Speech Pathology Australia

ACQ

ACQuiring knowledge in speech, language and hearing

Print Post Approved PP381667/01074 ISSN 1441-6727

Volume 11, Number 1 2009

Multiculturalism Bilingualism Dysphagia

Also in this issue

- Research Updates
- Defining Language
- Velocardiofacial Syndrome

C.R.KENNEDY
MEDICAL
TECHNOLOGIES

Australian & New Zealand Distributor

KAYPENTAX™

Acknowledged leader in diagnosis and therapy

APPLICATIONS

SPEECH ANALYSIS
PROFESSIONAL VOICE
ACCENT MODIFICATION
STROBOSCOPY
DYSPHAGIA

KAY PENTAX RANGE

CSL
VISIPITCH
MULTISPEECH
STROBOSCOPES
SWALLOWING SYSTEMS
AERODYNAMIC DEVICES
NASOMETER
ELECTROGLOTTOGRAPH

For further information contact :

Ryan Smith
TEL 03 9823 1577
MOB 0419 330 118
rsmith@crkennedy.com.au
www.crkennedy.com.au/medical

Speech Pathology Australia
Level 2 / 11-19 Bank Place, Melbourne, Victoria 3000
T: 03 9642 4899 F: 03 9642 4922
Email: office@speechpathologyaustralia.org.au
Website: www.speechpathologyaustralia.org.au
ABN 17 008 393 440 ACN 008 393 440

Speech Pathology Australia Council

Cori Williams – President
Gillian Dickman – Vice President Operations
Jacinta Evans – Vice President Communications
Beth King – Member Networks
Amanda Seymour – Professional Standards
Karen Malcolm – Practice, Workplace & Government – Communications
Jennifer Moody – Practice, Workplace & Government – Operations
Jade Cartwright – Scientific Affairs & Continuing Professional Development
Natalie Ellston – Public Affairs

ACQ Editors

Nicole Watts Pappas and Marleen Westerveld c/- Speech Pathology Australia

Editorial Committee

Joy Kassouf
Andrea Murray
Erica Dixon
Alexandra Holliday
Thomas Ka Tung Law
Kyriaki Ttofari Eecen
Karen Nitsche
Pamela Dodrill
Mary Claessen
Tarsha Cameron
Lyndal Sheepway

Copy edited by Carla Taines
Designed by Bruce Godden, Wildfire Graphics Pty Ltd

Contribution deadlines
July 2009 – 2 January 2009 (peer review)
5 March 2009 (non peer review)
November 2009 – 8 May 2009 (peer review)
10 July 2009 (non peer review)
March 2010 – 20 August 2009 (peer review)
15 October 2009 (non peer review)

Advertising

Booking deadlines
July 2009 – 23 April 2009
November 2009 – 20 August 2009
March 2010 – 3 December 2009
Please contact Filomena Scott at Speech Pathology Australia for advertising information.

Acceptance of advertisements does not imply Speech Pathology Australia's endorsement of the product or service. Although the Association reserves the right to reject advertising copy, it does not accept responsibility for the accuracy of statements by advertisers. Speech Pathology Australia will not publish advertisements that are inconsistent with its public image.

Subscriptions

Australian subscribers – $AUD77.00 (including GST). Overseas subscribers – $AUD90.00 (including postage and handling). No agency discounts.

Reference

This issue of *ACQuiring Knowledge in Speech, Language and Hearing* is cited as Volume 11, Number 1 2009.

Disclaimer

To the best of The Speech Pathology Association of Australia Limited's ("the Association") knowledge, this information is valid at the time of publication. The Association makes no warranty or representation in relation to the content or accuracy of the material in this publication. The Association expressly disclaims any and all liability (including liability for negligence) in respect of use of the information provided. The Association recommends you seek independent professional advice prior to making any decision involving matters outlined in this publication.

Copyright

©2009 The Speech Pathology Association of Australia Limited

CONTENTS

Research Updates

FROM THE EDITORS

Nicole Watts Pappas

Marleen Westerveld

As the new *ACQ* editors, we are delighted to present the first issue of *ACQ* for 2009. Having been avid readers of *ACQ* for many years, we are excited about the opportunity to be involved in its publication. We thank the previous editors Chyrisse Heine and Louise Brown for the excellent job they have done in the last two years and for their support and guidance in the handover period. During the first three months of our editorship, we have become aware of the hard work and expertise of the many people who contribute behind the scenes to the production of *ACQ*. The journal could not go ahead if it was not for our fabulous copy editor, Carla Taines, our graphic designer Bruce Godden and the administrative support of Filomena Scott. We would also like to thank the members of the *ACQ* editorial committee who do so much work sourcing and editing articles.

As speech pathologists with both a clinical and research background we hope that our experience from each of these areas will assist us to create a high-quality clinical journal that brings evidence based, up-to-date and clinically useful information to clinicians and researchers. With this in mind, we are introducing a new column in this issue entitled "Research Updates". This column will highlight current research projects throughout Australia to keep clinicians informed of what is happening. We are also keen to increase the number of peer-reviewed articles in the journal and would encourage those who submit articles to consider placing their article for peer review. Finally, we have a commitment to provide support to clinicians and new authors to publish and to act as a forum for discussion of clinically relevant issues.

In this edition the focus is on two very clinically relevant topics: multiculturalism and dysphagia. It contains a number of articles relating to working with clients and families from culturally and linguistically diverse backgrounds. For example, Lew and Hand provide an excellent discussion paper on the issues that arise when working with children who are bilingual, while Al-amawi, Ferguson and Hewat present a fascinating and very practical article related to working with families from an Arabic background. In keeping with our wish for *ACQ* to act as a forum for the discussion of recent clinical issues, several articles discuss the "free water protocol", a topical form of dysphagia management that has been introduced in many health facilities in Australia and around the world. We hope that whether you work with children or adults, you will find something of use in this issue. We look forward to our editorial term and welcome your comments regarding the content and format of the journal.

Nicole Watts Pappas and Marleen Westerveld

FROM THE PRESIDENT

It's always a challenge to begin a new edition of "From the President". Where to start is the first question, followed soon by what theme to address. When I opened a new Word document to begin writing this comment, it was with the awareness that this volume of *ACQ* ushers in a change of editors. This inevitably (or perhaps not inevitably) led me to think about change. The phrase "to every thing there is a season" sprang to mind. From there, I did what every good technophile does, and opened Google to search for quotes about change. Three and a half million hits. It seemed that there must be something appropriate in there, and indeed there were many interesting quotes reflecting a range of perspectives. Some of them were entertaining, some were food for thought, some were from people I had heard of, some from people unknown to me, some were appropriate to this time of change in the editorship of the *ACQ*. Let me share with you just a few.

Irene Peter: "Just because everything is different doesn't mean that everything has changed". Just because the editors of *ACQ* have changed, doesn't mean that everything has changed. Our thanks go to Louise Brown and Chyrisse Heine as they lay down the editorial pens (editorial typing fingers, while more accurate, doesn't sound quite right). Editing this publication involves a multitude of tasks. The editors must determine themes, source material (including pictures), organise and oversee the review of some articles, edit others, organise and oversee the columns, provide inspiration for the cover and correct proofs, to name just some. Chyrisse and Louise have produced six exciting issues, which I'm sure you have all enjoyed. The new editors, Nicole Watts Pappas and Marleen Westerveld, will continue with the same tasks (not everything has changed) and, through their own special talents and interests, bring something different to the end product. I look forward to it!

George Bernard Shaw: "Some men see things as they are and say 'why?' I dream of things that never were and say 'why not?'" Perhaps you are surprised to see this quote attributed to George Bernard Shaw rather than to Robert F. Kennedy – I was. Nevertheless, we can see how this may be applied to new editors of any of our publications – dreaming of things that never were (in the publication), and asking "why not?" are desirable characteristics, as is the ability to follow up and turn the dreams into reality. Each new editorial team brings change – new columns, a new approach. We thank Chyrisse and Louise for the changes they made to the *ACQ*, and look forward to the innovations that Marleen and Nicole will make.

