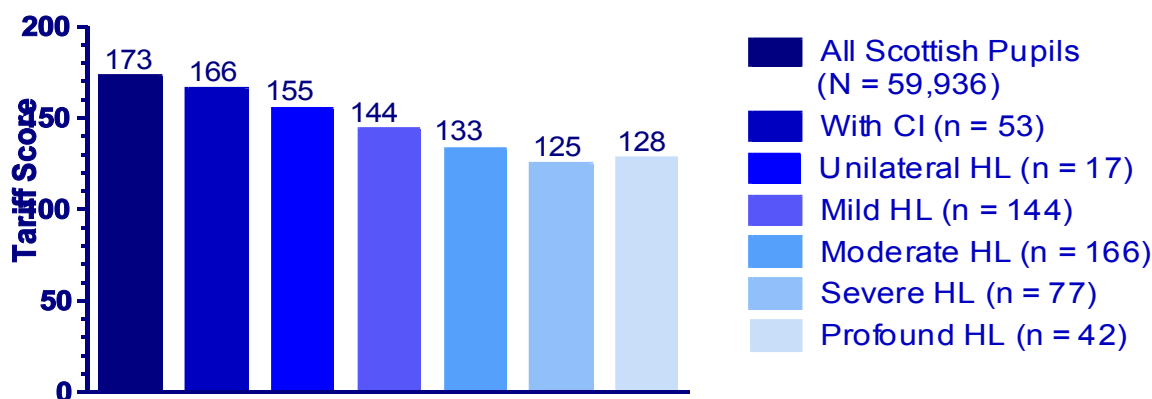
Figure 2. Tariff scores for students with different levels of hearing loss

exempt from one time-tabled option in order to provide specialist teacher support in other subjects. In the present sample, students with greater hearing losses entered significantly fewer examinations. Students with cochlear implants were entered for more examinations than those with severe or profound hearing losses. Consistent with the NLTS2 findings in the United States and contrary to the Annual Survey findings, there was no significant difference between students with mild to moderate hearing losses and those with severe to profound losses.

Levels of Support for DHH Students

The Achievement and Opportunities project examined factors related to the support provided to ADPS students received during the period 2000-2005, collapsed across health, education, and social services. A weekly support figure per student was measured in hours. Overall, there was a significant relation between amount of support and level of hearing loss. Students with severe to profound hearing losses received more total hours of support per week than those with mild to moderate losses, and those with profound losses received more support than those with severe losses. Perhaps surprisingly, students with cochlear implants (who usually have pre-implantation profound hearing losses) did not differ from other students with profound hearing losses in their hours of support. This likely reflects the need for intensive, ongoing support in speech and hearing for children using cochlear implants. Although it might be suggested that pre-implantation services could represent a confound, parallel results were obtained with regard to the amount of support (in total hours per week)

provided by teachers of the deaf to students at each level of hearing loss. Fortnum, Stacey, Barton, and Summerfield (2007) also found comparable numbers of support hours for students with implants and profoundly deaf students in England (12.8 hours per week), but the students with implants had less time from teachers of deaf children.

Overall, and after controlling for socioeconomic status, students with mild to moderate hearing losses received surprisingly little support, with means of 1.6 and 2.6 hours per week, respectively. Although these group may not be representative of the children in the general population with minimal and mild hearing losses, many of whom go unidentified, it appears more likely that these children are not receiving support that they need (Moeller et al., 2007; Goldberg and Richburg, 2004). This would at least partly explain the lack of greater achievement in the present sample (Marschark et al., in press).

Relations between Hearing Loss and Passes in English at Different SCQF Levels

Because literacy skills remain the most significant barrier for DHH students across their school years and into postsecondary education (Knoors and Marschark, 2014, ch. 8), a final set of analyses examined relations between hearing loss and English scores on the Standard Grade (SG) examinations Scottish students take in and leading up to S4. Simply put, the 482 students in this sample, across all levels of hearing loss and including students with cochlear implants, scored significantly lower at each SCQF level (3 through 5) than hearing peers. Greater differences were apparent at higher levels of qualification. Again, there was no significant effect of level of hearing loss.

Key Findings

Examination of the academic achievement among DHH school leavers who had been in the original ADPS sample informed three of the research priorities for this project. With regard to the question of how academic, social, and vocational outcomes for deaf children in this sample compared to those in the wider population, hearing loss – including mild losses and remaining losses after cochlear implantation – clearly had a negative effect on achievement as measured in several different ways (Moeller et al., 2000). Socioeconomic status also was related to DHH children's achievement, as it is in the general population. However, there appeared to be a mitigating effect of additional support on the achievement of DHH students below median in socioeconomic status.

With regard to the question of whether there are particular patterns of intervention, support, and educational methods that lead to more successful outcomes for DHH deaf children, findings indicated that students with severe to profound hearing losses were entered for fewer examinations than their peers with cochlear implants. Across all levels, hearing loss was negatively associated with students' English examination scores. Support services were found to vary significantly across levels of hearing loss,

with students who had mild to moderate losses receiving less support (in terms of total hours per week) compared to peers with greater hearing losses. While lesser support may reflect lesser need for support services in some cases, recent studies suggest that perceptions that students with mild hearing losses are functioning well in school (primarily because of their better speech skills) have significant, negative effects on their receipt of support services and, in turn, on their academic achievement.

