

# **TO BE OR TO BECOME**

**Language and learning in the lives of  
young deaf children**

**Merv Hyde (ed.)**

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Skådalen kompetansesenter  
Telefon: +47 22 70 37 00  
Faks: +47 22 70 37 01  
E-post: [skadalen@statped.no](mailto:skadalen@statped.no)  
[www.statped.no/skadalen](http://www.statped.no/skadalen)

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## Preface

The title of this conference – To be or to become – requires some explanation.

One of the objectives of the conference is to deepen our understanding of why it is important to identify the difference between these two specific perspectives on children and to realize the importance of distinguishing between the two. The two perspectives in question are those of seeing children as being or as becoming. The strong tendency in child studies to focus on children as becoming rather than as being, and this is now being criticised (Nilsen 2000). This critique also applies to current research and professional work with young deaf children.

There is no need to stress that on an intentional and on a theoretical level we all probably agree upon the importance of having a child-centred approach in our work. Professional and ethical challenges, however, occur when our good intentions are put to test and encounter the realities of life, both in research and in education. To approach this goal the conference was organised in order to open up the field of deaf education to scholars and practitioners in other fields of research than special needs education in general and in Deaf Studies in particular.

We especially welcomed researchers within social sciences and the humanities who take an interest in children, in communication, in language and in learning, in identity formation – and above all – how these aspects of human life interact both in time and space. This is not to suggest that those who presented their papers here were not familiar with the topic of the conference; language and learning in the lives of young deaf children. The point is that, in addition, they drew upon basic and new research from their respective fields on the core issues mentioned above. By opening up the research community of deafness, the professional community of deaf education as well as the cultural community of the Deaf, other fields of knowledge are invited into communities that may well appear to have been both secluded, exotic and maybe also excluding to the outside world.

More specifically the aim of our approach was twofold. We particularly sought to attract researchers, both within social sciences and the humanities, in order to link together their knowledge with existing research based knowledge in deaf education and in Deaf Studies as a whole. In addition, our intention was to draw the attention of the external scientific world to deaf

education in order to benefit from our knowledge and expertise. We contend that deaf education is a salient case for exploration and expansion of both theoretical and practical aspects of issues such as language development, communicational development and learning. The papers presented below reflect the principles behind the conference.

**Eva Simonsen**

for the Conference Convenors

# Introduction

This book is an edited and reviewed selection of the main papers presented at the Nordic Conference on Education of the Deaf: *To be or to become: Language and learning in the lives of young deaf children*. The Conference was held on the 25th and 26th of October, 2005 at Kommunenes sentralforbund, Oslo, Norway.

## Book Chapter Contributors

**Eva Simonsen** of the Department of Special Needs Education, Faculty of Education of the University of Oslo, outlines the main themes of the conference and presents us with a compelling picture of how those involved with deaf children as professionals have often tried to “form” the identity of the child and future adult, through forms of medical and educational intervention, the use of technologies and the imposition of value systems of a majority culture. She presents us with the challenge of seeking answers in cross-disciplinary contexts and views of the child as being rather than as becoming.

**James Wertsch** the internationally recognised psychologist from Washington University in Louis, USA, describes the childhood processes of inter-metal development and intra-mental development and how they fundamentally influence our capacity to understand and use the “cultural tools” of our communities. He provokes us to reflect upon established and essential learning foundations, leading towards developing the education of deaf students in new and productive ways.

**Bente Ailin Svendsen**, of the Department of Linguistics and Scandinavian Studies at the University of Oslo, presented the first of two papers on the topic of bilingualism. Her paper focuses on the issue of bi- and multilingual competence and practice. Drawing on her cross-cultural research examining the experiences of Filipino families in Oslo, she presents complex patterns of multilingual practice among family members, across social contexts and with frequent code switching among contexts and communication partners. She suggests that code switching among children and adolescents is a valuable tool to achieve communicative goals, rather than a result of language confusion or poor language skills. As such, code switching between a minority language and a majority language may be viewed as a normal and useful process.

In the second paper on the topic of bilingualism, **Arnfinn Muruvik Vonon**,

of the Department of Special Needs Education, University of Oslo, and the Skådalen Resource Centre examines the characteristics of bimodal bilingualism in children. His paper describes important similarities and differences between speech bilingualism and bimodal bilingualism, with particular reference to educational issues and how uncritical application of findings from speech bilingualism to bimodal bilingualism is not warranted. He shows, however, that as long as the particular features of bimodal bilingual development are taken into account, the findings from research on speech bilingualism are highly relevant for understanding the linguistic situation of bimodally, bilingual children.

**Carin Roos** of the Department of Special Needs Education, Karlstad University, Sweden presents the findings of a two-year, ethnographic study of the literacy events of a group of deaf preschool children. While showing that deaf children develop their interest in reading and writing during the preschool years in much the same way as hearing children do, the study also identifies an important role for fingerspelling and notes variation among the strategies used by the study participants, with phonological awareness being only one of the strategies used, with visual, strategies being equally effective.

**Oddvar Hjulstad**, of the Department of Special Needs Education, University of Oslo and Skådalen Resource Centre and **Lise Kristoffersen**, Head of Department at Skådalen Resource Centre present the next stage of the findings from their research project examining the education of deaf students with a cochlear implant. This important study of students in Norwegian regular and special education classes within various models of teaching, language and communication modality use, reveals ongoing tensions between the most appropriate forms of pedagogy, communication mode/s and even research paradigms and models and how these need to be applied to the everyday dimensions of learning in Norwegian classrooms.

**Merv Hyde** of the Centre for Applied Studies of Deafness at Griffith University in Australia, reviewed research and knowledge in the field of auditory-visual perception of speech over the last 40 years. His review outlines the established parameters of human speech perception and our in-built capacity and preference to attempt to process speech in bimodal forms, especially if those forms consist of the audio-visual combination: listening and lipreading. The paper concludes with an analysis of current auditory and auditory-oral approaches to teaching deaf children.

**Merv Hyde (Editor)**

## **Editors Note**

It is a continuing practice of the convenors of this conference – the Skådalen Resource Centre and the Department of Special Needs Education of the University of Oslo – to publish in book format the edited papers from their bi-annual regional conference on Deaf Education. On this occasion, I was asked by the convenors to review and edit the documents submitted by presenters and to ensure that they were able to meet the best standards of scholarly writing in the field. It has been a pleasure to work with my colleagues on this project and I congratulate the conference organisers on the excellent and stimulating event that they facilitated.

The papers presented here as chapters in this book have, therefore, undergone formal editing and review standards in terms of their accuracy, referencing and citation, as well as for their academic and scholarly content and merit.

Two of the papers at the conference are not available for publication due to:

- (1) The author, after presentation withdrawing the submitted abstract and subsequent paper from publication (Dr Ona Bø Wie's presentation: Factors that explain the variation in speech perception and speech production in children with cochlear implants), and
- (2) A pre-conference agreement that the presentation by Prof. Stephen von Tetzchner be given in oral format only.

It was also agreed by the conference organisers that the panel presentations would not be published. All the other papers are presented here for the benefit of the conference participants and others involved in education of the deaf.

Editor

**Merv Hyde PhD**

Director and Professor  
Centre for Applied Studies of Deafness  
Griffith University, Australia



# **To be or to become: Competing perspectives in research and professional work with young deaf children**

**Eva Simonsen**

## **Introduction**

Some people have been puzzled by the title of this conference – To be or to become?

A central objective of the conference is to deepen our understanding of why it is important to identify the difference between two specific perspectives on children and to realize the importance of distinguishing between the two. The two perspectives in question are those of seeing children as *being* or as *becoming*. The strong tendency in child studies to focus on children as *becoming* rather than as *being*, is being criticised (Nilsen 2000). This critique also applies to current research and professional work with young deaf children. To approach this objective, the conference is organised in order to open up the field of deaf education to scholars and practitioners in other fields of research than special needs education in general and in Deaf Studies in particular.

By opening up the research community of deafness, the professional community of deaf education as well as the cultural community of the Deaf, other fields of knowledge are invited into communities that may well appear to have been both secluded, exotic and maybe also excluding to the outside world. We have particularly sought to attract researchers, both within social sciences and the humanities, in order to link together their knowledge with existing research based knowledge in deaf education and in Deaf Studies as a whole. In addition, our intention is also to draw the attention of the external scientific world to deaf education in order to benefit from our knowledge and expertise.

## **The deaf child as being or as becoming?**

Professional disagreement over language and learning issues in deaf education dates back to its origins in 18th hundred France; when education of the deaf from its start became a battlefield for professional jurisdiction and dominance (Arnesen & Simonsen, 1999). The historical tradition of viewing children as valuable first and foremost as future citizens justified

professional ambitions as turning deaf children into useful deaf adults. Historically this is in accordance with the emerging biopolitics of the time, as argued by Michel Foucault, focusing on population issues and a healthy adult population (Dreyfus & Rabinow 1983, Simonsen 2006). To view children as material for nation building and future healthy adults was also part of the idea of progress and development as characteristics of modernity (Koselleck 2004).

For a long time now, however, we have tended to see children as children in their own worth, not primarily as future grown ups. This child-centred focus is a very strong point made by parents in Scandinavia when confronted by questions on what their ambitions are in relation to their child having a cochlear implant (Strand 2001). The prevailing state of the art research on children with cochlear implants, which constitutes a substantial part of research concerning deafness and children is, however, worrying in that respect (Simonsen & Kristoffersen 2001, Hyde 2003, Hyde & Power 2006). Thus a timely warrant for a child centred perspective occurred at one of our previous conferences on education of children with cochlear implants in 2000 (Simonsen et al. 2001). One may ask whether this is still the case in 2005. Recent searches in relevant databases confirm the fact that medical research designs and methodologies still dominate our field. As a logical derivation, the main focus in research in relation to outcome and success criteria of cochlear implants is still the speech perception and speech production of the children. Up till now this research has not been complemented by similar research in education, psychology, sociology or applied linguistics.

This research profile constitutes a problem in it itself, for obvious reasons. The disinclination within existing research paradigms to reach beyond the existing boundaries of their studies and research field presents an additional obstruction for productive interdisciplinary approaches. This tendency becomes specifically alarming when hospital-based teams, dominated by medical professionals take upon themselves to predict and design the future of the implanted children in relation to their communicative needs, their language preferences, educational placement and psychological needs. What we are observing here is disciplinary trespassing, and not a situation where interdisciplinary or trans-disciplinary work would be the model to pursue.

The drive to intervene in the lives of young children is almost without exception carried out under the slogan as being ‘in the best interest of the child’. Why then question this and other obviously well intended professional interventions? This urge to predict and direct the future of children

may also be interpreted as expressions of how we value or devalue children as beings, here and now. It is depicting of societal interest in children primarily as becoming – and less as beings. The temptation of the adult world to assign children's lives as professional, and also often political projects, seems to be both irresistible and, on face value, as highly commendable. This feature is quite common in the history of deaf education – with the much heralded introduction of new technology or new educational methods, and struggles over professional jurisdiction at various times and places during the last 250 years (Simonsen 2000).

### **Collective remembering and identity making**

Where do these observations lead us? What are the perspectives on language and learning and young deaf children today?

In his study *Deaf identities in the making*, the Norwegian anthropologist Jan Kåre Breivik (2001) uses life story interviews in order to explore processes of identification and self-understanding among young deaf people. These life stories are interpreted as narratives constructed to make meaning in peoples lives and experiences. In one of the chapters titled *Being, Becoming and Longing* - the interviewees convey their experiences in coming to grips with their social identification and self-awareness, expressed in terms such as 'coming out as deaf' (Breivik 2001:85). This and other ways of phrasing an identity, in making as Breivik puts it, demonstrate the personal fears that these young people experienced. Their identity was considered as socially unacceptable and therefore threatening to their relations to society as well as to their close family relations.

These narratives of identities in the making underline the strong pressure felt by deaf youngsters from a very early stage in life of being assigned a specific place of belonging, to a world defined by others. The ambitions and efforts of the adult world, on behalf of the child with a hearing loss, are there from the very start. In early life these ambitions of the outside world are only felt and taken in intuitively and emotionally by the young child. Later on these external identity formation plans are conceptualised and verbalised in a way that may be dealt with by the child or the young person also on an intellectual level. The interpretation, construction and phrasing of their life experiences as identity making also echo the essence of the grand collective memories of Deaf communities which is well known in collective remembering as such (Wertsch 2004). Collective memories as identity projects are characterised by an inherent tendency to perceive and construct history as basically a story of making divisions between 'them' and 'us',

between the good and the bad, black and white, and hearing and Deaf. This template of 'either or' makes collective remembrance 'impatient with ambiguity', according to Wertsch.

The main message conveyed by the study by Breivik is the confirmation of an overwhelming and historically long lasting and ongoing effort of capturing the soul of the deaf infant or to control the identity formation process of the child. In this race, the individual or in this case his or hers parents, may come under strong pressure, being met with arguments both secular as well as those with connotations of liaisons between specific professions and even divine powers. This is how the Norwegian Directorate for Health and Care Service expresses their idea of cochlear implants in deaf children in a report from 2006:

People were overwhelmed with amazement. 'He has done everything well,' they said. 'He even makes the deaf hear and the mute speak.'  
Mark 7, 37.

In addition to being profane, such statements are also in line with arguments that brought forward the education of deaf children as a public issue in France in times of the Enlightenment around 1750. At that time educators of the deaf were regarded as being close to God because they seemed able to make the deaf child 'God's child' or as a partaker in 'God's word'. By comparison educators of the blind were, according to themselves, just 'putting glasses' on their pupils (Simonsen 2000). Since then education of children with special needs, including deaf children has become part of human rights, regardless of which mode of communication applied in educating them.

History however, never really repeats itself. Future interpretations of life stories of people with hearing losses will definitely be quite different from those of today, as Breivik reports. What we however, may expect to find repeatedly, across cultural and historical borders, is a deeply rooted urge to create and maintain a duality or dichotomy between 'them' and 'us' - when what we ought to see is diversity.

### **No child left behind?**

A well known slogan in the educational policies of the present administration in the USA goes as follows: 'No child left behind'. How could this quite catching and seductive way of putting things be reflected in Norway in regard to young deaf children in our country?

What we are witnessing in our country at the moment is that there is a generation of deaf children that may experience, or at least feel, that they are

indeed being left behind.

This may be the situation for the generation of deaf children who received their implants during the past decade. The bleak irony of this situation is that when many of these children, and other children outside Norway, had their unilateral implants at ages between two and 10 years, they were referred to in international research publications as young (i.e., implantation at an early age). Today ‘young’ in connection to implants means before the age of 12 months (Hyde 2005).