I think we can also agree with Nancy Astor: "The main dangers in life are people who want to change everything or nothing". There are many things about the *ACQ* that we, as readers, appreciate – so we don't want to see everything change, nor yet do we want to see nothing change.

Change has also been taking place in other areas of the Association. The new mutual recognition agreement (MRA) came into effect on 1 January of this year. This revised agreement sees the addition of two new signatory associations – the New Zealand Speech-Language Therapy Association and the Irish Association of Speech Language Therapists. Thanks must go to all the negotiators, from all the countries involved, without whose efforts there would be no agreement. Speech-language pathologists from the six associations who are part of the agreement will now find it easier to obtain membership of these associations, a factor which will make it easier to travel between countries. The registration bodies of various countries, states and provinces, however, impose their own regulations which fall outside of the MRA. Members interested in using the MRA will need to look carefully at the information provided on the Speech Pathology Australia website, and on the website of the country to which they wish to travel, in order to determine the extra conditions which must be met.

There are some things which haven't changed! The Association continues to make every effort to provide members with relevant and valued services of all kinds. Gail Mulcair, our CEO, continues to lead these efforts competently and with a constant view to the future of both the profession and the Association. The paid staff, at National Office and in the states, provides efficient service, and the volunteers around the country add immense value to the Association through their actions and ideas. I thank them all.

And to finish, with tongue firmly in cheek, I would remind you of the words of that famous person, Unknown, "change is inevitable, except from vending machines". Enjoy the inevitable change that you will experience in the year to come.

Cori Williams

SPEECH PATHOLOGY IN THE CONTEXT OF CULTURAL AND LINGUISTIC DIVERSITY

Working with people from an Arabic background

Samar Al-amawi, Alison Ferguson, and Sally Hewat

This article has been peer-reviewed

Speech and language assessment for the Arabic population who experience communication disorders may present as a challenge for speech pathologists in Australia. Language diversity is not the only issue that makes it difficult to deal with such patients; cultural diversity and the role of the interpreter mediating the interaction between the speech pathologist and the bilingual patient also play a part. This paper provides a brief review of cultural and linguistic diversity in Australia, and discusses the need for more speech pathology research focusing on specific populations such as the Arabic population. The paper identifies some of the major Arabic cultural issues (habits, behaviours, beliefs and customs) that need to be taken into consideration by the English-speaking speech pathologist who is working with Arabic patients, and suggests the need for cross-cultural training to be provided for speech pathologists working with an Arabic population.

Keywords:
aphasia assessment and treatment,
Arabic population,
bilingual,
interpreters,
linguistic and cultural diversity

Australia is a country which defines itself as a multicultural nation; this is due to the relatively large number of immigrants who have settled in the country since colonisation. Of those immigrants who are from non-English-speaking backgrounds, many will continue to have poor English language proficiency for a considerable period, especially if they were older at the time of their migration. According to the Australian Bureau of Statistics (2006), almost 400 different languages were spoken in homes across Australia in 2006. Close to 79% of Australia's population spoke only English at home, a decrease from 82% in 1996, indicating that 21% of Australia's population were using a language other than English at home. The top five languages spoken at home (other than English) were Italian, Greek, Cantonese, Arabic and Mandarin. Fifty per cent of Australians in 2006 had at least one parent born overseas and 22.2% identified themselves as born overseas. The top five countries of birth (other than Australia) were England, New Zealand, China, Italy and Vietnam. There is an increasing body of literature in speech-language pathology that discusses the issues, challenges and opportunities that are relevant for the practice of speech pathology for these populations (Battle, 2000; Isaac, 2002; Roberts, 1998). This paper will discuss issues in relation to working with children and adults from an Arabic background, as it is suggested that more needs to be known about how best to provide speech pathology services to this culturally and linguistically diverse population.

Samar Al-amawi, Alison Ferguson, and Sally Hewat

Few studies have focused on how the English-speaking speech pathologist can best provide services for bilinguals (Roger, Code & Sheard, 1996; 2000), and how speech pathologists can improve their skills for dealing with such patients. Even fewer studies have focused on providing speech pathology services for Arabic patients with communicative disorders and what could be valid assessment tools to assess their language abilities in the context of linguistic and cultural diversity. Isaac (2002) stated that there has been relatively little research and literature giving consideration to multicultural perspectives in clinical practice: “research is needed in SLP to substantiate the (probably valid) assumptions we often make about our clinical procedures and polices” (p. 123). She reported that many speech pathologists have their own clinical tools and procedures for assessing or treating patients from cultural and linguistic minority backgrounds and that these resources have not been clinically trialled or widely distributed. Battle (2000) also has stated that limited contemporary Arabic, Urdu, and other language tools and instruments exist and few have been standardised on Arabic speakers (Butler, 1989; Crago, 1990). She also reports that Wiig and El-Halees (2000) have developed an objective, culturally and linguistically authentic Arabic language-screening test for children between 3 and 12 years. This new test was challenging to develop because of the diversity among Arabic speakers' dialects, the diversity of their cultures, and the paucity of information about the speech and language development in Arabic-speaking children. This test was developed to be used with children in Jordan and Palestine, so it is not clear whether it will be useful for work with Arabic children from other Arabic countries because of dialectal diversity. Given that the few available materials may not be appropriate for all Arabic speakers, how might the English-speaking speech pathologist use the available materials to assess Arabic patients here in Australia? To only provide speech pathology services for the Arabic population by Arabic-speaking speech pathologists would appear impossible, with less than 100 Arabic speech pathologists worldwide, and only 33% who live outside of the middle east (Wilson, 1993). In Australia, according to information obtained from the Speech Pathology Australia website (data retrieved from www.speechpathology.org.au 1 August 2008), there are only six Arabic-speaking speech pathologists, five of whom are working in New South Wales and one in Victoria. Speech Pathology Australia estimates that 1 in 7 people will experience a communication impairment during their lifespan, and so it can be estimated that of the current population of Arabic speakers in Australia (243,662; ABS, 2006), there may be 34,808 individuals requiring speech pathology services; clearly six Arabic-speaking speech pathologists cannot serve all Arabic patients.

From the previous discussion, it becomes obvious that there is a need to identify culturally and linguistically appropriate protocols to be used with Arabic speakers with communication disorders, and that it is important for speech pathologists to develop an understanding of the cultural and linguistic aspects of the Arabic population in Australia. The next section will provide general information about the Arabic population in Australia, and some suggestions regarding specific issues related to the assessment and management of Arabic speakers based on their linguistic diversity and cultural sensitivity.

The Arabic population in Australia

The Arabic language is one of the fastest growing community languages in Australia, with 51,284 speakers in 1976 (ABS, 2001), increasing to 243,662 speakers by 2006 (ABS, 2006). This amounts to 1.2% of the Australian population, and the data indicate that between 1976 and 2001, the population of the Arabic-speaking community quadrupled in size. While Arabic-speaking communities in Australia may have different religions, nationalities, genders and classes, all share the Arabic language and there are some core cultural issues that distinguish them from other communities. Arab immigration constitutes 8% of the total migration to Australia, and in 1999 Clyne and Kipp stated that Arabic was the fourth largest non-English language spoken at home in Australia.