Examination of relations among the characteristics of DHH youth and their levels of achievement indicated significant differences in tariff scores between those with cochlear implants and those who had severe hearing losses. After controlling for the effect of socioeconomic status, hearing loss no longer had a significant effect on tariff scores. Consistent with findings in the general population, there was no significant effect of gender on achievement scores. However, students who were older than peers in their cohort, possibly because they have been held back at some stage in their school career, did significantly worse in examinations than students who were in the age-appropriate cohort, a finding that replicated recent results in the United States (Marschark et al., in press). Perhaps most importantly for future intervention and study, results indicated that deaf students with additional support needs did not achieve as well as those without, and those who had additional disabilities performed significantly worse than those who did not. Precisely how to accommodate the needs of students in this extremely heterogeneous subpopulation of DHH students is one of the greatest challenges facing deaf education today (see Van Dijk, Nelson, Postma and Van Dijk, 2010).

At this juncture, given the findings with regard to educational achievements and parents' views of their DHH children's education, it is worthwhile reiterating one thread running throughout this report (see also the full report online) and recent research concerning the changing population of deaf learners. It is well acknowledged that children with greater hearing losses face considerable difficulties in acquiring spoken language, a situation that focuses the profession on early achievement, literacy, and family-centred interventions. However, there are similar serious issues for children with lesser hearing losses, frequently masked by their better spoken language skills. The lack of breadth in vocabulary knowledge, world knowledge, and difficulty in acquiring general information by overhearing it, together with the poor acoustic conditions found in most classrooms undoubtedly contribute to the poor achievement of children with mild and moderate hearing losses. Children with cochlear implants often are functionally in this group, and recent research indicates that their simply being able to overhear others via their implants is insufficient to provide them with vocabulary and world knowledge significantly better than deaf peers without cochlear implants (Convertino, Borgna, Marschark and Durkin, 2014). Again, a likely contributor to this situation is the relatively poor acoustics found in many classrooms (De Raeve, in press).

In England, there are building regulations (BB93) that mandate all new school buildings to meet a minimum acoustic level (Department for Education and Skills, 2002). However, these rules do not apply to existing buildings and 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 student numbers were limited in classes with DHH students, and if at least two classrooms per school were acoustically treated to standards used for classrooms in Sweden, this would go some way towards making reasonable adjustments. These structural approaches, along with greater focus from teachers of the deaf and audiologists providing better guidance to parents and mainstream teachers, likely would raise attainment for DHH children (see also final section, below).

Achievement and Opportunities for Deaf Students in the United Kingdom:
Deaf Young People's Views of Their Education and Transition to Adult Life

In the broad literature on raising and educating deaf children, it is rare that one actually "hears the voices" of stakeholders themselves (Young and Temple, 2014). The Achievement and Opportunities project sought to change that situation while gaining addition information about (1) the academic, social, and vocational outcomes for DHH learners; (2) patterns of intervention, support, and educational methods they believe contribute to the most successful outcomes; and (3) the educational, social, and community activities of DHH school leavers. The project therefore sought to make contact with as many DHH youth as possible from the ADPS study who had left school to find out about their lives in transition to adulthood and factors that contributed to that transition.

Transition to adulthood in the 21st century is recognized as being rather different than was experienced by earlier cohorts, and this is particularly true for DHH youth. Marschark (in press) argued that there has never been a better time to be a deaf individual, the product of changing educational methods, technologies, and social acceptance. But that does not make the transition from school to adulthood any easier. Traditionally, transition from adolescence to adulthood has been seen as a period of movement between longer and more stable periods of settled activity as a cohort moves from school to college, higher education, and/or work; moving out from the parental home and perhaps starting a family; and looking for one's place in the world. Recent studies, however, have challenged the linearity of this definition, arguing that transitions are rarely so unidirectional. Rather, life-changing transitions are much more individualized and occur across the lifespan (Ecclestone, Biesta and Hughes, 2010). As young people move, perhaps in a less purposive way than in the industrial past, they become somebody, experience setbacks, make choices, and discover limits imposed by their circumstances – whether or not they are constrained by them.

For DHH youth in the United Kingdom and other Western countries, opportunities have never been better for access to education, employment, and social interchange. As investigators within the UK, Valentine and Skelton (2007) highlighted the fact that the young people, and DHH youth in particular, may have quite different definitions of independence than the investigators who study them (see Young and Temple, 2014).

Some DHH youth will identify as members of a cultural-linguistic Deaf community of sign language users, some will not. Others will develop bicultural identities, having more or less comfort being part of two worlds or seeing society as a continuum to be explored. The full online project report reviews the international literature with regard to this transition and DHH youth. The focus here is on the post-school lives of DHH youth in the United Kingdom as they become independent and make their way in the world. This part of the project proved more challenging but also very informative, and some elaboration will be helpful in understanding the nature of the population involved. Full methodological details can be found in the full online report.

The ADPS project had tracked every individual over a five-year period, which meant that some entered the school system and some left during that time. As noted earlier, data had been collected from teachers rather than from students and parents themselves. Maintaining the relative anonymity of children in the ADPS database facilitated data collection and, in particular, informed consent was not required, but that anonymity created significant challenges for the Achievement and Outcomes project. The first of these involved contacting deaf youth who would have been in the ADPS study and seeking their consent for participation in completing a survey for the present project and/or use of their previous data. On the basis of ADPS data, approximately 1,380 students from the original study were expected to have left school by 2011. With the target audience of 16 to 28-year-old school leavers, a variety of contact strategies were utilized including the creation of a website, a Facebook page, services of an outreach worker, requests for assistance from schools and organizations, and advertising through newspapers, clubs, and audiology/implant clinics.