In addition, their implants were said to be of such quality that their hearing would be improved so that they would communicate optimally without any visual clues. On several occasions the use of sign language was identified as the main obstacle to achieving the un-debatably success criterion for the operation – that is, the transfer of the child to an oral kindergarten or school (Simonsen & Kristoffersen 2001). However, the implants received by these children are now said to belong to the ‘stone age’ compared to the more technically advanced implants that are being fitted bilaterally to younger children and babies.<sup>1</sup>

The misery here however, lies not for the children themselves who received their implants back in the ‘stone age’. Many of them benefit greatly from their implants and many also function very well bilingually, as an ongoing study by Skådalen Recourse Centre and the Department of Special Needs Education at the University of Oslo tends to demonstrate (Kristoffersen & Simonsen, in progress). The study is a follow up study of 24 children with cochlear implants at pre school age. When still in pre-school these children were part of our first study on communicative needs children with cochlear implants in Norway (Landsvik 2001, Hjulstad & Kristoffersen & Simonsen 2001, Strand 2001).

As future research projects or subjects for the medical community these children are of quite little interest, as the techniques and prostheses applied are considered outdated or they were operated on too late according to today’s standards. The mission for these children is accomplished, so to say. Now we are moving on. As a group, these children will never grow up to demonstrate the excellence of the new technology which they were expected to be able to do a couple of years back. Yesterday’s research is history, true enough.

We may turn our back on a number of these studies as no longer being valid and concentrate our attention on the children who will be getting two

excellent, modern implants at indeed an early age; when they are only a few months old. What should catch our attention and fascinate us however, are the perspectives and the questions asked in the past research, reflect and learn from them in order to make progress.

Apart from the academic perspective - what is crucial are the living children who had their implants fitted in the 'stone age' period. How do we approach these children, whose future in a way may seem to belong to the past - and make sure that they are not in any sense being left behind. One of the questions to be asked is whether there will be teachers trained to educate these children in a proper way? Will there be appropriate educational settings that serve their needs? Will there be research activities encompassing the educational needs and life experiences concerning these children?

Finally: How to avoid programs with built in mechanisms for failure for a number of children such as may be noted in the Auditory Verbal Training approach? Auditory verbal training is a method suitable for children who are able to develop their use of hearing according to fixed standards. As the training proceeds, the children who fail will have to leave the program and be taught in sign language-supported program (Hyde & Power 2006). How do we design educational programs to be inclusive of all in the sense we want them to be?

### **Drifting boundaries – fixed or flexible expectations**

The drifting boundaries of categorisation of research on children with cochlear implants as shown above is linked to a fixed set of expectations concerning the proposed outcomes, typically defined as speech proficiency, oral education and a 'hearing' identity (Simonsen & Kristoffersen 2001). Among the children involved, however, a variety of expectations and coping strategies is reflected. Through interviews with the children and young people with cochlear implants we learn about their impressive coping strategies in communication – conveyed with a bird's eye view or from a meta cognitive perspective by these quite young children (Christoffersen 2001 in Norway; Preisler & Tvingstedt & Ahlström 1999 in Sweden). What the research community as well as the professionals have on their hands, now and in the future may be described as an extremely heterogenous group of deaf and hard-of-hearing children and young people. Traditional ways of perceiving, rearing and educating deaf children, can no longer be viewed as either a parental or a professional issue, along with a set of prefixed cultural and social identities for them as young people and adults.

First of all the imagined connection between one culture – and one identity has to be untied or deconstructed, as Barbara Rogoff suggests (2003). Rogoff dismisses the idea of culture as a sort of social address, a box or an identity. Along with others she conceptualises culture with a focus on people's involvement in their communities, addressing the dynamic, generative nature of both individual lives and community practices. Looking upon this heterogenic, dynamic and changeable assembly of children which constitute children with hearing losses at this time being and in the future becoming, it is obvious that their lives will be marked by diversity and identity as a set of cultural practices.

Speaking of identity formation from an early age as a choice between two cultural entities, seemed to some to make ideological and political sense in the past. But as with other ideologies of the past, this socially constructed dichotomy failed to meet future demands for understanding, knowledge and action, as the Swedish sociologist Mårten Söder puts it when analysing ideological shifts in disability politics and care practices (Söder 1995).

### **Futures past**

We must take into account that today's children will grow to live in a world that is quite beyond the imagination of ourselves, as middle-aged people today. When the German historian Reinhart Koselleck speaks of futures past, he elaborates about how our experiences in modernity are inadequate when it comes to imagining the future (Koselleck 2003). From my point of view, there is a link here between Koselleck's point of view and socio-cultural theory or cultural historical theory and learning as situated, with language and technology both as cultural tools. To me this is a viable path to follow in education – including education of children with hearing losses, being it children with one, two or no cochlear implants. Within this approach we are forced to focus our attention on the demands of the present situation. Embedded in this is the concept of the child as being, in its own perfect right, here and now, and not a future product of the adult world.

Drawing a parallel from a newly finished research project in which I took part, hopefully will illustrate this point further (Ericsson & Simonsen 2005a,b) This was a European study of children of German soldiers and mothers in occupied countries born during World War II. Within a comparative perspective it is striking how dominant political, national and educational discourses on children tended to view them less as children with pressing present needs, but primarily as future citizens. When dealing with the war child issue in Norway after the war - both the public, politicians and

professions alike were fascinated by the same questions: How would the children turn out as young adults and grown ups? In negotiating their future identities these were the dichotomies around which the professional discussions were centred:

- What would their identity as adults be Norwegian or German?
- Would they come marching Nazis like their fathers – future ‘5th columns’ and a threat to peace and democracy – or as peaceful and democratic citizens?
- Would they turn out as morally and mentally inferior – as their mothers were assumed to be – or would they be intellectually normal?

The main irony of this story however, is that as researchers today we do not study the children in order to see how they may turn out to be. We listen to their life stories as documentations of the social changes and shifts in ideas about identity and belonging, parallel to the narratives of young deaf people, as presented by Jan Kåre Breivik (2001).

Thus our study objects in the war child project have not been the children – but the ideas and categorisations of the research communities of the past – with their focus on the presumed future identities of the children – with less interest in how the children were to be taken care of – there and then. Returning to the initial point made in this presentation and of the conference, our choices of perspectives in research and professional work among young deaf children, it seems sensible to be sensitive to the communicative practices now evolving among the children themselves. New educational settings and new technologies produce new expectations and new knowledge, probably beyond prefixed predictions, professional or research based.

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(Endnotes)

1 Statement by Ole Tvette, audio physicist at the National Hospital of Norway; seminar on cochlear implants in children; Department of Special Needs Education, University of Oslo, April 2005.

# Conditions of learning in young children

**James Wertsch**

I think I am one of those people from the margins of your field, so I hope I have something to say here about theory that actually is going to be useful – about conditions of learning in young children. I start with a notion of socio-cultural analysis. What does this mean? The basic goal of socio-cultural analysis is to understand and ideally to change the relationship – and the notion of relationship is crucial here – between the individual and socio-cultural settings. The individual side typically has to do with things we think of in psychology – often times pedagogical psychology. The issue here is to understand and change this relationship between the individual and socio-cultural setting. This relationship basically has to do with historical, cultural and institutional settings – institutions like formal education.

So the issue here is how do we understand that relationship. What goes between the individual and the socio-cultural setting to make this relationship interesting and meaningful? The conceptual link that the socio-cultural perspective suggests between the individual and socio-cultural setting is this notion of mediated action. Mediated action is a form of human action, and human activity generally speaking, but it is never the individual operating alone. It is always mediated action, which means individuals operating with cultural tools. It is a kind of package. So we can think of a hyphenated term here – active-agents-acting-with-cultural-tools, because, that is the unit of analysis. The most important cultural tool, deriving from the ideas of Vygotsky, is language.

This is a basic approach that assumes that “mind” extends beyond the skin. Mind is not something that has been placed between our ears, or in our cranial cavity, it’s not within the skull. There is a very strong tendency towards individualism that we find in contemporary psychology and related fields, especially in the United States where we really believe in the individual perspective. In contrast, mediated action pushes us to say no, mind is something that extends beyond the skin. Some of the ideas that I will be talking about come from figures such as Gregory Bateson, Jerome Bruner, Clifford Geertz and especially the ideas of Vygotsky and Leontiev – two Soviet psychologists who have influenced a great deal of what I have got to say.

Another way of saying this in contemporary cognitive science terms is to say that mind is distributed. Cognition, memory - these are all processes

that are distributed and they are distributed in two ways. First of all, mind is typically distributed between people – between two or more individuals operating in one cultural context. Secondly, mind is distributed because of our use of cultural tools. We often think that we act individually, within our self-enclosed skin. But the point is that when we are using cultural tools such as language, calculators, the Internet, it's a combined distributed process.

Now I want to turn to the first kind of distribution – the distributed cognition that I just mentioned. We could call this the Social Distribution of Cognition, or of memory, or of thinking - that is distributed between two or more individuals operating in one context. And here we come across a crucial, fundamental claim in Vygotsky's writings. It is what Vygotsky called the General Genetic Law of Cultural Development. The term 'cultural development' here is crucial because for him the idea is cultural development and what he called 'higher mental functions' are uniquely human mental functions. They rely on cultural tools for communication and cognitive processes. According to the General Genetic Law of Cultural Development we can say that any function in the child's cultural development that is, thinking, reasoning, memory, or attention, appears twice, on two planes. First, it appears on the social plane as what he called an inter-mental or inter-psychological process and then on the individual plane as an intra-mental or intra-psychological process.

It first appears between people. Take an example, such as remembering. Consider a child who arrives at home, for example, and comes in to see her father and says, "I don't know where my boots are!" "I need my boots to go outside, but I don't know where they are." What does the father do? First of all if he is a father like me, he says, "Oh no, you didn't forget your boots again did you?" But then he might say, "Did you have your boots on when you went to school today?" "Yes!" "Did you have your boots on when you came home in the bus?" "Yes!" "So what did you do when you came in the house?" And the little girl says, "Well first I went to feed Freddy the gold fish because I forgot to feed him this morning and I was worried about that all day." The father says, "Why don't you go and look next to the aquarium. Maybe your boots are there." The child goes and looks next to the aquarium and there are her boots.

The question here is: Who did the remembering? And the answer is: neither the father by himself nor the child by herself. It is not an intra-mental function by either one. Rather the remembering occurred on an inter-mental plane. So to continue Vygotsky's line of reasoning: cultural processes, like

remembering, appear first between people as an inter-mental category and then later within the child as an intra-mental category. This is equally true with regard to voluntary attention, logic and memory, formation of concepts and the development of volition. So the point is that at this point in the example, memory was occurring between people. How is that little girl going to remember and reason in the future where her boots are or where her keys are? She is probably going to enact some kind of dialogic encounter with another. “Where was I last when I had my keys? I had them when I came in the house, etc”.

At this point on the individual or intra-mental plane, it looks like what the father and the little girl did earlier on the inter-mental plane. Now, Vygotsky went on to warn against something, namely the idea that the individual processes that we have are really just copies of the social processes that occurred before them. So I have underlined some important parts here (see attached Power Point slides). Vygotsky says, it goes without saying, or it is obvious, that when internalisation occurs, that is taking over the inter-mental to the intra-mental, it transforms the processes itself and changes its structures and functions. In other words, Vygotsky warned against the idea that individuals have a copy of social dialogue and that is what intra-mental function is. It is not that simple. But the general point here is that social relations or the relations among people, genetic or developmental, underlie all higher mental functions and their relationships.

I bring all this up in order to go into the social distribution of mental functions because I think it has some important implications for the education of handicapped children, deaf children included - perhaps, especially deaf children. By thinking of mediated action on the inter-mental and intra-mental planes of functioning we raise certain questions about how we would define “intelligence”, because from this perspective intelligence basically comes from internalising social interaction. This has implications for how we think about the development of intelligence. What are the steps in the development of human intelligence? From this perspective there is a social origins argument. First comes the social and then comes the individual. Which goes against an American perspective of individualistic psychology, which assumes that first you have to have individuals before you can have social interaction. Yes, you do have to have individual human organisms, but when we talk about the level of organization of human mental functioning, there is a sense in which the social comes before the individual.

Finally, this approach has implications for what it means to talk about “re-mediation”. If mediated action is the central unit of analysis, and we

talk about re-mediation in education, it is no accident that the same root is used in the different terms.

Let's go back to the definition of intelligence. What does it mean now? From this perspective, the crucial element of intelligence is not some innate essence or "G" of general intelligence. Rather intelligence is now defined as mastering the cultural tools encountered in inter-mental functioning. Among other things this means that in different historical periods and in different cultural and institutional settings, we have different notions of intelligence. Intelligence is not a universal, ahistorical phenomenon. Instead, it amounts to being able to adapt to a particular socio-cultural setting. Now, this stands in opposition to methodological individualism – a term that we find in sociology that assumes that everything comes from the individual or that we must start with an analysis of the individual and then move to the social. That is the problem and the criticism of methodological individualism. This says that first you should start with the social, the communicative and then move to the individual.

With these ideas in mind, I am going to return to this notion of the Social Distribution of mental functions and the social distribution of cognition and Instrumental Distribution. Remember, I have mentioned two ways that mind extends beyond the skin (social and instrumental).

Let's start with instrumental distribution. The crucial element here, in the way in which cultural tools or instruments are involved, is language. Not just the grammatical structure of a language and not just ordinary language but an array of sign systems that we use: mathematics, scientific notation, and the like. From the perspective of instrumental distribution then, one of the questions we have when trying to understand intelligence and re-mediation is, where do the tools come from? Are they the only ones that could be used? Who gets to decide which tools we must use in order to be considered to be intelligent? With regard to the social distribution of mental functioning, the question comes up: How is inter-mental functioning organised? Is there only one way to interact with a child within a tutoring or teaching or social interaction system? How do we get social interaction off the ground if we have some kind of auditory problem, deafness for example?

Let me spend a bit more time on instrumental distribution to make my point here. The question here is who gets to decide which tools we must use in order to think and remember and use mathematics? What is the source of the tools? Basically one of the things we know from sociological analysis

and social theory is that the tools that we must use in modern society are not simply there in order to help us cognitively. Many of them are instead part of producing and reproducing established social order. This is something that has to do with social processes and political power and not necessarily with cognitive functioning.

Let me just give you some idea of what I am talking about with instrumental distribution using a very simple illustration. This is a multiplication problem:  $484 \times 22$ .

484

X22

First, I have done this differently here from the way that you might do it in Europe (referring to related Power Point slide). I do it in the way I was taught in the US. Now, if you ask me to do this problem and I did it like this and then you ask me: “Who did this problem?” My answer would probably be that I did it. I am responsible. I deserve credit for it. But then you might ask, “If you did it – what would happen if I told you that you cannot use pencil and paper or the blackboard?” It is as if my multiplication abilities would disappear at this point. Because my method of solving the problem involves transforming or translating into a simple heuristic that relies on very powerful human visual perceptual abilities, abilities to line up numbers, and so forth. If you started asking me how does this system of laying out the numbers work? Why do you switch that column over there? The answer might be, “Well that is what Mrs Smith told me to do in third grade”. “That’s how I do it.” And you might object and say, “No, really, what makes it work? How do you know it will work right?” I reply, “I don’t know, it has something to do with the tens and the ones...” You might then ask, “Do you understand what is inside the machine here? What is inside the cultural tool?” I am not sure. “Then how do you know if it is the right or only one to use?” For these questions I don’t have a good answer. Again, if you ask who really did the multiplication here – it’s me, plus the cultural tool - a cultural tool in this case that I don’t even understand very well.