Cruickshank (2008) recently discussed that Arab migration to Australia followed three sequenced phases. Initially, the Christians from Syria and Lebanon escaped from “Ottoman” rule, and fled to Australia in the 1880s. The second phase started subsequent to the complicated political situation in the Middle East after the Arab-Israeli war of 1967. Many Lebanese and Egyptians migrated to Australia, which was facilitated by the Australian government migration policy at the time. The third phase commenced in 1975, after the civil war in Lebanon which encouraged a large number of Muslim Lebanese to migrate to Australia. Over the past 30 years the Lebanese-born population in Australia has steadily increased. Of the Arabic population in Australia, the largest single country of origin is Lebanon, contributing 40% of the Arabic population in Australia, the next largest is Egypt with 8%, and the remaining 52% is made up of smaller numbers from a wide variety of Middle East and North African countries. Forty per cent (40%) of Arabs in Australia belong to Muslim groups, 50% belong to Christian groups (ABS, 2006; Kipp, Clyne, & Pauwels, 1995). The Arabic population in Australia is increasing, and according to the census figures of 2006 (ABS, 2006) most of this population is living in five distinct Sydney local government areas (LGA). The Arabic population represents 17.2% of the total population in the Canterbury-Bankstown, 12.5% in Auburn, 7.0% in Fairfield-Liverpool, 3.9% in Parramatta, and 3.2% in Blacktown (ABS, 2006).

The Arabic language

Speech pathologists who work with Arabic patients, need to know more about the Arabic language, and the maintenance of this language within the Arabic communities in Australia.

Language styles

Cruickshank (2008) suggests that the Arabic language is a diglossic language (i.e., consisting of two language styles). The first style is the modern standard Arabic language (al Quraan language) which is used in formal types of communication (for example, in academic discussions, religious situations, when talking with elderly people, and when women talk with non-related men; Battle, 2000), whereas the second style, informal Arabic, is typically only used within family communication (Battle, 2000). This style comprises many different Arabic dialects. Recently, the Arabic media has shifted from using the standard Arabic language (formal style) to the local informal Arabic dialects (which are different across the Arabic countries) in their programs. These programs seem to play a major role in causing a shift from use of the modern standard Arabic language toward the more informal style in Australia, especially with the large number of adult Arabs who may have had limited access to education and modern standard Arabic.

Language features

It is important to note that written Arabic is different from spoken Arabic. The written style is the Quraan language, which is more grammatically complex and has a considerably larger lexicon than spoken Arabic (Wilson, 1996). Some key features of spoken Arabic are provided below as a short (and basic!) introduction, and have been drawn from the work of Battle (2000).

Phonology

- Arabic /r/ is a voiced flap, Arabic speakers often over-produce the post-vocalic /r/.
- Arabic speakers learning English often insert short vowels (schwa) into consonant clusters (e.g., suhpring for spring).
- Exaggerated articulation with equal stress on all syllables is another feature that may influence production of English by Arabic speakers.

Morpho-syntax

- The verb is often placed before the subject noun.
- To make a negative form, a particle needs to be placed before the verb.
- Adjectives follow nouns.
- In addition, there are other differences in the order of the constituents within the sentence (see Elnaggar, 1990).
- There are no copula verbs, auxiliary “do” future tense, modal verbs, gerunds or infinitive forms in Arabic (nor are there indefinite articles).
- The Arabic language is a rich and highly inflected language; there are grammatical categories in Arabic which do not exist in other languages such as English.

Language maintenance

Kipp and Clyne (2003) studied the rate at which migrants’ languages shift to English in the community. They state that, for the Arabic language groups with the three generations currently living in Australia, the use of the Arabic language has been maintained strongly for the first generation, with only 6.2% of the first generation of Arab migrants to Australia shifting from Arabic to the English language. This percentage increases to 21.7% with the second generation. This means that many people from an Arabic background in Australia can be expected to have maintained their Arabic language, especially elderly people who may have contact with speech pathology services for communication disorders of neurological origin.

Cruickshank (2006) suggested that many factors play a role in maintaining the Arabic language, including the global growth in media with 24-hour Arabic language television available in Australia, new technology such as the Internet, language videos and mobiles which facilitate chatting between the Arabic population in Australia and their friends and relatives overseas using their Arabic language. Cruickshank also suggested that the affordability of travel back to their country of origin for holidays and extended stays plays a major role for migrants in maintaining their Arabic language.

Clyne and Kipp (1999) and Suliman (2003) reported that studies in Melbourne and Sydney found that Arabic parents tended to require their children to use the Arabic language when talking to them and when playing at home. However, English was the preferred language between the siblings and their peers. Clyne and Kipp (1996) investigated *language shift* (the proportion of a group born in a non-English-speaking country who now spoke "'English only" at home). They found those from predominantly Islamic or Eastern Orthodox cultures such as Arabic Lebanese were more likely to maintain their languages at home than were other groups from Europe. Those from a Lebanese background seemed to show a relatively low language shift rate in NSW, the state in which they were best represented. In the second Lebanese generation, however, there was an increase in language shift especially in the over 55 age group where there were very few (or none at all) older generation family members in the home with whom to speak Arabic.

Clyne (1991) suggested that extended families and ethnic schools also play a role in the maintenance of the Arabic language. From his review of the 1986 census data, he concluded that children act as agents of language shift, whereas grandparents (especially those born overseas) promote maintenance of language use in the community. Additionally, in 1986, there were 80 Australian supplementary (ethnic) schools that provided teaching in the Arabic language. In a study by Kipp, Clyne and Powells (1995), in addition to maintaining their native language, the Arabic population had confidence in their English proficiency, with 52% claiming to speak English '"very well'", 26% claiming to speak it '"well'", and only 6% stating that they could not speak English at all. This force for language maintenance continues, with community language schools (ethnic supplementary schools), which are run by community organisations with some government funding and regulation, continuing to operate outside school hours in different parts of Australia. Fifty-six Arabic ethnic schools (not counting students studying Qur'anic literacy in Islamic schools) were reported in Australia in 1997 with about 12,000 Arabic students, and 34 Arabic ethnic schools were reported in Sydney in 2008 (NSW-FCLS, 2008). In addition, the government has increased the number of primary and secondary schools teaching community languages as part of the standard curriculum (Clyne, 1991). However, this resource may not be a major force for language maintenance, given that Cruickshank (2008) stated that: "8% of Arabic speakers study their home language at Year 12, compared with 40% for other ethnic groups" (p. 7).

Overall, maintenance rates of the Arabic language in the home seems to be greater in NSW and Victoria than in other regions. This may be due to the high concentration of Arabic population in the main cities (Clyne, 2003). In summary, the main forces for language maintenance appear to be the media and community-based language schools.

Speech pathology services and the Arabic population in Australia

The increase in Arabic-speaking populations in certain areas of Australia, and the strong maintenance of the Arabic language in these populations mean that there is a strong likelihood that speech pathologists working with children and adults will need to consider the role of the Arabic language in service provision. They may need to conduct assessments that include assessment of the Arabic language, and to consider the viability of offering treatment in the Arabic language. However, as noted in the introduction to this paper, there appear to be only a few Arabic-speaking speech pathologists working in Australia, which makes it difficult for Arabic patients to obtain speech pathology intervention by an Arabic-speaking speech pathologist. To provide an effective service to these clients it is important to use a qualified, independent Arabic interpreter, and to work closely with family members in the design and delivery of services. Speech pathologists may need to consider providing intervention using the English language only. There are also general issues regarding assessment and intervention for culturally and linguistically diverse clients, and issues or information specific to an Arabic background (as discussed in the next section).

Key cultural communication issues for consideration

Culture affects an individual in a number of ways that are relevant to the provision of health service. For example, it affects their ideas about illness prevention, expectation and acceptance of treatment, and degree of comfort with his/her health care provider (Isaac, 2002; Worrall & Frattali, 2000). Therefore, it is crucial for speech pathologists to be aware of the similarities and differences in cultures, to know and understand different cultural values, beliefs and practices, and to respect patients and their diversity. At the same time, the speech pathologist has to avoid making assumptions as to such major issues such as religion and dialect/language roles. The following general points are noted for consideration, and have been based on previous published work (Alireza, 1991; Battle, 2000; Elnaggar, 1990; Isaac, 2000; Schwartz, 1999; Sharifzadeh, 1998; Wilson, 1996), as well as being informed by the first author's personal knowledge of the Arabic culture and her experience as a speech pathologist in Arabic-speaking countries (Jordan, Kuwait). As expected, the key cultural communication issues revolve around the expression and recognition of politeness, and involve both verbal and nonverbal communication. The following issues are highlighted as an introduction to some of the key features, and are by no means comprehensive.