Once contacted, individuals were requested to complete a survey created on the basis of the existing literature and a similar survey undertaken in the United States (WPSD, 2002). A total of 258 individuals completed the survey, of whom 188 had been included in the ADPS database. Of these, 177 of these gave consent to use their ADPS data. As described in the full online report, this 13.6% of the original ADPS sample was representative of the larger sample population in terms of age and level and family socioeconomic status but not in terms of level of hearing loss, presence of additional disabilities, gender, or tariff scores. It is unclear whether the nature of the sample was the result of contact factors, access factors, or willingness to participate, and generalizations from the following information on *living in the community* and *training, education, and employment* therefore should be made with caution.

Living in the Community

Living Situation

One indicator of youth transition to independence is where they live. As can be seen in Figure 3, most DHH respondents were still living with their parents/family. Precise comparison data for the general population are not available, but the Office for National Statistics (2011) using Labour Force Survey statistics reported that only 28% of 20 to

34-year-olds in the United Kingdom were living with their parents. Older respondents were more likely to be living outside the family home, but the data presented in Figure 3 suggest that young DHH adults are less likely to be independent than peers in the general population.
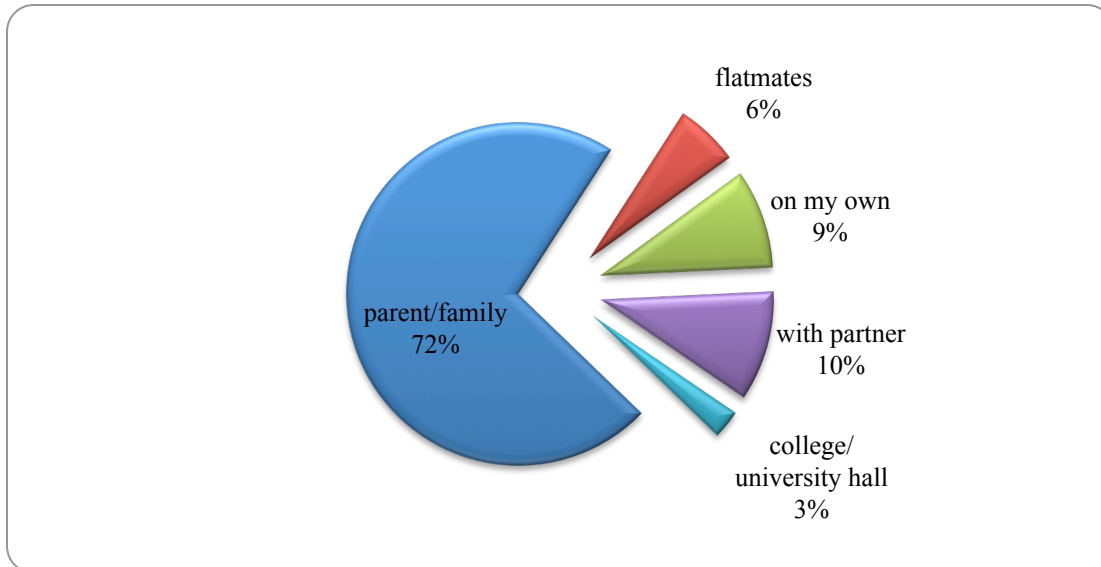
 Figure 3. Current living arrangement

Socioeconomic status

Using SIMD postcodes as a means for estimating socioeconomic status indicated a slight decrease among respondents relative to their status in the original (2000-2005) ADPS study. As the majority of youth were still living with their families, the small shift could be the result either of the frequency of youth living in less affluent areas than their parents or an indication of their employment/income status (see below).


Secondary School Attended

The type of secondary school attended frequently is associated with personal factors such as communication skills and friendships, and it may be related to postsecondary social, educational, and employment activities. Information therefore was obtained from respondents concerning their secondary school attendance in order to categorize school types as described earlier. Consistent with the larger DHH population, 85% of respondents attended mainstream or resource base programs; 11% attended a school for the deaf.

Happiness in School

With regard to social engagement, the survey asked individuals to reflect on their experience of school, clubs, and activities when they were younger as opposed to their current involvement as young adults. Almost 60% of respondents indicated that they were either happy or very happy when they were in school, compared to less than 20% indicating that they were unhappy or very unhappy. Nevertheless, respondents generally did not think that school had prepared them well for getting a job; 40% said it did not and 41% it did only a little. Individuals who used either sign language and spoken language reported having been equally happy in school.