You might suggest that I could do this on a calculator even more easily. And you could ask me, “How do you know it works? Can you explain what is inside the calculator?” Absolutely not, I have no idea. We see again mental functioning is distributed. It is not in the tool – these numbers did not jump up in front of me. A calculator does not tell you what to do. You have to have skill at using the tool, but the tool has a lot of the responsibility as well for the task. If we look for individual mental functioning as a kind of intelli-

gence within the individual we have a lot of problems trying to explain such things. So in that case we say who really did the multiplying? Or with the child with the lost boots and the father, “Who really did the remembering?”

The answer is that increasingly we use more and more tools that we understand less and less about. I might be able to give you an explanation of the columns (in the multiplication problem), but I can't explain to you how the calculator works. So by using the mathematics of columns, I have off-loaded part of the responsibility for the task. We can see in a certain sense that part of the intelligence resides in this case in the columns of the task, or in the calculator. Now another example that only some of you, those in upper middle age, will know about. I ask students, “How many of you have ever seen a slide rule?” - an algorithmic machine. If I ask young people, students today this question, sometimes some of them say, “Yes, in a museum”. But if you are my age or above you may very well have had a slide rule and you know the difference between a bamboo slide rule, a plastic one, a metal one and a circular one. But here again this is not a tool that makes mathematics happen. You have to have skill at using this. You can do all kinds of things – you and your cultural tool – can do all kinds of things with a slide rule, that are very difficult to do without a slide rule.

So what we are looking at here in general in terms of socio-cultural situatedness and socio-cultural context, is how particular cultural tools are used and how by introducing new cultural tools we transform a complex symbolic process into one that is often simpler and easier on me, but means that there is more complexity taken over by the cultural tool. This is a fact of modern technological life, whether we like it or not, and we see this in all kinds of ways. So if we start thinking in these terms we start thinking in different ways about what would intelligence be and might it be possible to substitute one cultural tool for another, perhaps for somebody who has trouble with one process (e.g., the columns in the multiplication task). Why do you have to use the columns in the task, why can't you use the calculator? These are political and cultural arguments and with this perspective we can talk about them.

One of the questions is: Who has the power and the authority to say we have to use this particular tool? I am not talking about a conspiracy here; I'm talking about a social system. At one point, in order to go to higher mathematics, you had to use a slide rule. That's what higher mathematics was built on at that point in history. We could not do without it. That has changed now with computers. The issue of which tool you use is a crucial one in thinking through these issues. And what constitutes an appropriate

way to measure intelligence? The point is you cannot use intelligence independently of the tools that you are asked to employ.

I now want to turn to something that is even closer to what I think your concerns are, namely an issue of socially distributed cognition. The claim again is that mental functioning – thinking in this case – appears first on the inter-mental plane then on the intra-mental plane. Now I want to ask a question here that I think is relevant to deaf education, and was something that I looked at earlier in my career with students in special education and learning disabilities' studies. What happens if we have trouble getting onto the inter-mental functioning plane? And what happens to our understanding of development after that? What happens if we vaguely call it an auditory discrimination or auditory attention disability? What happens if a child comes to interaction with problems in auditory discrimination, visual discrimination or attention disorders of some kind? Usually, because of our individualistic bias, we are likely to make a direct association between early organic handicaps, like hearing loss, and the eventual cognitive outcomes. I would think that people for the most part would not say that you can equate hearing loss with low intelligence, but we do know that hearing loss is often a predictor of subsequent school performance problems.

I think that the Vygotskian perspective gives us new ideas about this works. The key problem is getting into the inter-mental functioning that precedes intra-mental functioning. The key problem is very early on, that in order to interact, say for the father and child to do the memory task, they have to establish contact and interact on the inter-mental plane. And so what you have is a chain of consequences. You have changed the inter-mental functioning – it's not that you don't have it – you have changed it. You have changed it because you must change it in order to communicate with children who have an auditory problem. But in changing that you are also going to change the intra-mental individual cognitive outcomes and the tracing of those issues is exactly what this perspective is about.

Hence instead of assuming that there is some kind of organic, direct link between early auditory problems and eventual school outcomes we need to look not on the individual plane but on this inter-mental plane of functioning. The Vygotskian approach suggests that we think that there are two levels of intra-mental individual functioning in a sense. First, there is what is often called a 'natural' line of development in the individual, and then second there is an altered form of natural intra-mental functioning. That is, you have something different in the first type of intra-mental functioning for the child who comes to the social interaction with an auditory problem, and

eventually this will lead to a different outcome in the second type of intra-mental functioning. This link is made through the possibilities for social interaction, or inter-mental functioning.

Now I come to the point of some empirical studies that I think is very striking. If we alter the nature of inter-mental functioning because of hearing loss, the result is an altered outcome and one that is oftentimes unexpected and unanticipated, or an unwanted outcome. What we come up with is what we call an indirect model for understanding the impact of auditory loss on eventual school performance, or other kinds of performance. It requires us to look not so much at the hearing loss itself, but the altered path of intra-mental functioning that emerges in light of the hearing loss - the changed discursive processes that occur in this intermediate link. So this involves looking at a much earlier stage and focussing on that and recognising that the basic idea here is that if you have different inter-mental functioning, you have different intra-mental outcomes. They don't have to be higher or lower in any absolute sense but they are going to be somehow different.

One of the most striking versions of this, and something that students working with me in clinical settings have documented, is that at least people who are not clinically trained – for example, parents who are intelligent and with the best of intentions – often do not have the requisite skills to create productive inter-mental contact and functioning. What happens when they encounter interaction with a child who has a problem with auditory discrimination or any kind of hearing loss for example, is that in carrying out on the inter-mental functioning – carrying out this kind of joint – problem solving – there is a very powerful tendency for the parent to take over more and more of the cognitive responsibility for the task. They do this naturally in order to simplify the task for the child in light of the problems that they are having in communication. This is something that seems to be a very powerful and natural process. Unless you are educated to figure out an alternative way of organising the inter-mental functioning, what tends to happen is you make the task much easier for the child, while participating in the adult-child dyad.

The unintended consequence of this is, that you almost make the strategy of the task impossible to discover for the child. Instead of doing things like saying, “How is this one similar to that one?” and having a lot of trouble because of hearing loss, what you do is you just take two objects and (ask) “Are those together or the same?” By that simple move, what you have done as an adult, or as a tutor in this setting, is to take over and retain a great

deal of the cognitive and strategic responsibility for the task. There are several studies that we have done that show this to happen very easily among people who are not clinically trained. The natural tendency is to make the task simpler so that the child with hearing loss can understand can participate on the inter-mental plane, but in the process we can almost guarantee that they will not find the strategy of the task and what the intra-mental outcome should be. So there is a kind of double penalty involved in this case, unless there is appropriate clinical intervention.

To me, what is very striking is the difference then between the way an experienced clinician – or an experienced teacher – will come at this task with the child, and the way that a parent – who knows the child much better – will come at the task. There are alternate ways typically of mediating the task, of formulating the task on the inter-mental plane, but there are also very strong tendencies to be very conservative, if you are untrained in this, and to try to do it in only one way. The result is that you retain, as the ‘tutor’, much of the cognitive complexity of the task and it is almost as if it were a scheme to hide it from the child.

So it is worse than simply saying that the child is not as challenged, as it would be without the auditory problem. You are almost hiding the very strategic aspects of the task that the child must learn through inter-mental functioning. This is a major problem since a child must participate on the inter-mental plane in order to internalise on the intra-mental plane. So the basic idea here is that we need a much increased body of studies to understand, and not in just some theoretical or abstract way, but to be able to translate this into guidelines for how to organise inter-mental functioning with children with hearing loss. These are guidelines that could be made accessible to parents, as well as highly trained special educators. This is crucial because it is often with parents that we have the most important obstacle placed in the child’s way. Not technically due to hearing loss, but to how the hearing loss transforms inter-mental functioning, which then has the unwanted consequences at the intra-mental plane. So at this point I don’t think I have very many more answers but just a call for us to be much more attuned to what goes on in that period of very early inter-mental functioning, how it can be transformed, how this social interaction can be re-mediated in such a way that you can do a task equally well with different tools and that can have the desired outcomes for the individual that we all hoped for.

# **Bilingualism: Competence and practice**

**Bente Ailin Svendsen**

## **Introduction**

First of all, I like to express my gratitude for being invited to this conference. The topic of my talk is Bilingualism: Competence and practice. People seem to define bilingualism in a rather strict sense. It seems to be a widespread opinion that you have to speak the two languages “fluently” or “native-like”, whatever that is, or that you have to be born and raised with two languages to be called bilingual. Bilingualism is, however, something relative, it is not something you are, or something you are not. It is a gradual phenomenon. A bilingual person is a person who uses, or might use, more than one language in daily life or in specific situations. Today, I will talk about the following themes:

- Bi- or multilingualism as a norm, not an exception.
- What characterises bilingual competence?
- What characterises bilingual practice?

I will illustrate these themes by examples of language use in the Filipino community of practice in Oslo.

## **Bilingualism as a world wide norm**

We consider that there are about five to seven thousand different languages in the world. Among those, only 104 are official languages (Mesthrie et al. 2000). Thus, since there are only around 200 national states, people have to be bi- or multilingual. It is against this background I state that bi- or multilingualism is the norm, rather than an exception. We can imagine a young migrant from Vietnam in French-English speaking Montreal, a child in Guinea-Bissau, where the former colonial language Portuguese, and different local languages co-exist, or Filipino children in Oslo learning Norwegian, English, Tagalog, or another Filipino language at home, and Norwegian, English, and maybe a second foreign language at school.

There are several reasons for the spread of multilingualism, reasons that can be explained from both an historical and a contemporary perspective. Historically, The Philippines, Guinea-Bissau, and Norway, are rather young

states. They have in common that many native groups were included in the construction of the national states, though we know that many groups, including those with a hearing impairment, have not obtained political or linguistic acceptance until later on, if they have obtained it at all.

Multilingualism is also a consequence of migration, both old and the contemporary migration. In Norwegian primary and secondary schools, for example, more than 150 different spoken languages are registered, and more than 120 in Oslo schools (Oslo kommune 2005). Every third pupil is described as “bilingual” or “minority language speaking”. Such a diverse language situation is mainly a result of migration to Norway during the last 35 years: pupils who have migrated themselves or pupils who have parents who have migrated in recent decades.

Another contemporary reason for the spread of multilingualism is the global spread of English. Even in those European states who traditionally have hedged around their national language, English has spread, through increased globalization gained access into their economy, communication technology, and not least among youngsters through cultural expressions in different media, such as television, CD’s, public relations, movies, fashion, and through the Internet. During the last decade the use of computers has increased dramatically. In Norway, in 2002, as many as 76 percent of the age group 9-15 years used computers daily for entertainment and play (St meld nr 48 2002-2003). As a consequence of increased globalization, and of course as a consequence of American colonisation and the glorious days of The British Empire, English is today the world’s most widespread lingua franca.

### **Language use in the Filipino community of practice in Oslo**

English is also a Philippine language, since The Philippines was an American colony for about fifty years (1898-1946). It is also a part of the linguistic repertoire among many Filipinos in Oslo. I will show you an excerpt from an interview I did with a Filipino woman, Gloria, back in 1999 (Svendsen 2004). This is what she says about language practice in her family:

We use mostly Tagalog. I speak Tagalog to the children, but they answer in Norwegian. Their father uses to speak English to them, and then they answer in Norwegian. He doesn’t quite know Norwegian, so he speaks English with them. My sister and I use to speak Tagalog together, but the children hear we speak Bicolano. (Gloria)

Gloria was born and raised in The Philippines and came to Oslo during the 1970s as a nurse, like many other Filipinas (cf. Ball 1996). From the excerpt we see that as many as four languages are mentioned as a part of her family's daily linguistic repertoire, i.e., Norwegian, English, Tagalog, the most used language in The Philippines, and a Filipino minority language, Bicolano. Her family's language practice is far more complex than many might think is the case in officially monolingual Norway (despite the fact that Sami obtained a regional official status in six municipalities in North Norway in 1992, Svendsen 2006a). Multilingual practice is typical not only for Gloria's family, but also for the other Filipino families we have interviewed in Oslo (cf. Hvenekilde & Lanza 2001, Svendsen 2004, Lanza & Svendsen, in press). A reason for this complex language practice might be that many Filipinos and Filipinas are socialized into multilingualism from childhood on. There are 120 mutually intelligible languages in The Philippines, whereas Filipino (based on Tagalog) and English are the official languages (cf. Gonzalez 1999).

In five of the families in Oslo, I found, as shown in Table 1, a complex pattern of language use (Svendsen 2004).<sup>1</sup> Seven languages are represented by capital letters in this Table: Bicolano Albay, Tagalog, Ilocano, Cebuano, English, Norwegian, and Spanish. In all of the families, three or more languages are regularly in use. The main pattern is that the parents speak Tagalog to each other (column 2), one or two Philippine languages to the children (columns 3 and 4; including English), but also Norwegian. It is Tagalog, but also to some extent English, and not other Filipino languages, which are transferred to the child generation, besides Norwegian. The main language choice in the child generation in our studies is Norwegian (Hvenekilde and Lanza 2001, Svendsen 2004, Lanza and Svendsen, in press). The children answer in Norwegian when they are spoken to in Tagalog, but also when they are spoken to in English, like in Gary's family.

Table 1: Multilingual practice in five families with Filipino background

Interaction	Adults to adults		Adults to children		Children to adults		Children to children
	1	2	3	4	5	6	
Gro's father	CET(S)	T(N)	TN(E)	TN(E)	N(TE)	N(TE)	N(ET)
Gro's mother	TE	T(N)	TN(E)	TN(E)	N(TE)	N(TE)	
Julian's father	T	T(E)	T(E)	T(E)	T(NE)	T(NE)	T(NE)
Julian's mother	T	T(E)	T(E)	T(E)	T(NE)	T(NE)	
Gary's father	T	T	ET	ET	N	EN	N
Gary's mother	B(T)	T	T(N)	T(N)	N	N	
Gary's aunt	B(T)		T(N)	T(N)	N	N	
Antoinette's father	T	T	T(EN)	T(EN)	N(E)	N(E)	N(E)
Antoinette's mother	T	T	TN(E)	TN(E)	N(TE)	N(T)	
Gabriel's father	T	T	T(NE)	T(NE)	N(TE)	N(TE)	N
Gabriel's mother	IT	T	N(TE)	N(TE)	N(E)	N(TE)	

Language: B: Bicolano Albay, C: Cebuano, I: Ilocano, T: Tagalog, E: English, S: Spanish, N: Norwegian.