Cultural communication values

- Arabic speakers highly value the creative use of language, and so communication disorders may be perceived as having a significant social penalty for these speakers (Wilson, 1996).
- Clinicians may consider incorporating culturally appropriate traditional mores into the constructs of their treatment models such as traditional Arabic stories, proverbs, songs, and literature materials, regardless of the language of the treatment (Battle, 2000).
- Stories or conversations that report the actions or sayings of the prophet Mohammed are common and useful

sources to be used in the sessions working with Arabic patients, even if the patient is non-Muslim (Battle, 2000).

Customs

- *Handshaking* – For people from a Muslim religious background, handshaking is forbidden between male and female. Arab men shake hands when greeting or parting (Battle, 2000). To greet a woman, the man should not offer his hand for a handshake unless the woman extends hers first (Bahaa-Eddin, 2006).
- *Kissing* – There are at least four common types of kiss: a) head kissing, indicating respect and in a wedding context where a groom kisses his bride's head while giving her a gift and saying *maasiħ ʕaleeki bil maal wil ħalaal* (to show that this is a legal bond for which the groom has paid a dowry); b) cheek kissing, commonly between females; c) nose touching involving two or three nose-touches is an unmarked greeting; and d) hand kissing is another indication of respect and deference (Bahaa-Eddin, 2006).
- *Visiting* – A visitor may be expected to take off their shoes before entering a home (Bahaa-Eddin, 2006). There is a very elaborate etiquette of coffee-offering in most Arabic countries. It is very embarrassing and disgraceful not to offer coffee to a guest and it could be regarded as inappropriate not to accept it. Normally, the one who is on the right will get coffee first. Once s/he is done, s/he should shake the cup if s/he does not want any more coffee (Bahaa-Eddin, 2006).

Non-verbal communication

- *Distance* – People from an Arabic background usually maintain a conversational distance of a bit more than half a metre between speaker and listener, but prefer to keep greater interpersonal distance when communicating with the opposite gender (Battle, 2000).
- *Touch* –Men frequently touch each other (but do not touch women) (Battle, 2000)
- *Smiling* – It is appropriate for an Arabic female to not smile when meeting a stranger (Bahaa-Eddin, 2006).
- *Pointing* at someone with a finger can be perceived as rude (Bahaa-Eddin, 2006). Avoid sitting in such a way that your feet are pointing directly at someone else (Bahaa-Eddin, 2006).
- *Using the right hand* is always more acceptable than using the left in giving and receiving (Bahaa-Eddin, 2006).
- *Gestures* – Arabic speakers use many gestures during conversation (Battle, 2000).
- *Eye contact* is generally avoided in most cross-gender encounters (Bahaa-Eddin, 2006). During conversations, people from an Arabic background tend to maintain steady eye contact with the listener, but pious Muslim males will seek not to maintain eye contact when talking to a female.
- *Silence* may have a number of unexpected meanings. It may indicate a lack of understanding, respect for what the speaker has said, or respect for the older status of the other person. For Arabic women, silence may indicate embarrassment if talking with males present.

Verbal communication

- *Religious expression* – El-Sayed (1990) has noted the importance of religious expressions in expressing politeness in Arabic. One example of this can be seen in the use of such expressions as discourse management resources, for example, in turn-taking, or as fillers. The Arabic language is characterised by repeating some traditional common words and phrases automatically such as: *enshalla, Ishallah* (if God wills it), *elhamdulillah, hamdillah, kattirkairallah* and *ishkorallah* (thanks be to God), and sm'allah (in the name of God) (Feghali, 1997; Bahaa-Eddin, 2006). Note that such words may be used unconsciously by the Arabic person who has severe speech or language disorders. Such phrases may be preserved as automatic, stereotypic phrases in cases of severe or global aphasia. Also, *Ishallah* is used frequently by the Arabic population, which can reflect various meanings, i.e., it may mean '"yes'", '"no'", or '"I promise'", with its meaning depending on the intonation associated with its production.
- *Indirectness* – Feghali (1997) noted that the following are features of a general communication style in Arabic: indirectness (hiding of the speaker's intents and needs), elaborateness (rich and expressive language use), and effectiveness (persuasion of the listener of the speaker's beliefs, thoughts and ideas). In general for the Arabic-speaking population, the use of an indirect request as a form indicates politeness. Isaac(2002) notes that the use of a direct request may put the user at risk of being interpreted as impolite in a culture where politeness forms are commonly used and expected.
- *Prosodic features* – Many Arabic speakers use very rapid and loud speech, especially when discussing their emotions or stress, and many may use these stress patterns even when talking in another language such as English. This may cause misunderstanding between the Arabic speaker and a partner who does not share this cultural background.
- *Word choice* – Some English words sound similar to vulgar words in Arabic and should be avoided if possible, such as: zip, zipper, air, tease, kiss, cuss, nick, unique, and biz (Wilson, 1996).

Cultural communication roles

The speech pathologist needs to respect the value placed by the particular family they are working with as to the role of the nuclear and extended family, and the role hierarchy within the family (Schwartz, 1999). Some Arabic families also may be unwilling to discuss their disorder or disability with people from outside the extended family, which might affect the accuracy of the case history obtained (Sharifzadeh, 1998). In some Arabic families there may be a preference for the father or the older son to discuss other family members' problems rather than the mother, while the mother's responsibility might be to carry out the treatment suggestions (Battle, 2000). However, not all Arabic families follow this role division, since for most Arabic modern families there is an equal balance between the male and the female responsibilities within the family.

Gender roles need to be considered in relation to service provision. Some people from an Arabic background believe that women are to be separated from men (Battle, 2000), although modern Arabic families respect the role of the female in different jobs, and the importance of being involved in mixed gender situations. Female clinicians may be preferred in work with Arabic females, rather than with male clinicians (Wilson, 1996), although when a female clinician is not available, it would be acceptable to work with a male clinician.

Naturally, the above summary is only a brief introduction to a wide range of diverse cultural communication issues. There are an increasing number of resources that might help speech pathologists who are working with Arabic patients to know more about the Arabic language and cultural background particularly in relation to the provision of health care, for example, the *Health Care Providers' Handbook on Muslim Patients* (Islamic Council of Queensland, 1996).

Assessment issues

Typically, speech pathologists attempt to assess a speaker's communication difficulties by examining their first or most often used language. While there is a general acceptance in the current literature that caution is required when using tests that have been standardised against other populations (Baker, 1995, Roberts,1998), informal testing procedures designed '"on the run'" by speech pathologists working with interpreters may be inadequate. As with other language groups, Arabic speakers may differ greatly in their proficiency as '"bilingual'" or '"multilingual'" speakers. The speech pathologist needs to take the same care to seek valid assessment procedures across the languages being assessed.

Roberts (1998) suggests that more research is needed to investigate topics that have been neglected in the bilingualism research such as the clinical assessment and treatment of bilingual aphasic adults. There are limited options for speech pathologists seeking to conduct aphasia assessments in Arabic. Some available tests include: *The Bilingual Aphasia Test* (Jordanian Arabic version) (Paradis & El-Halees, 1989) and the CAT (*Comprehensive Aphasia Test*) translated by El-Rouby (2007).