Communication Preferences

Figure 4 depicts communication preferences among respondents. The finding that only 15% preferred to use BSL, and over 80% preferred to use English speech or English-based signing is consistent with parents' characterization of their children's communication preferences when they were in school. This finding is particularly interesting insofar as it suggests that rather than DHH 16 to 28-year-olds moving toward greater identification with the BSL-using Deaf community, they maintained their earlier English-language orientations, perhaps for postsecondary education or employment purposes. It could be argued that the relative infrequency of a preference for BSL was the result of its lesser availability in mainstream and resource base academic settings. However, the Deaf studies literature generally uses a preference for BSL as an indicator of a Deaf identity (e.g., Ladd, 2003; Lane, 1992).
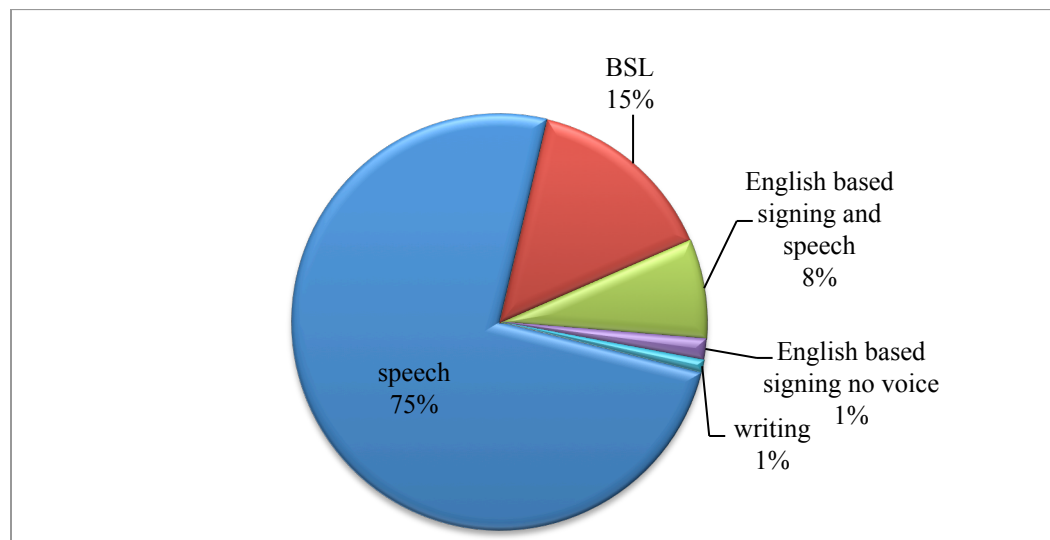
Figure 4. Communication preferences

Volunteer Activities

As one indicator of community involvement, individuals were asked if they had ever done voluntary work. 59% of respondents indicated that they had done so, a finding independent of whether individuals were currently employed (see below). Of the 33

who had done volunteer work and also held a job, 17 had engaged in volunteer work related to their employment, suggesting voluntary work may have been useful to them (or "encouraged" by their employers). Doing voluntary work had not improved respondents' chances of finding full time work.

Participation in Clubs and Community Activities

Earlier, it was reported that over 75% of parents in the ADPS sample indicated that their DHH children were involved in after-school clubs, with over 85% believing that attendance at clubs and activities was important for their children. As young adults, individuals' current responses agreed with their parents' assessments approximately 10 years earlier. 73% of respondents indicated that clubs and activities had been important to them when they were younger and 86% thought that their current involvement in clubs and activities was important to their lives.

Legal Registration

Two other indicators of community participation were being registered to vote and possessing a driving licence. In Scotland, approximately 90% of the general population aged 15 and above are registered to vote (Scotland's Census 2011, 2012). Only 78% of DHH 16-to 28-year-olds in the present sample indicated that they were registered. Looking ahead, it also may be informative that almost 10% of respondents did not know whether or not they were registered.

Holding a driving licence opens up better opportunities for work over a larger area and allows maintenance of friendships and a wider range of activities. In the general population, 50% of 17 to 28-year-olds hold driving licenses, as did 44% of respondents in our sample (another 5% had reported having passed the theory but not the driving portion of the licencing test).

Training, Education, and Employment

Given the frequent disparity in income between DHH and hearing individuals and underemployment among the former, the completion of postsecondary educational programs by such individuals cannot be underestimated, either for them or for the United Kingdom at large. In the United States, Schley, Walter, Weathers, Hemmeter, Hennessey and Burkhauser (2011) found that DHH students who graduated from postsecondary programs, even those who obtained vocational degrees, experienced significant earnings benefits and reduced dependence on government disability programs relative to students who did not graduate. Students with Baccalaureate degrees were found to earn 66% more over their careers compared to peers who were not admitted to the same program; those earning sub-Baccalaureate degrees were projected to earn 34% more than those who here not admitted. The Achievement and

Opportunities project examined school leavers' participation in work training, postsecondary education, and employment.

Participation in Work Preparation Training Programs

There are four Skills Development Scotland (SDS) programmes for unemployed people in Scotland: Get Ready for Work (for 16 to 19-year-olds), Modern Apprenticeships (for those 16 years of age and older), Training for Work (for those 18 years of age and older), and Skillseekers (Skills Development Scotland, 2012). The youth survey asked about involvement in any of these schemes including plans for future involvement. Participation in such schemes is often compulsory through a Job Centre if young people want to remain on unemployment benefit. However, there are sometimes considerable barriers to DHH individuals' accessing these schemes. These generally relate either to communication (e.g., absence of a budget for BSL interpreting or a required minimum level of English) or mathematics skills, the two most commonly-reported academic challenges for DHH learners (Knoors and Marschark, 2014). 17% of respondents indicated that they had participated in Get Ready for Work, 8% in Modern Apprenticeships, 18% in Training for Work, and 12% in Skillseekers. Approximately 8% were unsure whether they had participated in any of these training schemes.

Participation at College

Participants were asked if they were at college at the time of the survey or had been previously. Information was obtained on the number of years individuals had been studying, the name and length of their courses, and the qualifications sought. Young people in Scotland can study at both Further and Higher education level in local colleges, and the information obtained allowed separate consideration of courses taken at the two levels.