Language in brackets: Language in use "from time to time"

Relation: 1: to relatives, 2: to spouse, 3: adults to child in focus, 4: adults to brothers or sisters, 5: the child in focus to adults, 6: brothers or sisters to adults, 7: the child generation.

Compared with other studies of language choice in minority language speaking families, it is not surprising that Norwegian is introduced in the child generation (Clyne 1991, Boyd et al. 1994). But it is somehow surprising that Norwegian is introduced to such an extent as seems to be the case, in the parental generation. In addition, language practice among the Filipinos in Oslo seems to be more complex compared to other studies of language practice in minority language speaking families (Boyd et al. 1994, Aarsæther 2004). More languages are in use, and several languages are in use in one and the same conversation, so-called language switching or code

switching. Julian's parents have, for example, chosen to speak mainly Tagalog to their two children, and the children have a preference for Tagalog, even with each other. Nevertheless, the parents emphasize – after a while though – that they mix all of their languages as long as they understand each other. The following excerpt is from an interview I did with Julian's parents.

Bente: mm. ja. men sånn når dere sitter og spiser middag sammen, og sånn.

(‘mm. yes. but like when you sit and have dinner together, and things like that’)

Father: ja.

(‘yes.’)

Bente: hva- hva er det dere- hvilket språk er det dere eh-

(‘what- what is it you- which language is it you eh-’)

Father: alt! blanding. norsk, engelsk, filippinsk.

(‘everything! mixed. Norwegian, English, Filipino.’)

Mother: alt mulig. (latter)

(‘everything imaginable.’) (laughter)

Bente: ja, det er det, ja.

(‘yes, it is that, yes.’)

Father: alt mulig! så lenge som vi forstår på hverandre, jo.

(‘everything imaginable! as long as we understand on each other, right.’)

Julian: forstår hverandre!

(‘understand each other!’)

Bente: ja, ikke sant. (latter)

(‘yes, right.’) (laughter)

Hence, it seems to be a kind of mismatch between the parents' choice of Tagalog as their main socialization language, and the family members' interactional language practice. This is not surprising considering the fact that some interactive situations “require” that the participants do not fulfil

what they ideologically profess. One reason might be the relatively widespread negative attitudes towards code switching in general. Such attitudes might be anchored in fears of language confusion or language decline (Svendsen 2006b). Negative cognitive and moreover, negative social effects are, for example, postulated in research on Creole languages in the beginning of the 1970s. According to Whinnom (1971: 110) Creole languages constitute: "[...] with only a few exceptions, [...] in most communities a distinct handicap to the social mobility of the individual, and may also constitute a handicap to the Creole-speaker's personal intellectual development". At the same time as Whinnom did his research, code switching research gathered momentum, and maybe its most important contribution has been to document that code switching is not an "irregular mixture of two distinct systems" (Labov 1971: 457), but requires elaborated language skills in both languages, and serves, as discussed below, important communicative functions.

### **What characterises bilingual competence?**

Julian is trilingual in Norwegian, Tagalog and English. During an eight-month period while I worked as an assistant in Julian's class, I gathered data on his and four other Norwegian-Filipino children's competence in these three languages. While linguistics during the last decades has generated a substantial amount of research on the acquisition and use of two languages, trilingual or multilingual acquisition and use has gained ground only during the last six to seven years. Thus, we have limited knowledge of multilingual acquisition and use (Cenoz 2000, 2003, Svendsen 2006c). What we do know, however, is that the bilingual children who have received their mother tongue or first language instruction over time, are the ones with greatest educational success (Thomas & Collier 2002, Bakken 2003). In Thomas and Colliers' (2002) study in USA where more than 2 million students participated, including more than 100 different first languages, bilingually schooled students outperformed comparable monolingually schooled students in academic achievement in all subjects, after 4-7 years of dual language schooling. In Norway, Bakken's (2003) study confirms Thomas and Collier's results. One of the main reasons for the importance of bilingual instruction is the complementary principle: Bilinguals often acquire and use their languages in different situations, for different purposes, and with different people. Thus, their language skills are often complementary. One of the languages may be dominant, i.e., "stronger" or more developed than the others (Lanza 1994, 1997/2004). The dominant language might be the language you learnt first, or it might be the language you use

most. In addition, you might find that you have greater competence in one of the languages when you talk about certain subjects or in specific situations. One of the consequences of such a differentiation between the languages might be that the vocabularies are not identical. This is a natural consequence of the fact that one uses the languages in different contexts. Thus, a bilingual person is not two monolinguals in one (Grosjean 1998). Nevertheless, there is a need to study to what extent trilingual or multilingual competence is governed by the complementary principle. For example, it is possible that trilingual competence, to a larger extent than bilingual, is additional (Svendsen 2006c). Lambert (1977) differentiates between additive and subtractive bilingualism, where the first mentioned refers to contexts where L2 is added to L1 without weakening of L1, which is the case for subtractive bilingualism. Moreover, multilingual acquisition represents far more possible combinations for when, where, and how the different languages are acquired. Most studies of multilingual acquisition and competence are on early multilingualism, and the effect of bilingualism on the acquisition of English at school (Svendsen 2006a).

### **What characterises bilingual practice?**

The main characteristic of bilingual practice is language switching or code switching. There are several definitions of code switching in the literature, but they all agree that code switching contains the alternate use of two or more languages (dialects, or sociolects) in the same conversation. The following excerpt is from a group conversation where I asked five Norwegian-Filipino children to decorate a house by cutting out figures from magazines, and glue them on to a big piece of cardboard. I gave them glue and scissors, but with interesting effects: one fewer pair of scissors than that they actually needed. In other words, they had to cooperate. The children were alone, and I videotaped the conversation. I gave the children names, based on their original names, Antoinette, Gro Audhild, Julian, Gary, and Gabriel.

- |             |   |
|-------------|---|
| Gabriel:    | Gary! det går ikke å klippe!<br>(‘Gary! it’s not possible to cut!’) |
| Gary:       | jo. vent da. det går.<br>(‘yes. wait. it works.’)                   |
| Gro:        | du ødela den. (latter)<br>(‘you ruined it.’) (laughter)             |
| Antoinette: | æh! (latter) (laughter)   |
| Julian:     | å så lime den på igjen da.<br>(‘and then glue it on again then.’)   |

- Gary: jeg hater å så xxx klippe det ... hvordan da?  
(‘I hate to xxx cut it ...how then?’)
- Antoinette: vet dere hvordan dere skal få ut den?  
(‘do you know how to get it out?’)
- Julian: jeg har fri. (Julian går rundt bordet)  
(‘I am off duty.’) (Julian walks around the table)
- Gary: nei.  
(‘no.’)
- Antoinette: æh hæ hæ! vet dere ikke det en gang?  
kan jeg fortelle-  
(‘æh hæ hæ! don’t you even know that? can I tell-’)
- Gabriel: ja! skal jeg klippe håret ditt?  
(‘yes! shall I cut your hair?’)
- Antoinette: ja, skal jeg klippe ditt?  
(‘yes, shall I cut yours?’)
- Gro: latter (laughter)
- Gabriel: **can you understand the word come in my mouth?**
- Antoinette: **yes!!**
- Gro: **do you understand the word** (sings)
- Gabriel: **I do understand! do you understand ...**
- Julian: **the word ... the word <come in my mouth?>**  
(sings)
- Gabriel: **<come in my mouth?>**
- Gary: æsj! jeg vil ikke klippe den her allikevel.  
(‘æsj! I don’t want to cut this one after all.’)

xxx: incomprehensible, ... : pauses, <> simultaneous speech, utterances in English is in bold types.

In this excerpt we see that Gabriel is responding to Antoinette’s manner of interfering into the conversation. He is expressing in a rather annoyed way, and in English, can you understand? Whereas Antoinette answers back in English: yes! Thereafter, Gro Audhild and later on Julian, sings the same phrase in English, and thus the signs of disagreement between Gabriel and Antoinette, are resolved. Code switching among children and adolescents

often occurs when they are having a disagreement, and as a tool for positioning each other socially (Lytra 2003, Jørgensen 2003, Svendsen 2004, Aarsæther 2004). Gabriel puts Antoinette in her place because she interrupts the conversation (æh æh æh!). In addition, we see that the same phrase in English has a completely different function when Gro Audhild and Julian sing it. Here, instead of contextualising disagreement, the code switching has disarming and calming functions. In addition, the children use English, and to a certain extent Tagalog to show off, especially the boys. Moreover, the children speak English as a creative form of play with language, by using songs and jingles. Thus, they use code switching as a part of a performance among themselves on a mutual stage.

Code switching has been described as the main characteristic of bilingual practice. It may of course be triggered by the fact that you cannot find the exact word or phrase in the specific language, but usually code switching serves important communicative functions, and in particular in conversations among children and adolescents. First of all, code switching serves to structure the conversation at hand (Auer 1998). Where monolinguals use small hesitating words to reject a proposal, bilinguals may switch language. Secondly, through code switching children and adolescents creatively play with language, they position themselves and others socially through code switching, they mark their identification to the youth group (and maybe to a specific youth group), and they express an opposition to the adult generation (Svendsen 2004). Thus, code switching is not a result of language confusion or poor language skills. On the contrary, it is a tool to achieve communicative goals. In other words, code-switching may be seen as an effect of our human capacity of languaging or what I call “språking”, in Norwegian, i.e., the fact that as *Homo Sapiens* we are able to use the most efficient verbal and non-verbal tools, independent of language “suit”, to achieve our communicative goals (Jørgensen 2003, Svendsen 2004).

## Summary

In my talk today, I have emphasized that bi- or multilingualism is a world-wide norm, and not an exception. Thereafter, I pointed out that bilingual competence is governed by the complementary principle, and that the main characteristic of bilingual practice is code switching. Code switching might of course, as mentioned above, be triggered from a lack of word or a phrase in a specific language, but the important communicative functions of code switching must not be underestimated. The really interesting fact is that we as *Homo sapiens* share a language faculty. It is more interesting than

the fact that we can be said to use different and neatly separated languages (Jørgensen 2003). Languages in contact will always influence one another, and we need to study how young minority language speaking children and adolescents actually function as agents of linguistic change.

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### (Endnotes)

- 1 For those who are further interested in the family members' and in particular the children's multilingual practices and competences, see: Svendsen (2004)

# **Bimodal bilingualism in children – similar and different**

**Arnfinn Muruvik Vonen**

## **1. Introduction**

This paper discusses, from a linguistic and sociolinguistic perspective, the relevance of findings on hearing children's bi- and multilingualism in spoken languages (referred to as "speech bilingualism") for the understanding of bi- and multilingualism in signed and spoken languages ("bimodal bilingualism"). First, I will point out some basic similarities between the situation of speech-bilingual children from linguistic minority groups and that of bimodally bilingual children. Then, I will identify some specific properties of the particular situation of bimodal bilingualism in children: their access to the majority language, their access to the minority language, and the specific kinds of language contact phenomena made possible by the fact that, in bimodal bilingualism, two physical modalities are involved.

## **2. Bimodal bilingualism and categories of bimodally bilingual children**

For the purposes of this paper, "bimodal bilingualism" is defined as bi- or multilingualism involving one or more spoken/written languages and one or more signed languages. Bimodal bilingualism in children is typically found in situations where the child and/or one or more persons in the child's environment are deaf or hard of hearing.

Whether the child is deaf or hearing is relevant to the issue of access to the spoken language, and whether the parents are deaf or hearing is usually relevant to the issue of access to the signed language. Therefore, it may be useful to make reference to three subgroups of children growing up bimodally bilingual:

- A. Hearing children of deaf or hard of hearing parents ("HoD");
- B. Deaf or hard of hearing children of deaf or hard of hearing parents ("DoD");
- C. Deaf or hard of hearing children of hearing parents ("DoH").

However, it should be kept in mind that such categorisations are not always

easy to make, and that factors other than the child's and the parents' hearing status may sometimes be equally relevant to matters of language acquisition.

What I have just called "bimodal bilingualism" is sometimes referred to as "sign bilingualism" in the literature (Grosjean 1994, Pickersgill and Gregory 1998). However, this term might also be expected to refer to bilingualism involving two signed languages, a topic that I will not deal with in the present paper. In fact, children growing up with two sign languages (for example, a child with two Deaf parents from different sign language communities) will typically also be confronted with at least one spoken/written language and, thereby, with bimodal bilingualism.

In this paper, the phrase "deaf or hard of hearing parents" will be used to refer to one or more sign language users with a hearing loss who communicate with the child and function as language models so that the child acquires the language. Typically, these sign language users will be the parents (or at least one parent), but it may also be a sibling, grandparent, next-door child, etc. By "hearing parents", on the other hand, I refer to the common situation in which nobody in the child's home environment is a sign language user with a hearing loss. I do not take into account rarer cases, such as that of blind children. Neither do I take into account the possibility, expected to occur in societies where a sign language is valued, of hearing parents (for example, with a background as HoD children) functioning as sign language models in communication with their own hearing children.

### **3. Similarities between speech bilingualism in minority groups and bimodal bilingualism**

It has long been noted that there are important similarities between the linguistic situation of (hearing) minority groups living with two spoken/written languages, one a minority language and one a majority language, and that of signing Deaf communities living with one (minority) sign language and one (majority) spoken/written language (Vonen 1996). In many societies, Deaf communities and hearing minority language communities share experiences of marginalisation and oppression on the part of the majority population. For example, there are still many places in the world where signed languages are not legally admitted as languages of education, just like there are also still many spoken minority languages in the world that are not legally admitted as languages of education. To the extent that education in other languages makes learning more difficult for the children in question, such restrictions may be seen as instruments of oppression. Even in societies where legislative changes have been made and

the minority language in question is formally allowed as a language of education, the minority language is still commonly discriminated against on less formal grounds, reflecting a lack of confidence in the minority language as a vehicle of learning on the part of the majority population, including the policymakers.

Deaf communities have been observed (Fischer 1973, Vonen 1996) to share certain certain features with the subgroup of spoken language minorities speaking creole languages (such as Jamaican Creole English in Jamaica and Sranan in Suriname). In particular, creole languages, being relatively young languages, are often not even recognised as real languages by the majority population, and this non-recognition is also seen in the case of many sign languages. Also in line with creole communities, signing Deaf communities often show quite large individual linguistic variation due to the individual differences in language history among the community members.

Many Deaf communities as well as many spoken language minorities share a tolerant attitude to language contact phenomena such as code-switching and language mixing.

The learning experiences of hearing children from spoken language minorities have been documented in a large number of studies through many decades. Although many factors are at play and there are still many points of uncertainty, there seems to be consensus in the research community that extensive use of, and positive attitudes to, the minority language as a language of education is beneficial to the learning process, including the learning of the majority language. Research on bimodally bilingual education is far less extensive and is mainly focused on the education of deaf children (DoH and DoD). Recent results in this area confirm, however, that the basic pattern is the same: other factors maximally equal, deaf children with a good command of a signed language (either because they have signing deaf parents or have had early exposure to the signed language by other means) achieve better results in highly-valued skills such as literacy (for example, Prinz & Strong 2000).