When assessing a person with aphasia in English, it is important to ascertain the individual's premorbid communicative style and ability (Davis, 1983). Equally, as Dronkers, Yamasaki, Webster Ross, and White (1995) have highlighted, it is just as important when assessing the Arabic speaker to carefully document their premorbid competence in each of their languages and to be sensitive to particular dialects or varieties of language. However, there is widespread acceptance in the field of aphasia assessment generally that assessments need to cover more than linguistic features, and to include the assessment of communication needs. We suggest that aphasia assessments based on functionally focused interviews could more validly be administered via an interpreter than more traditional linguistic-based assessments (Al-amawi, Ferguson & Hewat, 2008). For example, functional assessments such as the *Inpatient Functional Communication Interview* (O'Halloran, Worrall, Toffolo, Code & Hickson, 2004) and the *Functional Communication Therapy Planner* (Worrall, 1999) use an interview format that is highly compatible with interpreter-mediated assessment. However, the use of an interpretor brings its own challenges (as discussed in the next section).

Use of interpreters

There are many potential traps which cause difficulties for those undertaking speech pathology sessions with interpreters (Isaac, 2002). These can include inaccurate interpretation due to inappropriate paraphrasing, use of professional jargon, lack of linguistic equivalents between the original and target languages, dialect mismatch, register mismatch, ignoring non-verbal signals, independent intervention by the interpreter, cultural mismatch between patient and interpreter, and assumptions of cultural similarity between interpreter and patient or between professional and patient (Isaac, 2002). Isaac (2002) emphasised that the interpreter has to know exactly what the speech pathologist needs from the session, the goals and intended outcomes and suggests that this will only be possible if both the speech pathologist and interpreter set aside time to discuss these matters before the session.

Based on Isaac's (2002) discussion regarding the interpreter–speech pathologist interaction when dealing with the bilingual patient, and from the first author's experience working with Arabic patients, the following points are suggested to be considered:

- The speech pathologist needs to discuss with the interpreter any issues in relation to the Arabic culture that may arise when using the tools and procedure of the session, to know if any of it may be inconvenient or inappropriate to be used with the Arabic patient.
- As there are many dialects across the Arabic-speaking world, it is crucial to make sure that the interpreter and the patient are able to understand each other's Arabic dialect.
- Some Arabic families may feel uncomfortable dealing with an interpreter who knows them or has a close friendship with the family.

It is useful for the speech pathologist to know about Arabic cultural nutritional behaviours, the main celebration events during the year, and some information about the patient's country of origin. That information may help the clinician to initiate and maintain a conversation with the patient. Also, the relative ages of the patient, interpreter and speech pathologist may need consideration. Some older Arabic individuals may refuse to deal with a young speech pathologist or interpreter.

Treatment issues

One of the most important points that speech pathologists need to consider when working with bilingual patients is which language is to be chosen for treatment. It has been suggested that the speech pathologist should aim to arrange intervention in the language used by the client in his/her daily repertoire, particularly the client's home language (Battle, 2000; Isaac, 2002; Paradis & Libben, 1987; Roger, 1998). Duncan (1989) suggested that intervention for children in their home language has positive effects on the development of the second language. This belief has been supported by another study by Rousseau, Packman & Onslow (2004), who used her bilingualism in English and French to study and treat a 7-year-old bilingual boy with severe stuttering. From her research, Rousseau concluded that speech in both languages improved, although no treatment was conducted in English.

Paradis (1993) considered that many basic questions remain unanswered in relation to therapy with bilingual or multilingual patients with aphasia. These included:

- whether or not therapy should be conducted in two or more languages simultaneously;
- whether there is a transfer of benefit from a treated to a non-treated language, and what determines the degree to which this might occur;
- whether translation should be used or specifically avoided;
- whether various therapy techniques are equally helpful in different languages.

For an Arabic aphasic patient, the following treatment strategies may assist in treatment process:

- language training provided at home by one of his/her family members;
- tasks that seem overly simple may anger or upset an older Arabic patient, especially one who is highly educated; the use of multiple repetition tasks may also be rejected;
- it may be a high priority for the Arabic person to re-learn how to do his/her daily prayer and how to pronounce his/her prayer texts; thus, using texts from the Holy

Quraan (Muslim) or Bible (Christian) may be acceptable for the Arabic aphasic patient;

- some Arabic male patients may not accept receiving speech therapy in front of their wives or children as culturally, they may feel shame to appear as a weak person in front of their family.

Issues for improving services

Reviewing the literature regarding the Arabic culture in Australia leads us to suggest that this population is at risk of having reduced opportunities to receive speech pathology services. In turn, the reduced visibility of Arabic-speaking patients in serviced population may reduce the opportunities that speech pathologists have to learn about the Arabic language and culture and how to provide services more appropriately. Similar issues have been discussed in a study organised by the Centre for Citizenship and Human Rights at Deakin University (Kenny, Mansoure, Smiley, & Spratt, 2005), which focused on the types of linkages that exist between the Arabic community and the wider community surrounding them in Australia. The study identified that the Arabic community reported their lack of knowledge about culturally sensitive resources and services due to their lack of social connectedness. Arabic people preferred not to use the available health service because of their limited English language proficiency and some cultural perceptions (for example, the shame associated with non-reliance upon family), and also reported more trust in community-specific services (which provide culturally and linguistically appropriate services) than in mainstream services.

It is also important to focus on the health service employees themselves and their lack of knowledge about others' cultural backgrounds. In the study conducted in metropolitan Sydney hospitals by Roger, Code and Sheard (1996), one of the findings was that speech pathologists reported their lack of knowledge about bilingual patients' language and cultural background.

Developing cross-cultural competence

Cultural competence is generally held to be critical to the achievement of national multicultural policy objectives and to the success of the immigration and settlement process in Australia, and so a number of studies have been conducted focusing on this area. For example, Bean's (2006) study aimed to evaluate the effectiveness of cross-cultural training programs over time in Australian public sector organisations. The study took place over an 11-month period from July 2005 to June 2006 and involved engaging the participants in training based on general cultural awareness, programs on specific cultures, working with interpreters, specialised programs for fields such as health and policing, and managing culturally diverse workforces. The main objectives were to develop awareness of the cultural dimensions of interactions and effectiveness in situations and environments characterised by cultural diversity. The study showed that the immediate post-training evaluation ratings showed increases in all areas of knowledge and awareness against which participants self-rated themselves in the pre-survey. The highest percentage point increases were in the areas of understanding of organisational policies and issues, knowledge of cross-cultural skills, and understanding of other cultures. There were smaller improvements in understanding of the effects of one's own culture on oneself, awareness of the effects of cultural differences on interactions, and confidence in dealing with people from different cultures. The findings from this study might encourage us to think about the importance of providing speech pathologists in Australia with cross-cultural training which might help them to improve their knowledge and skills in working with bilingual patients. This may, in turn, enhance the quality of speech pathology services provided to patients from different cultural and linguistic backgrounds.

Conclusion

This discussion of the literature in relation to speech pathologists' work with culturally and linguistically diverse speakers in Australia shows clearly that more needs to be known about ways to improve services for these clients. In particular, in light of the issues we have discussed in relation to speakers from an Arabic background, we suggest that there is a need to develop ways that would facilitate interpreter-mediated assessments of Arabic speakers with aphasia that could better identify areas of communication functional need. We have also suggested that there is a role for ongoing professional education to support the development of increasing levels of cross-cultural competence in the profession.

References

Al-amawi, S., Ferguson, A., & Hewat, S. (2008, 2–3 October). *Assessing aphasia in Arabic speakers: Work in progress*. Paper presented at the 13th Aphasiology Symposium of Australia, Brisbane.

Alireza, M. (1991). *At the drop of a veil*. Boston: Houghton Mifflin.

Australian Bureau of Statistics. (1999). *1999 census of population and housing*. Retrieved 20 April 2008 from http://www.abs.gov.au

Australian Bureau of Statistics. (2001). *Year book Australia 2001*, cat. no. 1301.0. Canberra: ABS.

Australian Bureau of Statistics. (2006). *2006 census of population and housing*. Retrieved 22 April 2008 from http://www.abs.gov.au.