Figure 5 depicts college attendance at the time of the survey and previously. For comparison purposes, the rate of individuals in the 17 to 29-year-old age group at college in Scotland during the 2010-2011 academic year was 34% (Scottish Funding Council, 2012), similar to the 30% among DHH respondents. In Scotland as a whole over the period 2007-2011, however, the proportion of Higher education enrolments by headcount in colleges ranged between 14% and 19% (Scottish Funding Council, 2012). In the present sample, 39% of the respondents reporting college enrolment indicated current participation in Higher Education rather than Further Education, over twice that in the general population. This may reflect insufficient academic preparation for Further Education among the DHH respondents or lesser need for Further Education for their career plans.
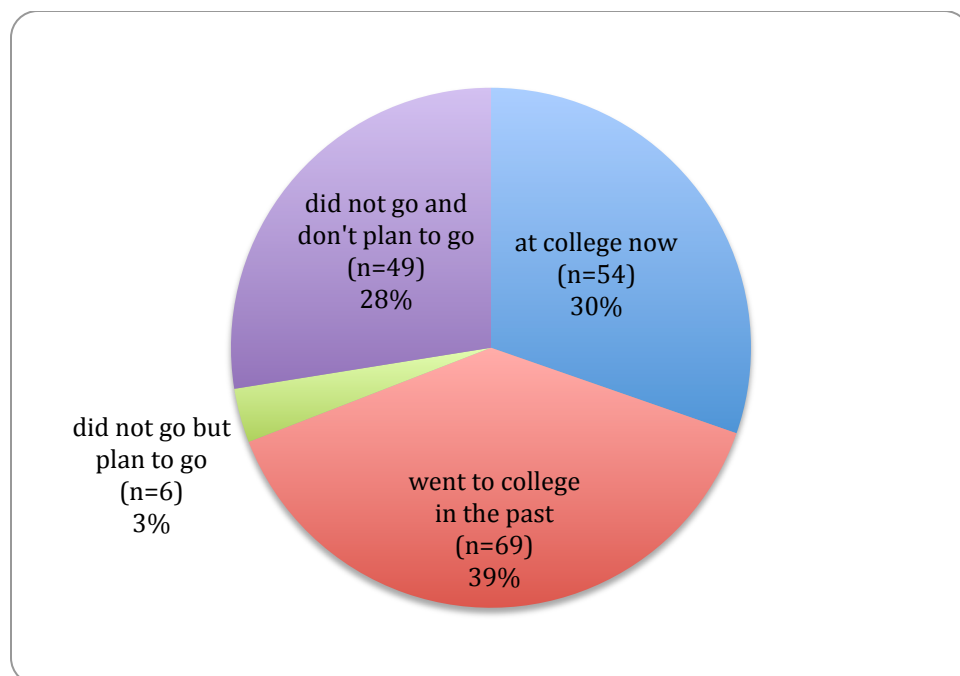
Figure 5. Attendance at college

Attendance at University

Survey respondents indicated whether they attended university at the time of the survey, if they had attended in the past, or if they planned to attend in the future. Information obtained regarding university attendance was similar to that obtained regarding college attendance. Figure 6 summarises reports of university attendance among survey respondents. Although the numbers are small, 12% of respondents had received Higher National Diplomas, Higher Education Diplomas, or other sub-Baccalaureate degrees; 64% had received first, Baccalaureate degrees; and 9% of respondents had received postgraduate degrees. Colleges in Scotland have lower admission requirements and often have more accessible support services than universities. Within the Scottish postsecondary education system, students thus can progress to Higher National Diplomas at local colleges and transfer to a university degree course later, a system similar to community colleges and Associate degree versus Baccalaureate degree programs in the United States. Of the DHH students reporting current enrolment at university, however, only 24% had previously been to college. This suggests that in the present sample of DHH students at university, most had gone directly from secondary school to university. This is only slightly higher than indicated by Scottish Government statistics indicating that 17% of deaf school leavers in 2011 went straight to university (Scottish Government, 2011).
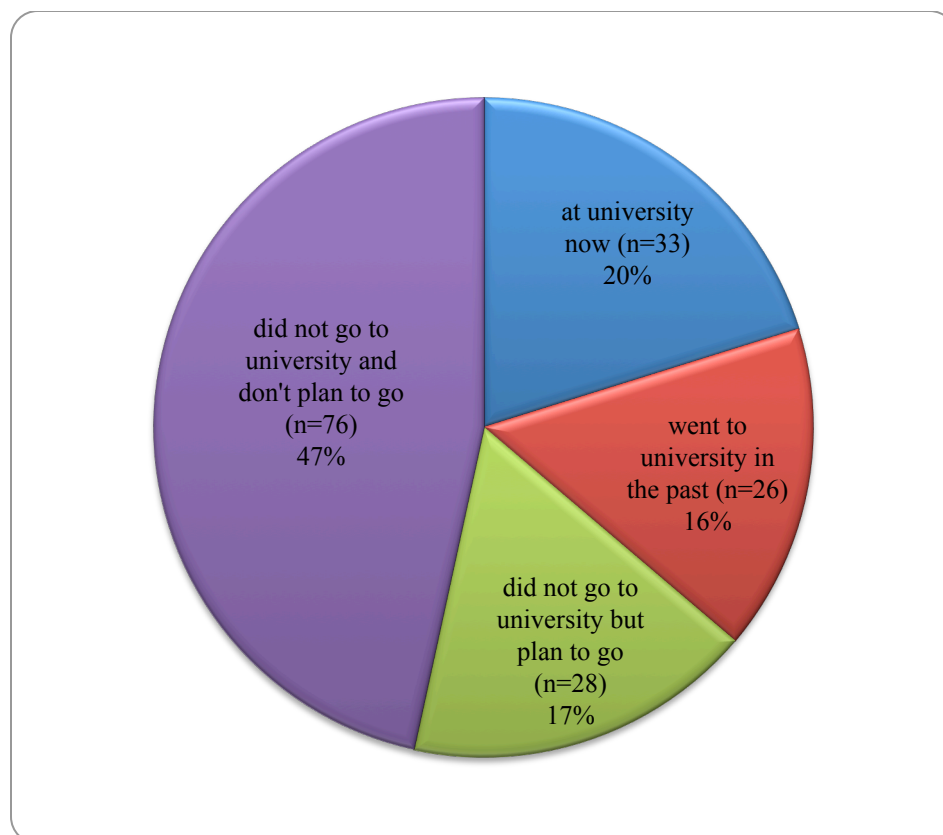
Figure 6. Attendance at University