#### **4. Differences between speech bilingualism in minority groups and bimodal bilingualism**

While the sociolinguistic situation and development of the Deaf community within a particular society is largely similar to that of spoken language minorities, there are several differences at the level of individual bilingualism. Some of these have to do with “extra-linguistic” factors, mainly

the prevalence of hearing loss and its consequences for access to the languages in question. Other differences have to do with “linguistic” factors, in particular the fact that the difference in the two languages’ physical modalities makes possible other kinds of bilingual practices than those observed in speech bilingualism.

#### ***4.1. Conditions on access***

Due to the hearing loss of many sign language users, and to the fact that only a small proportion of deaf and hard of hearing children are born into signing families, the issues of the child’s access to each of the languages in question are more relevant to bimodal bilingualism than to speech bilingualism. At this point, the distinction between the three main subgroups of bimodally, bilingual children is helpful for our understanding:

A. HoD children have access to both the minority sign language(s) and the majority spoken language(s) of the society in ways that are basically similar to the situation of hearing minority children. Both (all) languages may be acquired without systematic instruction. In fact, HoD children’s access to the majority language(s) may be expected to be easier than that of speech bilingual children since most of them have one or more siblings, grandparents, etc, who are hearing and use the majority language(s). In societies in which sign languages have low social status, HoD children may not be expected, even by their parents, to become active sign language users, and their productive skills in the sign language may remain poorer than their receptive skills. They may still be regarded as bilingual individuals, but with the spoken language as their dominant language. If the society values sign languages, they may have the chance of becoming balanced bilinguals, or of acquiring the same degree of proficiency in both languages.

B. DoD children have access to one or more sign languages in basically the same way as hearing language minority children have access to their spoken minority language. However, because of their hearing impairment their access to the majority, spoken language(s) is less straightforward than that of speech bilingual children. Hence, they may be expected to become sign language dominant or (at least if their hearing impairment is not profound) balanced bilinguals.

C. DoH children face challenges both in accessing the spoken majority language(s) – because of their hearing impairment – and in accessing the signed minority language(s) – because of the fact that the parents are hearing and probably cannot serve as sign language models. DoH children

are the vast majority of deaf children, and the outcome of their bilingual development will depend on the ways in which adults make each of the languages accessible to them – through exposure and facilitation.

#### 4.1.1. *More on access to spoken language*

As already mentioned, DoD and DoH children's access to the spoken language will depend on the nature and degree of their hearing loss. In the educational discourse on children with hearing loss in the Scandinavian countries, an educationally relevant distinction is traditionally made between "deaf" (Danish and Norwegian: "døv"; Swedish: "döv") and "hard of hearing" (Danish: "hørehæmmet"; Norwegian: "tunghørt"; Swedish: "hørselskadad"). Sometimes the distinction is defined audiologically, for example by postulating that "döv" signifies an average hearing loss greater than 90 or 95 deciBels in the better ear as measured by means of pure-tone audiometry at conventionally specified frequencies relevant to the discrimination of speech sounds (for example, 500, 1000 and 2000 Hertz). In audiological terms, this would correspond to "profoundly deaf" in English. At other occasions, less precise but educationally more self-explanatory criteria are used. For example, a functional definition of "döv" for educational purposes may be "having a hearing loss which prevents the spontaneous acquisition of spoken language". Definitions may also specify whether the criteria apply when using or when not using a hearing aid or a cochlear implant.

It is a well-known fact in the deaf education literature that a person's hearing may be highly dependent on the properties of the communication situation. Crucially, a hard of hearing child may be able to acquire elements of spoken language in some communication situations, but not in others. Put differently, a child who can hear well enough to acquire a good command of a spoken language through communication in accessible situations, may be excluded from communication in that language in many other situations. The accessibility of the spoken language communication situation depends on a number of factors, and I shall now briefly discuss this point with a simple model.

A communication situation (whether with a spoken language or with a sign language) may be said to consist of at least the following key elements:

- (i) two or more *participants*;
- (ii) one or more *topics*;
- (iii) a *context* of utterance; and

(iv) a certain *duration*.

Everything else being equal, we may assume that:

- a situation with few participants is more accessible than a situation with many participants;
- a situation with participants who are familiar to each other is more accessible than a situation with unfamiliar participants;
- a situation with physically close participants is more accessible than a situation with distant participants;
- a situation with stationary participants is more accessible than a situation in which the participants move around;
- a situation with a stable topic is more accessible than a situation with a number of alternating topics, especially if the alternation is not clearly signalled;
- a situation with a known and predictable topic is more accessible than a situation with an unknown topic;
- a situation in an auditorily and/or visually quiet context is more accessible than a situation with a noisy context
- a situation lasting for a short time is more accessible (and less tiring) than a situation lasting for a long time.

According to this model, the most accessible situations are situations in which there are two conversation partners who are familiar to each other and talk about a stable, known topic for a limited period of time while they are sitting or standing at a short distance from each other in a quiet room. No doubt any child may occasionally find himself or herself in such a situation, but no doubt there are also other situations in everyday life, at school as well as elsewhere. In accordance with the degree and nature of the child's hearing loss, some or many of these situations are less accessible or even inaccessible for the child as long as they are based on a spoken language. Furthermore, even if the child is able to access a certain communication situation, it may demand so much attention and effort that the child easily gets tired.

Since many spoken language communication situations are inaccessible, or at least tiring, for deaf children, the idea of concentrating in education on the acquisition of the written version of the majority language has been put forward and, to a certain extent, tried out in some societies. It should be made

clear, however, that the acquisition of literacy is a demanding task even for children who can hear the spoken version of the language, and it remains an educational challenge to facilitate it for deaf children. The syllabus for the subject of “Norwegian for Deaf Pupils” in the bilingual curriculum for deaf primary and lower secondary school pupils introduced in Norway in 1997 (KUF 1997) is an example of a curriculum description focused on the acquisition of the written, rather than spoken, language. A critique of KUF (1997) is provided by Engen (1999).

#### *4.1.2. More on access to sign language*

Children born into families with signing parents, such as the HoD and DoD children introduced above, may be expected to acquire the sign language from their family members, unless the parents choose, because of language status problems or for other reasons, to restrict their children’s access to the parents’ language. The DoH children are not in the situation that they meet competent sign language models at home, and they are dependent on adults’ choices for accessing a sign language environment. Relevant areas of intervention may include providing education environments – in pre-school and school – in which sign language is used by competent adults and by children; providing sign language models out of school – such as adult support persons paid by the local government to spend time with the child; and providing sign language education for parents and other family members.

#### **4.2. Bilingual practices**

As we have seen, considerable variation is to be expected in children’s bimodal bilingual acquisition, mainly due to variation in exposure to two (or more) languages. Some children acquire a balanced bilingualism whereas others become dominant in one or other of the languages. (I would like to point out, though, that it is not clear whether the notion of ‘balanced bilingualism’ should be defined in a way that would make it applicable to individuals whose hearing loss precludes any proficiency in the spoken modality of the majority language.) Limitations in language skills clearly may restrict the range of language choices available to the individual child in the individual situation. In addition, however, several studies have shown that children with considerable language competence in both modalities make different language choices in different communication situations (for example, from the Norwegian context, Arnesen, Enerstvedt, Engen, Engen, Høie and Vonen 2002 and Ohna, Hjulstad, Vonen, Grønlie, Hjelmervik and Høie 2003).

As mentioned earlier in this paper, the different modalities involved in bimodal bilingualism make possible bilingual practices that are hard to imagine in speech bilingualism, in particular the simultaneous production (and perception) of elements of both languages. When this occurs spontaneously in competent bilingual communication, it is known as “contact signing” (Lucas & Valli 1992). Contact signing and other bilingual practices are part of the range of linguistic resources at the bimodally bilingual person’s disposal. However, it should be pointed out that communication forms involving the simultaneous use of elements from both languages (and both modalities) may serve different functions (Vonen 1999):

1. Language mixing as a resource in competent bilingual communities: In communication among people (deaf or hearing) who are all competent in both languages, language mixing may function as a resource for enriching the communication. Language mixing may serve, for example, as a flag of the interlocutors’ shared bilingual-bicultural identity. It may also be chosen to indicate a shift to a topic closely connected with one of the languages in a conversation primarily taking place in the other – for example, in a signed conversation between deaf university students discussing books they have read in Norwegian.
2. Language mixing as an emergency tool in the absence of sufficient language skills: This seems to often be the case when language mixing is used in spontaneous conversations between deaf and hearing individuals: each conversation partner tries to use elements from the other conversation partner’s language to make the communication work, although neither of them has a full command of that language.
3. Language mixing as an educational strategy: In several societies where sign languages are not highly valued, but where deaf children’s need of visual communication is acknowledged, attempts have been made at constructing signed versions of a spoken majority language. Examples are Signed Norwegian (“tegnspråknorsk”, developed in the 1970s) and several systems of Signed English (or “Manually Coded English”). In these systems, most of the lexical items are taken from the sign language of the society (except for their mouth movements, which are taken from the spoken language), while the syntax and in some cases even the morphology are those of the spoken language. In societies where sign languages are in low esteem, these systems have been believed to be communicatively and culturally superior to the sign languages themselves, and thus have played a role in debates on language policy in the deaf community. Also in societies

where the sign language is acknowledged, it has been argued that signed versions of the spoken language may serve a function in the teaching of the spoken/written language. As tools for communication, however, these systems have been criticised for being cumbersome and hard to acquire for deaf children (for example, by Kluwin 1981, Marmor & Petitto 1979 and Vogt-Svendsen 1987), and their historical roots as products of non-recognition of sign language have caused many deaf people to regard them as symbols of a society's oppression of sign language.

The unique forms of bilingual practices made possible by the modality difference between the two languages in bimodal bilingualism, thus, have been observed to serve different functions in communication, including communication in educational settings. They have also taken on complex patterns of sociolinguistic functions that have not yet been fully understood, and the debate of their future roles in the larger framework of bimodal bilingualism remains a topic of educational and political debate. In future work on comparing speech bilingualism and bimodal bilingualism, a better understanding of the linguistic as well as sociolinguistic impact of these bilingual practices will be important.

## **5. Conclusion**

In the present paper, I have discussed some important similarities and differences between speech bilingualism and bimodal bilingualism, with particular reference to educational issues. I have pointed at some basic similarities between the two kinds of bilingualism and emphasised the many parallels between bimodal bilingual development and the speech bilingual development of hearing children from linguistic minorities. I have then discussed some important differences between the situation of bimodally bilingual children and that of speech bilingual hearing minority children and focused on differences in access to each of the two (or more) languages and on the unique forms of bilingual practice made possible by the modality difference in bimodal bilingualism.

The differences are important and should be taken into account in comparisons between the two kinds of bilingualism. Thus, uncritical application of findings from speech bilingualism to bimodal bilingualism is not warranted. However, I hope to have shown that, as long as these particular features of bimodally bilingual development are taken into account, the findings from research on speech bilingualism are highly relevant for understanding the linguistic situation of bimodally bilingual children.

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# Deaf Preschoolers' Literacy Events

Carin Roos

## Abstract

The aim of the study (Roos 2004) reported here was to focus on the literacy events going on at a preschool, from the children's perspective. The study was an ethnographic study of a group of deaf children during a two-year period. The methods used were video recordings and interviews. The results showed that deaf children developed their interest in reading and writing during the first preschool years in much the same way as hearing children do. The children showed an increasing meta-linguistic awareness and an understanding of the function of written texts. There was, however, a tendency to underestimate the children's competence from the adults' point of view. The results also show that the children used several kinds of strategies in learning to read and write, suggesting that there may not be only one way of acquiring reading and writing skills, but many. It may be that phonological awareness is not imperative, but one of many strategies used. This paper will focus on what impact the study can have on educational practice.

## Deaf Bilingualism

In a literate society, it is very important that all children develop a high level of literacy. As Olson and Torrance (2001) put it: “[i]n order to understand and participate in the modern world it is increasingly obvious that one must have access to writing /.../” (p. 12). Thus, it is of a great importance that children meet and have the opportunity to learn about written language as early as possible.

Bilingualism is expressed in the syllabuses (The Swedish Board of Education, 2005) for deaf pupils in Sweden as follows:

*/.../ preparing pupils so that they can live and work as individuals with two languages in society. Language skills are also of great importance for all work in school and also for the future life and activities of the pupils. Pupils meet the two languages in different contexts and in different forms are stimulated to exchange thoughts and experiences concerning the different roles and structures of the languages. Bilingual education aims at providing pupils with the opportunity to use and develop their skills of using sign language, speaking, reading and writing in different contexts, as well as providing experience in and learning*

form e.g. literature, video, film and theatre in both languages. The aim of the education is to create good opportunities for pupil's language development so that the language becomes a functional tool.

([www3.skolverket.se/ki/eng/spec\\_eng.pdf](http://www3.skolverket.se/ki/eng/spec_eng.pdf))

This paper describes a study conducted in such a bilingual setting at a special preschool for deaf children. Teachers are using sign language as the language for communication, read many of stories to the children, use fingerspelling and write together with them.

Before reporting the results of the study, its aims will be described as well as a short summary of relevant findings from other studies. The method used and the process of data production will also be presented.

### Aim of the study and theoretical frame

There has been little research describing how young deaf children show their interest in the written form of a language and how this interest develops in a bilingual setting, using a sign language as the form of communication. The present study is thus an investigation of early childhood literacy events in a signing, bilingual setting from the child's perspective.

The theoretical bases of this study are the theories of social constructivism (Berger & Luckmann 1966), Bruner's (1986) theory of children's learning and Vygotsky's (1978) theory of thought, language and literacy development. Deaf children's literacy learning is seen as a joint construction by the participants in the literacy events.

### **Aim of the study**

The aim of this study has been to describe young deaf signing children's literacy events in a preschool and during their first school year, and how they interact and negotiate meaning through which literacy is constructed.

The study also attempts to answer four main questions, namely;

How do the children interact in reading and writing, with peers and adults?

In what situations do deaf children show interest in symbols, letters, words and text?

What do young deaf children read or write?

What can a description of these activities and the ways they are performed contribute to a better understanding of deaf children's ongoing constructions of literacy?

This paper concentrates on the fourth question, describing what impact on the work of the teacher the study findings may have. Hopefully this can contribute to better and more meaningful literacy activities and seeing the child as a competent bilingual person.

## **Deaf Literacy**

Research into Deaf literacy shows that deaf children have problems reading and writing (for overviews see Musselman 2000, Chamberlain, Morford & Mayberry 2000, Marschark, Lang & Albertini 2002). This particular field of research supports mainly three differing opinions concerning the development of reading ability and deafness and a fourth view combining the other three.

One view maintains that deaf children learn to read using essentially the same processes as hearing children, which means mainly using phonological processes while reading. The research efforts reported are centred round themes such as word processing, coding and different techniques used by deaf children, or programs used by their teachers. This research is also conducted mainly among children having learned a sign language late in childhood or educated orally (Musselman 2000, Paul 1998).