Bahaa-Ediin, M. (2006). Emirati Arabic politeness formulas: An exploratory study and a mini-mini-dictionary. *The seventh annual UAE University research conference*, vol. 22, 17–27. UAEU Funded Research Publications.

Baker, R. (1995). Communicative needs and bilingualism in elderly Australians of six ethnic backgrounds. *Australian Journal on Ageing*, *14*, 81–88.

Battle, D. E. (2000). *Communication disorders in multicultural populations* (3rd ed.). Boston: Butterworth Heinemann.

Bean, R. (2006) *The effectiveness of cross-cultural training in the Australian context*. Department of Immigration and Multicultural Affairs: Canberra: AUS: 249. (TRAI.11) www.immi.gov.au/media/publications/research/cross_cultural/index.htm, accessed 18 December 2008.

Butler, K. (1989). From the editor: Language assessment and intervention with LEP children: Implications from an Asian/Pacific perspective. *Topics in Language Disorders*, *9*(3), iv–v.

Clyne, M. (1991). *Community languages: The Australian experience*. Cambridge: Cambridge University Press.

Clyne, M. (2003). *Dynamics of language contact: English and immigrant languages*. Cambridge: Cambridge University Press.

Clyne, M., & Kipp, S. (1996). Language maintenance and language shift: Community languages in Australia, 1996. *People and Place*, *5*(4), 8 pages. Retrieved 15 May 2008 from http://elecpress.monash.edu.au/pnp/free/pnpv5n4/clyne.htm

Clyne, M., & Kipp, S. (1999). *Pluricentric languages in an immigrant context: Spanish, Arabic and Chinese*. Berlin: Mouton de Gruyter.

Crago, M. (1990). The development of communicative competence in Inuit children of Northern Quebec: Implications for speech-language pathology. *Journal of Childhood Communication Disorders*, *13*(1), 54–71.

Cruickshank, K. (2006). *Teenagers, literacy and schooling*. London: Routledge Falmer.

Cruickshank, K. (2008). Arabic-English bilingualism in Australia. In J. Cummins & H. Hornberger (Eds), *Encyclopedia of language and education*, Vol. 5 (2nd ed., pp. 281–291). Boston: Kluwer.

Davis, G. A. (1983). *A survey of adult aphasia*. Englewood Cliffs, New Jersey: Prentice-Hall.

Dronkers, N., Yamasaki, Y., Webster Ross, G., & White, L. (1995). Assessment of bilinguality in aphasia: Issues and examples from multicultural Hawaii. In M. Paradis (Ed.), *Aspects of bilingual aphasia* (pp. 57–66). Tarrytown, NY: Pergamon Publishers.

Duncan, D. M. (Ed.). (1989). *Working with bilingual language disability*. London: Chapman Hall.

Elnaggar, A. (1990, 20–25 August). Phrase structure grammar of the Arabic language. *Proceedings of the 13th conference on Computational linguistics* (pp. 342–344). Finland: Helsinki.

El-Sayed, A. (1990). Politeness formulas in English and Arabic. *ITL: Review of Applied Linguistics*, Sept., 1–23.

El-Rouby, I. (2007). *Standardization and modification of Comprehensive Aphasia Test*. Unpublished doctoral thesis, Faculty of Medicine, Ain Shams University, Cairo, Egypt.

Feghali, E. (1997). Arab cultural communication patterns. *International Journal of Intercultural Relations*, *21*, 345–378.

Isaac, K. M. (2002). *Speech pathology in cultural and linguistic diversity*. London: Whurr.

Islamic Council of Queensland. (1996). *Health care providers' handbook on Muslim patients*. Queensland: Author.

Kenny, P., Mansoure, F., Smiley, D., & Spratt, P. (2005). *Arabic communities and wellbeing: Supports and barriers to social connectedness*. Victoria: The Centre for Citizenship and Human Rights, Deakin University.

Kipp, S., Clyne, M., & Pauwels, A. (1995). *Immigration and Australia's language resources*. Canberra: AGPS.

Kipp, S., & Clyne, M. (2003). Trends in the shift from community languages: Insights from the 2001 Census. *People and Place*, *11*(1), 33.

NSW FCLS (2008). Community language schools. Information retrieved from web-site for NSW Federation of Community Languages Schools, at www.nswfcls.org.au , accessed 18 December 2008.

O'Halloran, R. T., Worrall, L.E., Toffolo, D., Code, C., & Hickson, L. M. H. (2004). *The inpatient functional communication interview (IFCI)*. Oxon, UK: Speechmark.

Paradis, M. (Ed.). (1993). *Foundations of aphasia in bilinguals and polyglots*. Oxford: Pergamon Press.

Paradis, M., & El-Halees, Y. (1989). *Bilingual aphasia test (BAT) (Jordanian Arabic version)*. Hillsdale, NJ: Lawrence Erlbaum.

Paradis, M., & Libben, G. (1987). *The assessment of bilingual aphasia*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Roberts, M., (1998). Clinical research needs and issues in bilingual aphasia. *Aphasiology*, *12*(2), 119–146.

Roger, P. (1998). Bilingual aphasia: The central importance of social and cultural factors in clinically oriented research. *Aphasiology*, *12*(2), 134–137.

Roger, P., Code, C., & Sheard, C. (1996, 27–28 Sept.). *Language rehabilitation for aphasia in adults of non-English speaking background*. Paper presented at the Aphasiology Symposium of Australia, Adelaide.

Roger, P., Code, C., & Sheard, C. (2000). Assessment and management of aphasia in a linguistically diverse society. *Asia Pacific Journal of Speech, Language & Hearing*, *5*(1), 21–34 .

Rousseau, I., Packman, A., & Onslow, M. (2004, 29 Aug. – 2 Sept.). Treatment of early stuttering in a bilingual child. *Conference program and abstracts of the 26th World Congress of the International Association of Logopedics and Phoniatrics*, Brisbane, Australia.

Schwartz, W. (1999). *Arab American students in public schools*. ERIC Digest (Report No. 142; ERIC Document Service No. ED 429 144).

Sharifzadeh, V. (1998). Families with Middle Eastern roots. In E. W. Lynch & M. J. Hansen (Eds.), *Developing cross-cultural competence: A guide for working with young children and their families* (pp. 441-482). Baltimore: Brookes Publishing Co.

Suliman, R. (2003). *Motivation and achievement of Lebanese background youth in NSW*. Sydney: University of Western Sydney.

Wiig, E., & El-Halees, Y. (2000). Developing a language screening test for Arabic-speaking children. *Folia Phoniatrica et Logopedica*, *52*(6), 260–274.

Wilson, W. (1993). *The role of speech-language pathology and audiology in the management of handicapped children in Saudi Arabia*. Paper presented at the first International Conference of the Saudi Benevolent Association for Handicapped Children. Riyadh: Saudi Annals of Medicine.

Wilson, M. (1996). Arabic speakers: Language and culture, here and abroad. *Topics in Language Disorders*, *16*(4), 65–80.

Worrall, L. (1999). *Functional communication therapy planner*. Oxon, UK: Speechmark.

Worrall, L., & Frattali, C. (2000). *Neurogenic communication disorders: A functional approach*. New York: Thieme.

Samar Al-amawi is a qualified speech pathologist from Jordan, undertaking her PhD study in speech-language pathology at the University of Newcastle. Her research area is the assessment of Arabic aphasic patients from different linguistic and cultural backgrounds. **Associate Professor Alison Ferguson** and **Dr Sally Hewat** from University of Newcastle are supervising this research.

Correspondence to:
Samar Al-amawi
Postgraduates
School of Humanities & Sciences
from the University of Newcastle
NSW 2308
email: samar.al-amawi@studentmail.newcastle.edu.au

SPEECH PATHOLOGY AND BILINGUAL CHILDREN

Do we think in terms of “two monolingualisms”?