Employment

Figure 7 summarises respondents' reports concerning their employment status. Taking the first quarter of 2011 as the reference period, the Scottish Youth Unemployment rate was 19%, only slightly lower than the 22% among DHH respondents. The Scottish Youth Employment rate was 53%, as opposed to 31% for the respondents in the 16 to 24-year-old group (Scottish Government, July 2011). This comparison shows that DHH respondents were rather less successful in finding work than peers in the general population. It is noteworthy that at that point in the recession, only half of young people in Scotland were in the labour market and, as is often the case in tight labour markets, DHH individuals and others with disabilities were experiencing an even more difficult time.   In such situations, many young people stay or re-enrol in postsecondary education as a buffer, either preparing for specific employment or waiting for a time when more jobs will be available.

Information obtained from respondents concerning the nature of their employment indicated that only about 1% had attained managerial positions and fewer than 10% reported being engaged in professional occupations. The three largest categories of employment were elementary occupations (e.g., cleaner, waitress – 20%), caring, leisure, and service (18%), and sales and customer service (16%) (Office for National Statistics, 2010). Overall, however, compared to 16 to 24-year-olds in the general

Scottish population, DHH youth had a higher proportion of mid-income jobs and a lower proportion of low-income jobs. Perhaps not surprisingly, respondents who had achieved higher levels of education (in terms of SCQF level) were more likely to be employed, and education level likely was partly responsible for the lesser dependence on low-income employment among DHH respondents.
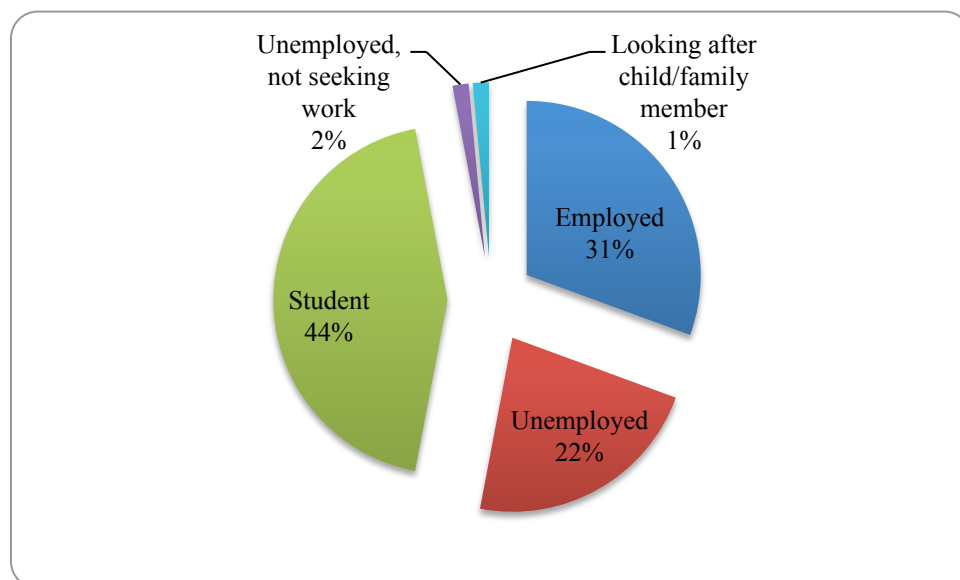
Figure 7. Employment among DHH school leavers aged 16-24

Happiness at Work

School leavers had been asked about their earlier happiness while at school, and 63 who were currently employed responded to a question about their happiness at work. Their responses indicated that almost 70% were happy or very happy in their work; less than 15% indicated that they were unhappy or very unhappy. Far fewer DHH respondents were unhappy at work relative to adults of working age in the United Kingdom (NEBOSH, 2011), but comparison statistics for this age group were not available.

DHH Youth Not in Training, Education, or Employment

Throughout the United Kingdom, there are some young people who are difficult to engage in employment or training. The government defines this group as 16 to 19-year-olds who are not in education, employment or training (NEET). In Scotland, the group is rather euphemistically called More Choices More Chances (MCMC). Thirteen respondents were in the MCMC category, representing 18.3% of the larger group of 16 to 19-year-old respondents, a higher rate than in the 12.4% of the same-aged general population of Scotland for same year (2011). Demographic data indicated this to be a

very "average" group in terms of socioeconomic status, educational level, language preference, and geographic location (urban/rural). Perhaps the most distinguishing features were that only 2 of the 13 had driving licences, and only 5 had studied at college for a year or more (cf., Schley et al., 2011).

Advice to Deaf Children Still in School

Among the questions developed on the basis of an earlier survey of DHH school leavers in the United States (WPSD, 2002) was one that had proved most interesting in the earlier study: "If you could give advice to deaf schoolchildren now, what would you say to them about school?" This proved one of the most engaging questions for the current sample. Their varied responses fell into the five following themes.

Personal Qualities Will Lead to Success

Both respondents educated in mainstream settings and those who had attended DHH units or schools highlighted this as the most important theme. Participants advised deaf children at school now to be confident and assertive, to keep trying and be ambitious, and to have confidence in themselves.