The opposing view proposes that deaf children use qualitatively different processes when learning to read, which means that deaf readers are presumed to be using a sign language, fingerspelling, orthographic information and semantic information. Studies are showing that children raised in families of signers (i.e., deaf parents using a sign language) display a higher level of reading performance than children raised orally, that is, with parents using a spoken language (Marschark 2001, Paul 1998). Research also shows that deaf children in signing hearing families sometimes outperform deaf children from deaf families (Marschark 2005). Thus research suggests that good sign language communication can be used as the mode for explaining the structure of a written language in school (Hoffmeister 2000, Padden & Ramsey 2000, Roos 2006, Strong & Printz 2000, Svartholm 1994, 1998).

A third perspective emphasises the development of literacy skills not only as a linguistic and cognitive achievement, but also as “a social achievement” (Padden & Ramsey 2000:185) in a signing environment. This view is held also by other researchers (Bagga-Gupta 2004, Roos 1999, 2006).

Another perspective, the fourth, is discussed by Chamberlain, Morford and Mayberry (2000), Marschark (2001, 2005) and Stewart and Clarke (2003) namely that there is a possibility that deaf children actually use several strat-

egies to learn to read and write. The hypothesis is that it is partly due to their education being organized in different ways but also due to the communication mode/s used at school. This may explain the contradictory results from different studies.

Thus what the research describes is several perspectives, namely:

1. The first view is emphasizing writing and reading as mainly about understanding the alphabetic code, focusing on form and sounds and on the phonological process while reading.
2. The other view is emphasizing meaningful literacy activities in interaction with peers and adults in a signing environment, focusing on discussions at a meta-linguistic level.
3. The third view emphasizes interactions in a signing environment and looks upon literacy skills as a social achievement.
4. The fourth view maintains that the contradictory results from different studies reported can be explained as emanating out of the varying educational experiences deaf children have and by the fact that the children differ as persons.

### **Early Childhood Deaf Literacy**

There has been some research carried out on deaf children's literacy development early in childhood, when attending kindergarten or preschool classes, and in a signing environment (Erting 1992, Erting, Thumann-Prezioso & Sonnenstrahl Benedict 2000, Ewoldt 1990, Ewoldt et.al. 1991, Padden 1996, Williams 1993, 2004). This research holds that deaf children show an interest in reading and writing early in childhood and that their early development shows great similarity to that of hearing children. Padden (1996) shows that fingerspelling is important in the child's development and that forming strategies to learn the position of letters is what deaf children do when hearing children invent their own spelling. Harris and Beech (1998) show that hearing children outperform deaf five-year-olds in phonological awareness and, later in school, in reading progress. However, they found four deaf children in their test group who performed just as well as the hearing children. Two were educated in a non-signing school and showed good phonological awareness and speech ability. Two children had deaf families and were good signers but performed poorly on tests of phonological awareness.

Thus, this research suggests three things, namely:

1. Deaf children are interested in reading and writing and develop their interest in much the same way as hearing peers do.
2. Fingerspelling seems to be important when learning about words and letters.
3. It may be that phonological awareness is not imperative for developing reading and writing skills for deaf children. It may be the language mode used that is of greater importance.

### Methodology and data production

The study presented in this paper had an ethnographic approach (Hammersley & Atkinson 1983, Silverman 2000), which in this case means firstly, observing and videorecording the children in their daily interactions and play situations and secondly, holding semi-structured interviews with teachers, parents and children during the data production and during the analyses in a longitudinal study carried out over a period of two years. During this period, examples of writing by the children were collected, their language proficiency in Swedish Sign Language was assessed and visits to their homes were carried out.

The children, three to six years of age, were in a signing class. During the study, four of them started at a primary school for the deaf. This means that observations during both preschool and primary school were collected.

Data were also collected from the local health authority's records of the children concerning their early language situation in the home, when the children began their sign language development and about their hearing status.

### **The six participants**

The children were selected as a complete preschool group, which, at the start of the period of data production, consisted of the six children, aged 3:1 – 6:9, four boys and two girls. They are described in their records and by their teachers as a 'normal' group of young children. One of the children has deaf parents and siblings, one has parents who are hard of hearing and the other four have hearing families. All of the children started to learn to sign at an early stage. Sign language is described as their first language and they are described as fluent signers by their teachers, although two of the children with hearing parents are later developers to some degree.

The children are regarded as deaf from birth. Three of them have a

profound hearing loss with no measurable hearing; the other three have a severe prelingual hearing loss (70-90 dB). One of the children has a cochlea implant (CI), which only he received during the study, and three of them wear hearing aids. All of them are regarded by their parents and teachers to be signers. One of the children, using hearing aids, knows some spoken words and tries to speak with hearing persons who do not know signs. Descriptive data about the child subjects are presented in Table 1.

*Table 1: The six children in the study*

<b>Child's age when the study started</b>	<b>Sign Language skills</b>	<b>Hearing status reported from the health authority</b>	<b>Hearing Aids used by the child during the study</b>	<b>Parents' hearing status</b>
<b>Boy 3:1</b>	Very good	Deaf*	None	Deaf
<b>Boy 3:4</b>	Late developer	Severe hearing loss	On both ears	Hearing
<b>Girl 5:9</b>	Very good	Deaf	None	Hard-of-hearing
<b>Girl 6:0</b>	Very good	Severe hearing loss	On both ears	Hearing
<b>Boy 6:5</b>	Very good	Severe hearing loss	On both ears	Hearing
<b>Boy 6:9</b>	Late developer	Deaf	Cochlea Implant	Hearing

\* Refers to a profound level of hearing loss

## **The preschool and school**

All of the children were attending a special preschool class in a Swedish town when the study started. The preschool is adjacent to the Special School for the Deaf in this region of the country. The preschool has children from

one to six years of age. The children do not actually start school until they reach the age of six when attending the preschool class, but even before then, they attend school several days a week, together with the older children. The preschool and primary school teachers work closely together preparing the children for a good start at school. In the preschool, there is a team consisting of three teachers and in the primary school, the team consists of two teachers and an assistant. Both teams include deaf teachers or assistants.

## **Results**

The purpose of this study (Roos 2004) was to describe young deaf signing children's literacy events in a preschool and during the first school year, how they interact and negotiate meaning through which literacy is constructed in everyday life. The focus in this study was the interaction between peers and between the children and adults and the study is attempting to describe the child's perspective of the literacy events.

The results of the study suggests that, in line with the fourth view (earlier presented in this paper and held by Chamberlain, Morford & Mayberry 2000, Marschark 2001 and Stewart & Clarke 2003) suggesting that educational experiences deaf children have added by the fact that the children differ as persons is crucial in understanding why and how deaf children develop their literacy skills. The study presented here suggests in addition that deaf preschoolers in a bilingual setting develop individual and personal strategies in their development of literacy. The children used lipreading, fingerspelling, sounding words out and writing, often at the same time. The study also adds the importance of socio-cultural impact on developing literacy skills. It showed the children's capacity to perform and to communicate on a meta-linguistic level about the literacy practice when given such a possibility in a signing setting. The results of the study reported here in this paper will concentrate on a description of these activities and the ways they are performed and how they can contribute to a better understanding of deaf children's ongoing constructions of literacy. Thus this paper concentrates on the work of the teacher and the impact the study may have on teacher performance.

First, the print environment seems to be very important as regards stimulating the occurrence of literacy events. The texts must be meaningful and the social interaction around them is crucial. Here, the adults seem to be important for this interaction to take place. The results indicate that if the teacher does not give attention to a text it will not attract the children's

attention either, unless the children themselves have realized that the text contain some kind of message. One example is a ‘post-it’ note from a teacher saying “This toilet have not been cleaned for several days”. The children found it very interesting and discussed what it communicates. Thus the deaf children in the study seem to regard writing, first of all, as a communicative practice. They interact socially around written language when given the opportunity to participate in such events, but seem to pay no attention to, for example, small notes on windows, doors and furniture saying WINDOW or DOOR.

Secondly, the results indicate that these deaf children, like hearing children, develop literacy skills at an early age, in much the same way. The results indicate that the deaf children write scribbles, play with writing, try to understand written words and text and interact with peers and adults in just the same ways described in literature on hearing children. They do critical cognitive work in order to understand what reading and writing is all about. Thus, for instance, the two three year old boys do show each other that they know about the letters of their names and continuously talk about texts around them. During the last year at preschool (5-6 years of age), these deaf and hearing children appear to differ. While most hearing children start to write, inventing their own spellings, the deaf children in the study collect whole words, fingerspelling them, memorizing them and using them in their writing. The results indicate that when adults talk on a meta level with the child about differences between Swedish and Swedish Sign Language (SSL), the children do, in fact, understand. But the teachers in this preschool seldom did this, which suggests that they may think that the children are not sufficiently mature for this kind of discussion. Teachers should perhaps, expect more of the children and have confidence in the their competence. They say in the interviews that they are “impressed by the children’s knowing and interest”.

Third, it seems that the role of fingerspelling is crucial. It is used in many different ways to try to figure out the meaning of a word, to learn it, to recall a word from memory and to communicate something in addition to being a part of Sign Language itself. While using fingerspelling, the children seem to be stimulated spontaneously to use their voices. When using their voices they appear to use strategies not unlike those we know hearing children use when reading. One five-year old girl (Girl 5:9) suddenly understood that they may get an apple pie after dinner. She gets the others attention and fingerspells the word PIE. She repeats it over and over again while closing her eyes and when doing so she suddenly sounds it out several times using

her voice, loud and clear. Using her voice is something she otherwise very seldom does. The strategies the children used to memorize or to decode a word, was varied and it often happened that children used several strategies. They used fingerspelling, sounding words out, reading quietly with moving lips, lip-reading and they discussed the meaning of a word or a sentence with peers. The study suggests that it may be that the phonological awareness is not imperative for developing reading and writing skills in deaf children. It rather suggests that phonological awareness is one strategy among others in developing reading and writing skills among deaf children. The different strategies are shown in Table 2.

*Table 2: The children's reading and decoding strategies*

<b>Strategies to decode single written words</b>	<b>Strategies to recall single words from memory</b>	<b>Strategies to memorize new words</b>
To try to understand by: - using fingerspelling as a mode of analysis - with lips form and <i>taste</i> the word - sounding the word out - lipread someone saying the word	To try to recall by: - using fingerspelling as a mode of analysis - with lips form and <i>taste</i> the word - sounding the word out	Exercise the word by: - using fingerspelling - using fingerspelling while closing the eyes - using fingerspelling while sounding - writing the word

Fourth, the results indicate that when the children fail in their literacy activities it is often due to misunderstandings emanating from an educational setting where adults do not have a sufficiently deep understanding of what it means to be a visual, non-auditory learner and communicator and that teachers have a tendency to underestimate the capabilities of the children. In such circumstances the child seems to feel that it knows less than it actually does, which affects the child's self-confidence and further development. One such example is when a three-year-old boy fingerspells his name, but is asked to repeat it. Since he thinks the teacher saw him fingerspell it he accordingly assumes he did it in a wrong way. Actually the teacher was not aware of him fingerspelling. This makes him shy and not willing to fingerspell his name for several months. This study also indicates that knowledge about text first occurs in social interaction and is negotiated. It appears together with both peers and adults. Teachers' use of a child-

centred communicative style seems to be necessary for this to occur. This also means that every child is in need of an environment using a language accessible to the child and in a shared context. A rich first language base seems to be necessary for the child to be able to understand and develop its second language; in this case the written language, early in life.

### **To meet literacy in a visual way**

The results from the study further indicate that it seems to be imperative that the teachers analyse their own strategies for working with and understanding the child as a visual human being, learning from the deaf children's strategies for performing activities at the same time as maintaining contact with each other. The teacher should invite the child to talk about its own learning to promote awareness of the child's thinking about reading and writing and for the teacher to learn from this. Adults may need to reconsider their own assumptions about what deaf children can and cannot do.

The visual way of understanding the world and the visual way of understanding literacy of deaf children needs to be better understood. This could help us find more effective methods for the development of literacy skills, not only for deaf children but also for hearing children having difficulties learning to read and write.

The results of this study indicate that early literacy development among deaf children is facilitated by a signing environment that involves a rich interaction among peers and adults. The adult's understanding of the child as a visual communicator and learner and as a competent child, rather than focusing on the fact that the child is not able to hear is crucial.

The results also indicate that there is not 'a best method' or 'a best path to literacy'. Rather, the results indicate that it is necessary to invite the child to participate in a large range of literacy activities and to use a lot of different materials in environments where the child can interact fluently with others. This is best done in a way that recognises the child not as a non-hearing person but as a visually oriented person.

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# **A Review of auditory, visual and auditory-visual perception and learning of speech by deaf children**

**Merv Hyde**

## **Speech and Speech Perception**

I believe that you should already know much of what is in this paper. In fact, many of the studies that I will cite are not new. However, they remain seminal in a field where such foundations were clearly established many years ago. Sometimes it is useful to re-confirm these foundations as we examine new opportunities or challenges. I believe that such knowledge is valuable in helping us to understand how deaf children may access and learn a spoken language and how to contextualise the findings and claims of studies of the use of cochlear implants with deaf infants.

### ***Human hearing***

Human speech would seem to be well designed around our capacity to hear. Alternatively, it can be proposed that in evolutionary terms our auditory capacities reflect our speech productive potential. Whether the “chicken” or the “egg” came first, human hearing is a remarkably sensitive instrument. Many humans can identify intensity (perceived as loudness) differences as small as 1 deciBel (dB) and to frequency (perceived as pitch) differences as small as 3 Hertz. Since some of us have frequency sensitivity from 50 Hz to 20,000 Hz, this is a remarkable feat. Our range of hearing is typically reported according to an interval scale specially designed to represent the intensity and frequency range of speech sounds. As such, a human audiogram shows a decibel scale from 0 dB to over 120 dB and across a range of frequencies, typically from 250 Hz to 6kHz. This does not mean that we cannot hear more than this range, but that it represents our hearing for human speech. For convenience, this graphical design has a logarithmic and not a more common linear scale. This is important, as a small increase in the decibel level represents a large increase in the perceived loudness or power of a sound. For example a 60 dB sound will have twice the perceived acoustic power of a 54 dB sound.

Our hearing system is also able to make fine judgements about the time that speech sounds exist for and how they may overlap in time. These judge-

ments are crucial for the perception of many consonants and vowels and for the flow of speech.

### ***Human speech***

Human speech is made up of a number of sounds called phonemes. Each language group may incorporate a specific selection from the range of phonemes that humans can produce and perceive. Some languages have many phonemes and some have fewer. Generally those languages that have fewer phonemes have longer words, as we all have roughly the same number of purposes (functions/pragmatics) that we try to use our communication for. For example speakers of English can use between 45 and 38/39 phonemes, depending on their local or national speech traditions. I am advised that in norsk, the range may be between 45 and 35, depending on region and dailect.