Joyce Lew and Linda Hand

This article has been peer-reviewed

Speech pathologists in Australia find working with communication disorders in bilingual[1] clients to be problematic. There are obvious reasons for such difficulty, most prominently that of how to assess and provide therapy in languages that you do not speak. However, it is the contention of this paper that providing interpreters is not the solution. There is an issue we are calling “a monolingual perspective on bilingualism” which leads speech pathologists to think about bilingual clients as if they were a composite of two monolinguals, rather than appreciating the differences between monolingualism and bilingualism. This paper outlines reasons for current beliefs and practice, as well as the evidence for considering bilinguals as a variant set of communicators who process and use language differently from monolinguals. There are implications from this for changes to speech pathology practice.

Keywords
assessment in child language disorders,
bilingualism,
cultural and linguistic diversity,
intervention in child language disorders.

Joyce Lew

Linda Hand

There is concern in the speech pathology literature about effective assessment and intervention for bilingual children with language impairments (Gutierrez-Clellen, 1999; Kayser, 2002; Kritikos, 2003; Mahon, Crutchley, & Quinn, 2003; Sochon & Hand, 2001, Speech Pathology Australia, 2001). There is now a reasonable amount of advice available for working with children from linguistically and culturally diverse backgrounds (see Baker, 2000; Battle, 2002; Isaac, 2002; and Roseberry-McKibbin, 2002 for examples) including material on culturally competent practice more generally (e.g., the National Center for Cultural Competence at Georgetown University in the USA – see website). However, the question of “which language?” for assessment, diagnosis and intervention is still an issue for most clinicians. Should assessment or intervention be conducted in the child’s first language, second language, or both? How can you decide? Most commonly, clinicians in Australia and most of the English-dominant world work in English (if at all possible) or less commonly with an interpreter in the child’s home language. They have, therefore, made a choice as to which language is the significant one in that particular case.

To answer the question “which language?” might seem problematic enough. However, we contend that to ask such a question at all is to see the issue as one language versus the other. Common clinical questions are “which language best demonstrates the disorder?” or “which language is most needed by the child?” It is easy to assume that the two languages in bilingual individuals are, and perhaps should be, autonomous (Grosjean, 1989), but the speech pathologist asking these questions does not see the child as a whole bilingual, with a communication system that consists of *both* languages. Rather, he/she is treating each language as separate, a perspective we are calling “two monolingualisms”.

But what exactly does it mean to talk about “a communication system of both languages?” Evidence that bilingualism is qualitatively different from a multiple monolingualism comes from a variety of sources. One source is studies of language use, specifically the phenomenon of code switching or code mixing. Code switching and mixing has in the past often been interpreted as a product of interference between one language and the other, poor proficiency in one or both, or careless language, and in all these cases indicative of inadequacies in language competence. While it is true that code switching can occur through a lack of proficiency, it is also true that code switching and mixing is a characteristic of highly proficient bilinguals, and a naturally occurring characteristic of bilingual communication (Brice & Anderson, 1999; Grosjean, 1989). It is hypothesised that language alternation through code switching and code mixing allows bilinguals to combine two language systems, including pragmatic, syntactic and morphological dimensions of both languages (Grosjean, 1989). The appropriate parts of either language are utilised according to how they provide for their communication needs. In the end, the whole is more than the sum of the parts. This code mixing can result in a “third language” which is not exactly the same as either language considered separately (a process common in the development of new language via creolisation). Crystal (2003) pointed out in the concept of “global English” that the use of English by proficient multilinguals who do not have English as a first language results in a different “English” to that spoken by monolingual English speakers. As a consequence, judgements of what is “correct” in the language (what is “English”?) can no longer be the exclusive province of the monolingual English speakers.

This raises a number of possibilities for clinical practice. Putting aside the issues of working in multiple languages, should even teaching English-only in a bilingual situation be the same as teaching it in a monolingual one? How might it differ? Where could we find “norms” for bilingual use of English? Could teaching code switching be an appropriate target in language intervention? And if so, how could this feature be taken advantage of, and encouraged, as an indicator and an aid to proficiency?

Another line of evidence for the bilinguals not being double monolinguals comes from neurolinguistics. Vaid and Hall (1991, cited in Baker, 2003) and Kim, Relkin, Lee, and Hirsch (1997) indicated that the comparative brain lateralisation studies that have been conducted over a number of years have found differences in hemispheric activity in language processing between monolinguals and bilinguals when speaking in the same language; bilinguals use their right hemispheres more for language processing than monolin-

---

[1] See table 1 for an explanation of this term.

Table 1: Terminology

First language; L1	The first language a child is exposed to, from birth, as the language of interaction. Often also known as the "home language" or "native language". This may or may not be a child's dominant language (see below).
Second (or subsequent) language(s); L2	A second language to which is child is exposed, usually sequentially or later than the first language, typically at school. May become the dominant language. Sometimes used to refer to the less well-known language when two languages are spoken at home.
Equal proficiency	A very rare situation where a bilingual can be said to be equally proficient in two or more languages. More commonly, proficiencies vary between the languages, e.g., in literacy, in comprehension, in vocabulary, in social conversation etc.
Dominant language	1. The language in which the person has the greatest proficiency. This may or may not be the first language. Often after being at school, a child with a different first language may have the language of school (their second language) become their dominant one. 2. The dominant language(s) of a society. This may be judged by that in which the greatest number of messages appear – e.g., street signs, newspapers, government publications, radio and television programmes, education, public buildings and spaces, and entertainment. It is also a sign of dominant culture.
Language of instruction	The language used in schools as the primary means of instruction (i.e., by teachers). May be the L1 or the L2 of a child, or their dominant or non-dominant language. Usually it is the dominant language of the society.
Bilingualism and multilingualism	A term meaning the existence of some degree of proficiency in more than one language. A person may be said to be bilingual if they understand a second language but cannot speak it, can speak it but cannot read or write it, can use it for conversation but not in cognitively demanding contexts, or any other possible variations. Multilingualism is proficiency in more than two languages. Bilingualism as a term often encompasses multilingualism.
Language loss	When a language proficiency decreases, usually through lack of use. May happen to an L1 where L2 is dominant in the wider society.
Language fossilisation	Where a language reaches a certain level, and does not continue to develop or to change as languages normally do. Language in a migrant group may fossilise relative to the homeland, where it continues to change.
Semilingualism	A non-favoured term, commonly resulting from a situation where parents use a language in which they are not proficient in order to help their children learn it. Children are not exposed to any model of a complete or rich language, and fail to develop one well. Long-term consequences may be unclear.
Code switching	The use of terms, phrases or passages in one language when "speaking" another. Proficient bilinguals code switch frequently with each other, to achieve the most efficient communication given their mutual language skills, and may not be particularly aware of doing so. Non-proficient users may code switch when they lack vocabulary or other language skills in the language they are trying to speak, and substitute items from their other language(s). Hence code switching may occur because of lower proficiency, but also as a sign of high mutual proficiency in speakers.

guals. It is also the case that second language acquisition involves the right hemisphere more than it does in first language acquisition, and that left hemispheric involvement increases as proficiency in a second language increases. These results may be related to the fact that the left hemisphere is associated with the core analytical aspects of language, while the right may be involved in more pragmatic aspects of language. This research has also indicated that learning a second language through the understanding of grammar, spelling and irregular verbs will result in more left hemispheric involvement, while learning a language in a natural manner and using it for day-to-day communication will involve more right hemisphere involvement. There are differences by age of acquisition, with more marked differences present for later second language acquisition.

These two somewhat different lines of evidence (code switching and neurological activity) both suggest that bilinguals use and process language differently to monolinguals, and function as unique and specific speaker-hearers (Baker, 2003; Grosjean, 1989). Baker (2003) conceptualised this as early bilinguals being likely to have a shared conceptual system between the two separate language systems, and strong interconnecting channels between each of these systems. Therefore, it would seem bilingualism may not be just a matter of "which language" but "how to involve both languages, at the same time". This may be new territory for speech pathology.