Ask for and Take Help

This theme also was equally represented among young people who attended mainstream schools and those who went to units or schools designed for DHH students. They saw support as vital for success. Respondents indicated that it was important to actively request support, make the most of it when it was available, and be aware of the support to which one is entitled. As with the general population of young people, social support from family and friends was seen as vitally important. Within this theme was an acknowledgement of how hard it is to access and absorb all the information one needs as a deaf person in a hearing learning environment.

Take Control of Your Access Arrangements

This theme emerged more from young people who had experienced mainstream education than those from special education settings. These young people suggested that DHH students need to shape the learning environment to better support their communication needs, to have high expectations for themselves, to work harder than others, and to use all opportunities to gain experience and develop skills. Respondents supported a strong self-advocacy approach, suggesting that sometimes, they could rely only on themselves.

Relationships with Hearing People

This theme also was more prevalent among young people who had been in mainstream schools than those who had been enrolled in special settings. There were many indirect references to bullying from hearing peers and being disparaged by some members of staff (see Knoors and Marschark, 2014, ch. 7). Once again, respondents expressed an attitude of self-reliance in dealing with hearing people.

Relationships with Deaf People and BSL

This theme was most remarkable for the infrequency with which it was addressed, although the clear preference for spoken language among children and youth in this sample suggests that it should not have been unexpected. Generally, associated comments came from respondents who had been in the full range of educational placements, but young people who had attended mainstream schools mentioned BSL more often than those who had been to resource bases or schools where signing was used. Tensions were evident in young people's responses, just as we saw earlier among parents' responses: Some participants argued that being with other deaf people was very helpful; others saw it as isolating.

Key Findings

In terms of their transition to independent adulthood, a survey of DHH school leavers who had been part of the ADPS study when they were younger indicated that a considerably larger proportion of DHH survey respondents are living at home with their parents than is the case for same-aged peers in the general population. Perhaps as a result, the DHH youth in the sample were somewhat less likely to have driving licences and were less likely to be registered to vote (or to know whether they were). Consistent with their orientations when they were younger, the vast majority preferred to use spoken language rather than sign language.

A much lower proportion of DHH youth went straight from school to university (17%) than was the case for all Scottish students (38%). As a group, however, respondents were studying broadly the same range of subjects at Higher education level as university students in the United Kingdom at large.

Fewer of the DHH respondents were employed (31%) relative to the general population of the same age (53%), and of those who were employed a far greater proportion was working only part time. Only 11% were taking advantage of Access to Work. Respondents with cochlear implants were aware of the program although they generally did not make use of it.

A higher proportion of DHH youth were not in education, employment, or training (NEET) compared to the general population, representing all socioeconomic backgrounds except for the 20% most affluent.

Respondents felt that personal qualities and individual effort would lead to success for deaf people at school. They thought it was very important to ask for help, even though that is often difficult to do. They suggested that young deaf people should take responsibility themselves for improving their access arrangements at school. Their attitudes towards hearing people show an expectation of equality, but also suggest experiences of being bullied.

Taken together, survey responses from a group of 188 DHH young people who had been part of the original ADPS study offered insight into their worlds, 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, many deaf young people were succeeding in a wide range of jobs, showing great commitment to Further and Higher Education, and participating in clubs and societies. This group appeared to be quite resilient and are continuing their studies in order, one would assume, to be in a better position to compete for jobs in the future.

Achievement and Opportunities for Deaf Students in the United Kingdom: Implications for Brighter Futures

The Achievements and Opportunities project should be considered only a first step in answering for questions introduced earlier in the summary:

1. What patterns of intervention, support, and educational methods lead to the most successful outcomes for DHH children in academic, social, and personal growth?
2. How do the academic, social, and vocational outcomes for DHH children compare to those in the wider population of children and school leavers in Scotland and the UK?
3. What proportion of deaf school leavers are not in education, employment, or training?
4. What characteristics of deaf young people are associated with these various outcomes?

As noted earlier, these questions are not mutually exclusive but overlap historically, practically, and methodologically. They also are complex, and the tentative answers provided by the project raise many more questions. But questions and answers are what research is all about, and we believe that these tentative first steps set us on a path toward improving academic outcomes, lifelong learning, and quality of life for deaf youth in the United Kingdom and beyond. Toward this end, acknowledging limitations of both the earlier ADPS study and this one (see the full project report online), the

present findings suggest a number of implications for policy and practice. These, too, are not mutually exclusive and complex; their description here is in the order raised by the three primary aspects of the project presented earlier, not in order of priority or feasibility.

Of Parents and Their DHH children

The findings from the parents' survey have implications for all those involved in the education of DHH children. Perhaps most important and most general is the need to provide parents with full, objective information to support their decision-making and involvement in their children's educations, both formally and informally. There will always be "helicopter parents", those who are extremely attentive to their children's progress and problems in school, and are constantly hovering nearby (and not coincidentally, often appear suddenly, making a lot of noise and fuss). Many parents of DHH children, however, however, particularly those from more deprived social backgrounds are much less confident about suggesting improvements in the educational support of their deaf children. Teachers, schools, and local education authorities – as well as parents and children – all would benefit by better engagement with this group, explaining the workings and limitations of the educational system, and seeking compromise rather than adversarial relationships (Lukomski, 2002).

Many parents (as well as teachers and researchers) have detailed and well-developed views about how to improve access to the education system for their DHH children. These views could be listened to much more systematically. At the same time, while acknowledging that parents know their children better than anyone else, they do not always recognize the complexity of deaf education, the way that DHH children differ from hearing children, or even the strengths and needs of their own children (e.g., Marschark, Bull, et al., 2012). Some parents suggest they are ill-informed about why their DHH child has difficulties with literacy, historically the greatest academic challenge for DHH children. This issue could be raised earlier by specialist teachers so that parents can take steps to improve their children's chances of success (Dirks & Wauters, in press).