Infants in their first year typically focus in on the production of those phonemes that are most relevant for their language environment (the implicit phonology). These sounds of speech (phonemes) are often called the segments or the segmental features of a spoken language. These are combined to form syllables, combinations of vowels and consonants used in the production of words (e.g., CVC; CV; VCV, etc). There are of course other aspects of our speech performance. Speech is also made up of non-segmental features, sometimes called prosodic features. These include aspects of voicing: for example, loud, soft, and nasal, intonation contour, rate of utterance (even silence), and emphasis on certain words and stress on some syllables. In other words how we say something acoustically is often as important as what we say.

### ***Speech acquisition and production***

Speech is typically acquired during the first two years of life, first receptively and then used productively. As noted earlier, infant babbling is multilingual but narrows to reflect the sounds that are most accessible and instrumental in their environment. To the greatest extent, we say what we can hear and then we perceive best what we can say. If we hear Russian with a particular dialect then we say it that way. Any interesting parallel to this is the saying that, “when a deaf person speaks they give you their hearing loss”. However, we are not only tape recorders, because we also perceive and say what we see. Vision of the speaker is crucial in adding vital information about the nature of the production of speech sounds and the mood, emotion or intent of the speaker. It is important to note that speech perception, and

its consequences for speech production, is strongly influenced by the visual features that accompany speech. I will cover more of this later.

## **Speech Perception**

Speech perception and the phonology of speech are frequently described according to various distinctive features. These are tools to help us understand how speech may be classified, learned and produced. These features include: Place of Production, Manner of Production, Voicing, as well as the flow of speech and other prosodic features. It has been proposed that we develop and use these features or categories as detectors in our efforts to perceive and learn speech.

### ***Place of Production***

Place of Production (or Articulation) refers to the place in the vocal tract where a sound is fundamentally formed. For Vowels this usually means a position between the front and the back of the vocal tract. Vowels are acoustically distinguished from each other by the various frequency components that they possess. This particularly applies to the second energy band, or frequency formant that they possess. The range of hearing between 1500 and 4000 Hz is crucial for making distinctions between various vowels and their formant frequencies (hence the facilitation for a specific range of hearing that is created by the natural resonance in of our outer canal and the size of our middle ear space). Loss of information of the second formant frequency range makes many vowels and diphthongs indistinguishable from others (e.g., [ee] and [oo]). And, of course, what we hear is going to be essentially what we say.

For Consonants, Place of Production categories are: front, middle and back in the vocal tract. These are further divided into:

- the lips (labials and bilabials),
- the teeth (dentals),
- the lips and teeth (labio-dentals),
- the alveolar ridge (that part of the gums behind the upper front teeth -- alveolar articulations),
- the hard palate (given its large size, one can distinguish between palato-alveolars, palatals and palato-velars),
- the soft palate (or velum -- velar articulations),

- the uvula (uvulars),
- the pharynx (pharyngeals),
- the glottis (glottals).

Consonants vary greatly in their capacity to be heard. In English for example, the softest sound is a consonant: [th] – an unvoiced lingual- dental phoneme. The loudest sound in English is vowel combination (a diphthong), [or] (or [aw]). There is an amazing 30 dB difference in the audibility of these two sounds. Hence, even a small loss of hearing can influence our ability to perceive and distinguish between some sounds. It can also be noted that there are some languages that can make life harder for people with a hearing loss. English is such a language. Many of the morphemes that can change (inflect) meaning in English (such as [s] for plurals, possessives and continuous verb forms and [t] for regular past tense forms, e.g., [walk-t] – ‘walked’) are both high frequency and low intensity sounds. A combination, that makes them less audible for many listeners with a hearing loss or indeed many normally hearing listeners in noisy situations.

### *Manner of Production*

These categories relate to sound types such as plosives, fricatives, nasals, and so on. In other words how the sound is produced.

### **Voicing**

The main acoustic feature perceived in voicing is the duration of the voicing. Sounds that are voiced are easily distinguished acoustically from sounds that are not voiced (e.g., [p]-[b]) and in other contexts the voice onset time is readily distinguishable (e.g., [ba]-[pa]). Other features of voicing are nasality, pitch and vocal volume.

### ***Non-segmental or prosodic features***

These acoustic features can dramatically change the meaning of the message. The shape of the intonation contour, the duration of a pause, the emphasis on a word, all can modify or enhance the meaning carried by the grammar of the utterance. A listener needs to be able to perceive variations in pitch and loudness. These are relatively robust features that seem to survive, even in noisy communication environments and in cases of moderate hearing loss.

For example (with apologies for my norsk):

**Peter** bought a new house of Thursday  
**Peter** kjøpte et nytt hus på torsdag

Peter bought a **new** house of Thursday  
Peter kjøpte et **nytt** hus på torsdag

Peter bought a new **house** of Thursday  
(Peter kjøpte et nytt **hus** på torsdag)

Peter bought a new house of **Thursday**  
(Peter kjøpte et nytt hus på **torsdag**)

Or,

You're going.    *You're going?*    **You're going!**  
Du drar.                    Du *drar?*                    **Du drar!**

Another point to be made concerns the fact that speech is not simply the addition of one segmented phoneme to another (as early attempts at synthesised speech showed us. Speech has a necessary flow and some phonemes may vary in their production, according to the context of surrounding sounds. In particular, co-articulation refers to the influence that sounds have on each other as we say them in a sequence. In Australian English, a good example is [javagoodweeken?] or “Did you have a good weekend?”. I am sure there are similar examples in the Scandic languages. These are often described as “lazy” forms of speech, but are actually quite normal.

So was a very brief and probably over-simplified description of human hearing, speech, and some of the features of speech perception. However, what other features are there that can influence speech perception?

Contemporary views of perception are that we learn and function best when our sensory systems can operate in an integrated way that constructs understanding and consistency across sensory systems, in particular, that we are born with the predisposition for a linkage between hearing and vision. The youngest infants will “turn” as if expecting to see an attractive auditory stimulus that has been presented. Much of our early learning displays such inter-sensory operation. Speech perception and acquisition are no different.

### *Audio-visual speech perception*

Considerable research examining the development of vision and audition and the relationship between them in childhood has been reported, notably by Dodd and Campbell (1984) and Massaro (1987 a, b), and for deaf children specifically by Erber (1972, 1974 a, b, c, 1975). Two major factors emerge from this research: (a) that lipreading is used by hearing children in normal development and would seem to facilitate their acquisition of speech and language, and (b) both hearing and deaf students' development and comprehension of speech and language is enhanced by simultaneous access to visual and auditory input.

In series of foundation studies, Dodd (1979) found that hearing infants as young as ten weeks old were aware that their mothers' lip movements paralleled speech and was of the view that "vision may play an important role in the acquisition of speech perception and production (p. 483)". In reviewing other research, Dodd (1987) indicated that "hearing children make fewer errors when imitating words if they can observe lip movements as well as listen, as compared to listening alone (p. 173)". She appears to be of the view (Dodd, 1977; Dodd & Hermelin, 1977) that what is being processed from the lips goes into a phonological system (i.e., an "auditory" and not a "visual" system) for both deaf and hearing children. Elsewhere Dodd (1977) found that "having both inputs [i.e., audition and vision] provided significantly more information than either vision or hearing alone (p. 38)". In summing up their findings Dodd and Hermelin (1977) were of the view that

The major implication of the findings is that the ability to store and use phonological information is not necessarily dependent on the auditory modality. This may indicate that the way in which phonological information is stored is not modality specific. That is, no matter which modality of input is used to acquire phonological information, if it can be acquired, it can be used to solve phonological tasks ... such as the mapping of phonological systems (p. 416).

Campbell (1987) had a similar view, going so far as to say after her research on lipreading that "In all ways in which heard and seen (written) recall can be distinguished, lipread material behaves as if it has been heard, not seen (p. 253)". A classic example of this is the *Mc Gurk Effect* where even when the auditory and visual information of speech is deliberately put out of sequence, or in conflict, we seem compelled to produce a meaningful outcome from our perception of such events. This "effect" seems to work for

infants and adults and across languages, for words as well as syllables.

[http://www.media.uio.no/personer/arntm/McGurk\\_english.html](http://www.media.uio.no/personer/arntm/McGurk_english.html)

In this example, you should alternate between looking at the talking head while listening, and then listening with your eyes shut. Most adults (98%) think they are hearing “DA” - a “fused response” - where the “D” is a result of an audio-visual illusion. In reality you are hearing the sound “BA”, while you are seeing the lip movements “GA”.

The McGurk effect shows that visual articulatory information is integrated into our perception of speech automatically and unconsciously. The syllable that we perceive depends on the strength of the auditory and visual information, and whether some compromise can be achieved. Integration of the discrepant audiovisual speech syllables is effortless and mandatory. This is considered evidence that the brain treats visual speech information, as if it is auditory speech. This is also known as the “ventriloquism” effect. It has even been demonstrated to work when the mouth can’t be seen, but only touched. (The “McGurk effect” was first described by Harry McGurk and John MacDonald in “Hearing lips and seeing voices”, *Nature*, 264, 746-748, 1976).

These conclusions are further supported by findings of Mills (1987) with blind children that “lipread information is clearly used by sighted children and... its absence affects [speech] acquisition in visually handicapped children. Sighted children learn those sounds that have a visual articulation more quickly than those sounds that do not have such a clearly visible articulation (e.g., [baba; mama] p. 145)”. As Dodd and Campbell (1987) put it, “Seeing complements hearing for just those sounds that need it (p. viii)”.

Massaro (1987a) was also of the view that speech perception is normally “bimodal” via vision and audition and that the normal developmental process makes use of both these sources. Massaro (1987b) stated that his research evidence supported the position that “perceivers appear to evaluate evidence from both the audible and visible domains in bimodal speech perception ...the sources of information are integrated. (p. 63). In addition there is strong evidence that a view of the speaker’s face is crucial in determining the mood, character and intent of their communication. Watching a mother speaking with a young child is an example of this. Stoyles (1998) went so far as to suggest that, “motor information in speech

exists simply for enabling the vocal imitation for infants to learn spoken vocabulary” (p. 122).

Another line of research also supports the benefits of multimodal access to speech in the developmental process. Wightman and Allan (1992), reviewing research on auditory development in hearing children, summed up by saying

There is increasing evidence that the auditory processing skills of preschool children are considerably less well developed than those of adults. Masked thresholds are higher ...; intensity, frequency, and duration discrimination are poorer ...; spectral and temporal resolving power are lower ...; and spectral pattern recognition is not as acute (p. 113).

Their research led them to the view that the poorer auditory performance of some children is largely due to the influence of non-sensory factors “such as memory and attention (p. 133)”. If this is the case, putting deaf children in a position where they are forced to depend on their immature auditory capabilities would appear to be contraindicated.

In summary then, we would seem to perceive speech visually and acoustically

- Acoustically***    Speech segmentals  
                           Speech non-segmentals  
                           Topic/Context  
                           Emotions
- Visually***         Gestures, pointing  
                           Gaze/ Direction of attention  
                           Facial Expressions  
                           “Body Language”  
                           Identity  
                           Lipreading

So what is lip reading and why is it relevant to this issue?

Lip reading or “speech reading”

Lipreading is then attempting to derive information (particularly) from the

speaker's face. In the act of producing speech we move our lips, tongue and jaw and a view of the lips and the position of the tongue are central to the process. If all of the sounds of speech produced distinguishably different patterns on our faces then the task for lipreaders would be so much simpler. However, the visible information available is only a fraction of the information available through hearing. Although what is visible is highly related to the actual language (e.g., English, Mandarin) being used, it is typical for about one third of spoken sounds to be both visible and distinctive or distinguishable. This is because, as you know, many sounds are produced back in the vocal tract ([ha]) or, even if visible, look the same as other sounds (homophonous sounds such as [ma] and [ba]). These visemes then would seem to have limited potential by themselves, although now used in security contexts and in computer voice recognition. This is where the "nature/nurture" argument comes in to play.

It has been shown that both hearing and hearing-impaired subjects utilized lipreading in situations where the auditory signal was distorted or reduced (Dodd, 1977; Erber, 1975; McGurk & McDonald, 1976; Miller & Nicely, 1955). Although lipreading is correlated with linguistic factors (competence and familiarity with the stimulus materials) and environmental factors (speech quality, distance and angle), the presence of simultaneous auditory information improves lipreaders' performances to an extent inversely related to the degree of their hearing loss (Conrad, 1979; Erber, 1974b). There has been demonstrated a facilitative relationship between listening and lipreading in which the observer obtains place of production speech information from the lipreading component when this was not available through audition. For example, both hearing subjects in noisy situations and hearing-impaired subjects will look for particular lip shapes and tongue positions to discriminate between the acoustically similar syllables /far/ and /thar/. In a complementary manner, information on voicing, intensity variation, intonation and some spectral information have been shown to be available through residual hearing. It has been demonstrated by Grant and Braida (1991) that normally hearing listeners obtained a 4 dB improvement in speech reception scores, when they could see the speaker's face. Further, in noise (the more normal context in which we communicate) when most listeners only obtained about 10% correct from the heard words, they were able to achieve over 70% when the face of the speaker was available.

Thus lipreading and audition operate in a way that is mutually supportive. What one misses from one mode, can often be picked up from the other. Norm Erber (1974c) demonstrated that the use of spectral information

relating to higher frequency consonants and the second formants of vowels was only possible for some severely hearing-impaired subjects (= or < 95 dB average hearing loss) and not for profoundly hearing-impaired subjects (= or > 96 dB average hearing loss). The combination of vision and hearing for the severely hearing-impaired group produced significantly higher speech recognition scores (19 to 28 % increase; Erber, 1974b) than either hearing or vision separately. Although the profoundly hearing-impaired group had to rely more on the visual information they were still able to achieve a performance gain of up to fifteen percent on the combined audio-visual condition. Their scores on the combined condition were, however, significantly below those of the severely hearing-impaired group.

In an early study of my own, involving 11 individual and combined communication modalities (involving various combinations of lipreading, listening, signing and fingerspelling) Hyde 1992), I was able demonstrate results for severely deaf students for the listening-lipreading combination of 74% correct on a four-alternative sentence task, results that paralleled those of Erber (1974). Interestingly, these students performed as well with the listening-lipreading combination as they did with signs. Such an outcome was a surprise for the students and their teachers. The same outcome is not normally achievable for profoundly deaf students, although a significant enhancement is still recorded in most studies. Lipreading is then a major factor in the speech perception of severely deaf students and any facility that reduces the level of hearing loss of profoundly deaf students is to be appreciated. Further, any condition that reduces the role of lipreading and other visible information accompanying speech would seem counterproductive in a communicative context.

Lipreading ability, however, is not given to us equally. There is a range for both hearing and hard of hearing communicators. For example, with hard of hearing listeners, speech reception with lipreading can improve from between 20 and 90% over listening alone. Lipreading is also influenced by distance (best > 2metres), angle (best not more than  $\pm 15^\circ$  off centre) and by the brightness and direction of lighting.