Research has demonstrated that student-teacher relationships are an important predictor of academic progress and well-being in school, but that DHH students, on average, feel they have less positive relationships with their teachers than do their hearing peers (Wolters, Knoors, Cillessen and Verhoeven, 2012). For their part, teachers in both mainstream and special classrooms could better address classroom issues – with both children and parents – such as looking different and standing out, bullying, identity development, and the advantages of having deaf and hearing friends (Knoors and Marschark, 2014, ch. 7). These may be challenging and sensitive issues, but they are essential ones to address.

Parent and teacher expectations, among the best predictors of academic outcomes of DHH as well as hearing children, is another important issue for deaf education. The

parent survey found low expectations on the part of teachers a key concern. This issue is one found among both mainstream and specialist staff, and one that should be both integrated and addressed in Initial Teacher Education as well as specialist and in-service training (Swanwick, in press). At the same time, we need to be aware of the potential for parents themselves holding low expectations for their DHH children. Organisations such as the NDCS are already targeting support to hard-to-reach groups, but teachers and schools have a role to play as well in this regard. This work could be extended by providing parents from relatively deprived social backgrounds with more knowledge of their rights and ways in which they can improve outcomes for their child by engaging the school system.

Educational Achievement: Where Are We and Where Are We Going?

Present findings have raised a number of issues for local authority services for DHH children and organisations that support deaf education. One of the most prominent implications from the present findings is that services and schools need to focus much more attention and staff time on the needs of children who have mild and moderate hearing losses, a group that functionally includes most children with cochlear implants (e.g., Moeller et al., 2007). Recent research from nationally-representative samples in the United States has indicated that students with mild hearing losses, on average, are achieving no better than those with profound losses (e.g., Marschark et al., in press). The locus of that finding may be the same as the reason several studies have found no advantage for students with cochlear implants by the time they reach secondary and postsecondary education: the implicit but incorrect assumption that DHH children who speak well also hear well enough that they do not require special support services.

Present findings and the results of other recent studies emphasise the need to modify methods and materials to accommodate the strengths and needs of DHH learners (Knoors and Marschark, 2014, ch. 6). With appropriate accommodation, DHH students can learn as much as their hearing peers, and services should maintain high expectations for students with greater hearing losses. Services could consider balancing medical and socio-cultural perspectives of hearing loss in allocating the kind and number of staff support hours. New ways could be found to support deaf students more effectively: better quality deaf awareness for class teachers and peers (De Klerk, Fortgens and Van der Eijk, in press), more rigorous acoustic standards in schools, and greater care in testing accommodation (Cawthon, in press). Creating listening-friendly classrooms will be particularly beneficial for students with minimal to moderate hearing loss and the increasing numbers of children with cochlear implants, groups that presently receive less support from school services than they require (Goldberg and Richburg, 2004).

Reduced spoken and/or signed vocabularies are a large factor in depressed English scores and reading comprehension among DHH children (Jackson, Paul, & Smith, 1997). An early years' focus on vocabulary development would support better achievement in these areas and across the curriculum. Parents, and particularly those

from lower socioeconomic strata need to be encouraged to engage in interactive reading and frequent informal conversation with their DHH children and demonstrate the value of reading and writing (Bruin, in press; Hart and Risley, 1995).

Who Am I and Where Am I Going?

Effective communication remains a central issue for DHH learns, not only in school, but in day-to-day living and in the development of a socially and emotionally stable individual (Hintermair, 2014). With the lack of evidence to support its academic impact, bilingual education is waning in the United Kingdom and elsewhere (Swanwick et al., 2014). Nonetheless, even for children who eventually will rely primarily on spoken language (e.g., most of those with cochlear implants), sign language can provide a strong foundation for a variety of language skills and has never been found to interfere with the acquisition of spoken language. Resource bases for deaf children in local authorities thus should consider offering sign language as an option to the 47% of deaf children – and their families – who currently do not have the opportunity. Not all children will benefit from sign language; not all children will benefit from cochlear implants. Having options and seeking the best match between children's strengths and accommodations are keys to academic and personal success.

Understanding one's options and having full, objective information is not just an issue for parents. DHH youth at school would benefit greatly from more career guidance, particularly by the provision of materials which offer diverse, positive DHH role models. At the same time, parent and teachers of DHH children should continue to encourage empowerment and self-advocacy in making access arrangements as an important step toward independence (Antia et al., 2008). Teachers of deaf children, career guidance and college/university disability advisors all need greater awareness of Access to Work, so that they can provide better advice to a wide range of DHH youth about their employment opportunities. Transition planning is essential. In particular, guidance officers in colleges could track the progress of and encourage deaf Further Education students studying Higher Education courses to articulate to a degree, rather than leave with a Higher National Diploma, to improve their employability.

The Achievements and Opportunities project offered the opportunity to follow a large cohort of DHH learners from childhood into the school system and in transition to adult life. The youth, their parents, and school services have revealed some important new findings. Principal among them is the need to better inform parents, teachers, and youth themselves about services and educational supports that build on DHH students' strengths and accommodate their needs. Formal and informal educational intervention must begin early, with UNHS and early intervention, always recognizing that each DHH child and each family is unique. There is no doubt that hearing loss has a significant impact on children's achievements in school, their personal growth, and their independence and confidence in adult life. With appropriate, better support, DHH children's language development, social-emotional functioning, and academic achievement can be improved over current levels. This journey will require increased

cooperation among parents, teachers, education authorities, and researchers. The sooner we begin, the sooner we will arrive.

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