#### *Simultaneous versus sequential stimuli*

In addition to bimodal versus unimodal studies, hearing-impaired subjects have also been included in studies examining sequential versus simultaneous processing. Many of these studies have examined the association between the auditory modality and the perception of temporal features (stimuli presented sequentially) and between the visual modality and the

perception of spatial features (stimuli presented simultaneously; for example, Hermelin & O'Connor, 1980).

Pollard (1977) attempted to determine if hearing-impaired subjects provided evidence for perceptual compensation by vision or evidence for generalized perceptual deficits in hearing and vision. He compared processing of simultaneously presented visual information with that presented sequentially. He hypothesized that if the hearing-impaired subjects processed the sequentially presented information better than the simultaneously presented material, this would indicate that their visual functioning had altered in comparison to hearing subjects and had “adapted” (p. 5) itself to the communication demands of hearing impairment. Pollard found no support for any “compensation” (p. 77) by the visual system of hearing-impaired subjects. In another study, however, which minimized the role of language.

As early as 1917, Pintner and Paterson reported that, “the so-called visual centre seems to have failed to take upon itself the function of the auditory centre and that compensation seems to be conspicuous because of its absence” (cited in Conrad, 1979, p. 118). Studies that followed continued to report short-term memory deficits for hearing-impaired subjects, supposedly because of their inability to utilize sequential memory processes (Wallace & Corballis, 1973).

McDaniel (1980) found no evidence to suggest that hearing-impaired subjects have more difficulty with sequential information than they have with simultaneous information. He concluded that hearing-impaired subjects were comparable to hearing subjects when processing such stimuli.

Recent findings also provide converging evidence that hearing-impaired subjects are able to use signed information to facilitate their performance on short-term memory tasks in a manner analogous to the use of speech-based codes by hearing individuals. This process, however, would seem to have some task-specific limitations. Hanson (1982), in a study involving matched hearing and hearing-impaired subjects, found that these visually-based coding systems were as effective as speech-based systems on free recall tasks but significantly less effective on tasks requiring ordered recall. Hanson pointed out that individuals' varied perceptual abilities, degree of hearing loss, linguistic background and access to speech-based codes were also important variables. This provided further evidence for the hypothesis that ordered or temporal recall may be best facilitated by the use of a speech-based code for both hearing and hearing-impaired subjects (Conrad, 1979; Hermelin & O'Connor, 1981).

### *Speech perception with simultaneous communication (SimCom)*

Another question concerns the perception of speech with other visual forms of communication, specifically when it is in association with signing. Early studies examining the correspondence between teachers' spoken and signed communication have, however, been criticised on methodological grounds and more recent and better designed studies of teachers' ability to produce (for example) signed English in Simultaneous Communication have presented a different picture. They indicate that well motivated, trained and experienced teachers can and do produce high levels of correspondence between the spoken and signed components of their simultaneous communication (average of over 90% morphological correspondence) in classrooms (Hyde & Power, 1991; Mayer & Lowenbraun, 1990). Although well-motivated and experienced teachers seem capable of producing a relatively complete signed English component, research I conducted with my colleague Des Power (1992, 1998) raised questions about the quality of teachers' speech when using Simultaneous Communication (Hyde & Power, 1991). In particular, it is likely that there are disturbances of the prosodic qualities of the teacher's speech that may influence the acceptability of such speech as an auditory-oral model for deaf students.

To date, consideration of the prosodic qualities of teacher speech produced in conjunction with signed English has been mainly limited to the examination of teachers' rate of utterance when using Simultaneous Communication (Hyde & Power, 1991). Results of these examinations indicate that for sentence material teachers' rates of utterance do slow down in Simultaneous Communication, with signed English sentences being presented at approximately half the rate (2.5 syllables/sec) reported for sentences presented with speech only (4.8 syllables/sec) (See Table 2). Further, the study by Hyde and Power provided evidence that because of the simultaneous signed English production demands, there was vowel elongation, repetition of consonants (e.g., "stop-ping" instead of "stopping" - as a consequence of slowed speech when adding the fingerspelled morpheme) and, at the word and sentence levels, some changes from teachers' normal stress and emphasis patterns.

What is not yet known is whether these changes to teacher speech also occur under oral-only communication with deaf students and, crucially, whether or not these changes under either condition hamper or facilitate deaf students' comprehension of information through residual hearing and lipreading. It may be, for example, that "unnatural" speech variations (from

the perspective of both “conversational” and “formal” rate descriptions provided by Pickett, 1980, p. 166) under oral or Simultaneous Communication conditions facilitate rather than limit deaf students’ comprehension. This was found to be the case with deafened adults exposed to “clear” speech incorporating some of the changes noted above as occurring in Simultaneous Communication (Picheny, Durlach & Braida, 1985; Picheny, Durlach & Braida, 1986).

While there would seem to be few, if any, studies available about deaf children on this issue, a study we conducted in 1998 with hearing listeners to teachers’ speech under SimCom, Oral-Only and Hearing conditions, demonstrated that the slowed speech of teachers of the deaf under the SimCom condition was most likely due to prosodic variations. Variation among teachers seemed to be as great as variation across the teacher groups producing speech under SimCom, Oral-only and Hearing conditions. Interestingly a few teachers using SimCom were able to maintain near normal (i.e., formal) speech rates while signing to deaf students. Ratings of the “understandability” of the teachers’ speech under the three conditions found the slowed speech rate under the SimCom condition to be the most understandable of the three conditions, yet the least “natural” in judgements by hearing listeners.

In reality, there is always going to be a compromise between either accommodations of the spoken signal or accommodations of morphological completeness of the signed signal. In a “worst case scenario” with less experienced users of SimCom, the speech rate is slowed to a point where all naturalness is lost and/or the signed component is barely able to follow the word order of the spoken language. Hardly, a good set of conditions for speech perception.

In our 1992 study comparing a range of individual and combined methods of communication of English we found no superiority for deaf students’ reception scores for manually communicated English with speech (SimCom) over the manual form alone (Table 1). As such we concluded that there was no evidence for any form of perceptual “synergy” (Maxwell & Bernstein, 1985, p. 80) between the spoken and signed representations of the same language. Indeed, as suggested above, there may even be disadvantages in the production of both the manual and spoken forms of a language simultaneously.

## Conclusions

What then do these findings mean for the communication environments in which deaf children are learning?

- (1) Perceptually it would seem abundantly apparent that our sensory systems are pre-programmed to operate in an integrated manner. Sensory deprivation in one of our distance senses can, of course significantly weaken the integration of information. There are indeed clear examples of cortical deafness and cortical blindness, even when the damaged sensory source (ears or eyes) can be repaired or improved later in life (e.g., with late cochlear implantation). As such, intervention needs to be as early as possible to take advantage of the inter-sensory potential for learning that exists. Of course, if this early intervention actually contributes to the deprivation of sensory information (e.g., restriction of visual information or of auditory information), then that would seem to be inconsistent with the manner in which our sensory systems operate and through which communication development normally takes place for all humans. Seems we are programmed to operate bimodally, even multimodally.
- (2) There is compelling evidence over many years and research contexts that one of our most integrated perceptual systems is concerned with audio-visual processing. This is not to suggest that all audio-visual information can be perceived and learned effectively. When what is presented to eye and ear is semantically different, conflicting, or well out of synchrony, we may do better with one sensory source alone. However, the Mc Gurk Effect and other experiments have shown that we are still able to synthesise semantically linked information from eye and ear, even if the sources are significantly out of synchrony, or if information from one of the senses is degraded. We accommodate to such circumstances and attempt to construct understanding.
- (3) One of the most researched and effective audio-visual combinations is that involving listening and lipreading. Many studies involving both hearing and hearing-impaired subjects and children and adults have shown that this combination produces an interactive effect. That is, scores achieved with listening and lipreading, exceed scores achievable by either method alone. We all lipread, it is linked to our learning about speech production and enhances our speech perception.

- (4) For hearing-impaired listeners however, there are some limitations. The main limitations concern the degree of residual hearing and the level of background noise present. It has been demonstrated conclusively, across many linguistic tasks, that the combination of lipreading and listening produces significant enhancement for persons with a hearing loss that is below a “severe” (< 90dB HL) level. They are typically able to make use of the spectral (frequency) information with their amplified hearing. For persons with “profound” (> 90dB HL) losses, often the residual hearing is able to provide only temporal or intensity information. Clearly, there is no evidence of any compensation by one sense if the other is blocked or deprived. They are after all designed to work together.
- (5) As such, the continued development of digital programmable hearing aids and cochlear implants that can give greater gain across a wide range of frequencies, can mean that fewer and fewer children are profoundly deaf. In fact, a claim has been made by some, that with the CI that no child in future *needs* to be profoundly deaf! If this claim can be sustained, then speech perception with lipreading and listening may be an effective reality for many more deaf children and adults. More prudent claims of CI fitting are that it can shift a person’s threshold from one audiometric level to another. That is, from profound to severe or from severe to moderate. This seems to be the case. Interestingly, digital aids are now producing amazing gain curves and seem to operate better in noise than do current CI’s.
- (6) Other audio-visual combinations involving speech seem more equivocal in their benefits. It would seem that some sign system users with SimCom are able to maintain near normal speech features and close to 90% completeness in their signed communication. This however, is not the norm and there may be compromises of the integrity of both communication modes. Using forms of “contact” signing simultaneously with speech is not a topic with a strong research base and I am unable to offer a view on this combination, only reservations, if asked.

Last I would like to consider some links between research on speech perception and the approaches or “methods” that have been used or that we continue to use with deaf children.

Recent reviews (see Beattie, in Spencer & Marschark, 2006) have described

four main approaches with in the “oral/aural” traditions. These are (in no particular order):

- (a) Auditory Verbal (Therapy/Teaching). I have covered in other papers (Power & Hyde 1997, Hyde, 2005) the history and principles of this approach but would emphasise here that its proponents have maintained, to a greater or lesser extent, a focus on listening and restriction of a child’s access to lipreading in therapy sessions, particularly in the early stages of communication and language development (Simser, 1993; Beattie, 2006). While such a strategy remains unproven even in the AV research literature (Eriks-Brophy, 2002) and is contrary to almost all the principles of speech perception established through intensive research over the last 40 years, there are that other characteristics of AVT that may well be more relevant to its contribution and outcomes. These features have been consistently demonstrated in research studies to be influential. They include, early diagnosis, early hearing aid fitting or implantation, a one-on-one perspective with high levels of parental support, the expectation of high levels of parent and family involvement and integration of the child into a range of school, centre, local, and family activities. Parents learn that they are the primary partners in their child’s learning and that cognition, audition, communication, language and speech evolve concurrently. This broader developmental basis is a more recent feature of AV programs, and it is a most appropriate one.
- (b) Auditory Oral. This approach shares basics features of strength (above) with the AV approach but differences in the degree of emphasis on listening alone. AO proponents have traditionally exploited the valuable information available from lipreading and even natural gestures. Alexander Graham Bell himself was an ardent advocate of such an approach (A. G. Bell, 1898). There are also some differences in the pedagogy of AO approaches. Typically, AO approaches are more varied in their implementation across school settings, whereas the AV approaches are more focused, consistent and disciplined. The AVI curriculum and therapist accreditation structure and regimen ensures this.
- (c) Natural Oralism/Natural Auralism. These are more frequently called (or at least were in the 1980’s) “auditory-oral” or “oral/aural” programs. They are reported to draw on the learning principles of

Jerome Bruner and a “normal” albeit slower sequence of “normal” process of language development. Parents and teachers were encouraged to ‘follow’ the interests and needs of the child as in *motherese* descriptions and to use conversations with their young child to construct meaning.

- (d) Maternal Reflective Method This last approach is also described as being based on *maternal* forms of conversational interaction between the deaf child and a more mature adult language user. Even though it shares many features with the NA approaches, a central role in the approach is however, given to the written form, the “reflective” element.

Recently, the distinctions between AV(T) and AO and NA/NA have been blurred significantly. The Alexander Graham Bell Association and AV International have, somewhat surprisingly, announced a “merger” and a draft agreement signed. This is evidence what many observers have been suggesting for some time. That is, a shift in the direction of AVT principles and practices to being more mainstream and inclusive in terms of strategies. I could add here that not all AVT programs follow this more “liberal” direction.

According to the new agreement, rather than completely denying visual input, they now promote monitoring of the child’s spoken language primarily through hearing, but “without undue (*italics added*) emphasis on visual input” (Dimitry Dornan, Hear and Say, personal communication, August 2005). This may not seem a major change but it is reasonable to suggest that AV approaches (some Australian chapters of AVI have even replaced the word “therapy” with “learning” or “teaching”) now have encompassed many of the tenets of auditory/oral education and indeed of effective first language acquisition conditions in their early intervention programs. In recent research there would seem to be a similar convergence between AO and AV programs with similar speech perception outcomes being found for matched groups of subjects in some studies (see Hodges, Ash, Butts & Schloffman, 2000).

As Bob Dylan said 40 years ago, ‘the times, they are a changing!’ We now are witnessing a rate of technological change in our various fields that has never been seen before. We see a combination of universal newborn hearing screening with diagnosis of hearing loss typically at 1.5 weeks and ever younger ages of implantation and ever more successful outcomes. It needs to be considered, however, that a significant proportion of children so

fitted will have undisclosed retro-cochlear neural pathologies or forms of neural de-synchrony that are not able to be bypassed by the implant. These degrade the quality of the signal that is available for subsequent auditory and cognitive processing. Early estimates following UNHS and CI use in Australia suggest that this group could be as high as 20% of young implantees. If we add to this group, those children who have an additional disability (for example, attention disorders, specific or general learning disabilities, other sensory or intellectual impairments - again an increasing proportion of deaf children, based on current aetiological data), the expectation that they can primarily learn from auditory input alone is flawed. Some may not even benefit sufficiently from auditory-visual communication.

How we manage the aftermath of newborn hearing screening is the crucial issue. This is largely uncharted territory for all early intervention service providers and for medical authorities. We have after all moved from a mean age of diagnosis of 18 months to 1.5 weeks! If we allow uninformed attitudes to auditory-visual communication, lipreading or even to sign language use to develop, or worse still if we encourage related fears among extremely vulnerable parents, we are doing a disservice to implanted deaf children and the various futures that they may realise during their lives. If unbiased, comprehensive advice and services are not provided, there are unappreciated risks (beyond the medical) for families and for service providers (see Hyde, 1995 and Hyde & Power, 2006, for an analysis).

Whichever claims are made about recent developments in technology, surgical procedure or teaching or therapy, it is incumbent upon professionals to submit their theory and practice to rigorous evaluation because their advice has real effects on parents and deaf students. Especially they need to heed research bearing upon their claims and to submit their own practice and outcomes to independent objective research and analysis. As Fuchs and Fuchs (1993) have said, “weighty issues must be resolved by researchers’ data, not by the advocate’s impassioned plea (p.136)”.

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*Tabel 1*

*Tabel 2*

*TO BE OR TO BECOME*



*TO BE OR TO BECOME*