Speech pathology practices in bilingual contexts

Bilingualism or multilingualism is the norm, and not the exception, for most of the world's communities (Baker, 2000; Cummins, 2000; Mahon et al., 2003) and unsurprisingly, bilingual children form a substantial percentage of speech pathologists' caseloads all over the world, not least in Australia (Hand et al., 2000; Sochon & Hand, 2001). There have been a number of attempts to tackle the difficulties of valid assessment in these groups. There are a number of ways that knowledge about bilingualism, versus a monolingual perspective, shows itself in such practices. We will examine just two examples of these.

Translating language tests Assessing one language by translating a good, standardised language test from another language is an appealing idea. However, languages are not simple translations of each other. For example, Chang (2001) showed that parts of speech in Chinese languages are not formally distinguished, and the same word may have different structural functions – contrary to English which has word classes with different functions in a sentence (e.g., "verb", "adjective", etc.). As a result, bilingual speakers of English and Chinese may not always differentiate between related words that in English would be distinguished, for example, "difficult" and "difficulty". If a test is marked "right" or "wrong" depending on such distinctions, then the translated test would be invalid. Therefore, to consider translating a language instrument, whether a formal test or not, shows a lack of understanding of bilingualism.

Using developmental normals from "home" populations If a child speaks Cantonese in Australia, then it has been suggested that a valid judgement can be made by comparing their language development to that of children in Cantonese-speaking countries. Although this approach has considerable initial appeal, problems arise when we consider the nature of bilingualism. This recommendation results in a comparison with a monolingual Cantonese population, or a bilingual but Cantonese-dominant one. However, bilingualism varies by context. There is a phenomenon of "language loss" in a first language when a child or adult becomes more proficient (or dominant) in a second language (Grosjean, 1989; Kravin, 1992; Mahon et al., 2003). In general, there is less exposure to the home language as it is not found in the wider society or in general communication sources (e.g., the media, official publications, education). The child's exposure to Cantonese in Australia may be to only one or some uses of language (e.g., social, within-family language) compared to a wider variety of uses in places where that language is society-dominant. Therefore, proficiencies cannot be expected to be the same in children growing up in the two countries, even with the "first language" being the same and being made available by proficient speakers of that language. Understanding of this point has led to recommendations that "language dominance" should be considered more significant by speech pathologists than "first language" (Dopke, 2000; Huer & Blake 2003). However, anecdotal evidence suggests that speech pathologists often do not assess "language dominance", feel inadequate to do so, or use the concept of "first language" as a basis for assessment decisions.

Both of these examples are attempts to increase the validity of assessing a bilingual child. However, they are both still looking for one language to compare to what is essentially a monolingual "norm". Speech pathologists rarely assess the dual communication system of bilinguals. One of the reasons for this may be because the speech pathologist is proficient only in one of the languages spoken by the bilingual. However, even bilingual speech pathologists have difficulties analysing mixed language data. The education and training in speech pathology is oriented to monolingual understandings, hence "speech pathologists who happen to be bilingual" are not the same as "bilingual speech pathologists". The former group may have difficulty or lack confidence in applying their bilingual skills to their clients, as their other language may be that of a user, rather than an analyst of communication as a speech pathologist must be. There is little published guidance on analysing a bilingual language sample, even if the speech pathologist doing so is bilingual. Nor is there much information on the specific features of impairment in a bilingual communication system. Mahon et al. (2003) suggest that many researchers studying bilingual language continue to shy away from dealing with mixed language data, leaving the monolingual bias in speech pathology to persist.

Hammer, Detwiler, Detwiler, Blood, and Qualls (2004) reported that in 1985, the American Speech and Hearing Association (ASHA) found that the majority of speech pathologists surveyed (91%) stated they had received no coursework in multicultural issues. By the late 1990s and early 2000s, 59% to 95% of speech pathologists working with children reported they had at least one bilingual child on their caseload (Kritikos, 2003; Winter, 1999). The profession does not have a long history in preparing its practitioners for what may be an increasing caseload of bilingual clients. More recently, speech pathology associations have published position papers discussing multicultural issues, most of which tend towards recommending a pluralist bilingual view. Speech Pathology Australia, for example, states that all residents "should have equitable access to speech pathology services irrespective of cultural or linguistic background" and that "development of cross-cultural competence is essential" (Speech Pathology Australia, 2001, p. 3). However, Mahon et al. (2003) reported that the prevailing view in the therapeutic landscape in the UK is still on the side of assimilation, despite research indicating the positive effects of the child's first language (L1) as language of instruction on the development of the English language. It seems there remains work to do with regards to changing the attitudes of speech pathologists.

Bilingualism in education

The problem in speech pathology is mirrored in education. Education can illustrate for us the ways that monolingual bias appears and can be maintained, even in the face of information that would contradict it. In the development of Australian multiculturalism during the 1970s, bilingual education was seen as a means of contributing to self-esteem and achieving equality in educational outcomes for immigrant children (Inglis, 2003). This followed the American Supreme Court in 1974 ruling that the civil rights of non-English speaking students were deemed to be violated if their school did not assist them in acquiring the language of instruction (Cummins, 2000; Kayser, 2002).

However, in 1998 and 2000, California and Arizona voted to reverse approximately 25 years of education policy by eliminating the use of first language as the language of instruction of bilingual children (Cummins, 2000, 2003). By the mid-1990s, education policy-makers in Australia argued for the need to acknowledge English as the nation's common language (Department of Education Victoria, 1997). Their "Multicultural Policy for Victoria" recognised the value of the first language as a sound basis for the acquisition of English as a second language, but little was suggested on possible implementation of policies relating to assisting children with little or no English to learn the language of instruction by making links with the language concepts of their first language. In policy debates in the USA both sides argued "equity" as their central principle. The conservatives pushed for an assimilation discourse in social policies, which involved a "return to the traditional expectation that immigrants will quickly learn English as the price of admission to America" (p. 32), and strongly supported "time-on-task" as the single most effective way of achieving acquisition of a second language (Hornblower, 1998, cited in Cummins, 2000); that is, spend more time on English, because it is the language you will be using more often.

The push for the traditional assimilation practice is a monolingual view in more ways than one. Not only does it privilege one language over others, it also expects a generalisation from the way the first language is learnt to the second. Against this, proponents of bilingual education acknowledge the differences in language acquisition between first- and second-language learners, and support spending instructional time partly in students' minority first language because of the significant interdependence across languages at deeper levels of conceptual and academic functioning (Cummins, 2000, 2003; Kayser, 2002; Perozzi & Sanchez, 1992).

Inglis (2003) noted that ethnic groups in Australia were largely silent when a revised language policy that gave far greater priority to the importance of English in Australia was announced by the Commonwealth government; instead, protests came mostly from educators. Inglis suggested that the silence may have come from a priority that parents assign to mainstream academic success. The opportunity for social mobility among English-speaking academic high achievers in Australia, and in the USA, may outweigh such parents' interest in maintaining their mother tongue. There is a widespread lack of understanding of the correlation between language and cultural maintenance. Parents from diverse language backgrounds need to know that the development of a strong first language system that can be cultivated by the child's natural environment supports the learning of English. However, they are not the only people who need to know this more thoroughly. The fact that speech pathology includes a bias found in the wider society should not surprise us, as it indicates that there are pressures that support the underlying monolingual perspective. Understanding this gives us some potential to resist it.

Future directions: a bilingual approach to language therapy

Which language?

Decisions about which language(s) to use in speech pathology should be made on the basis of the broader social, cultural and temporal contexts of the child. There are a number of significant reasons to maintain and enhance a minority language, for example being part of a community which speaks that language, interacting with family members who may only speak or be dominant in the home language, and participating in important cultural events. It is also important to consider whole-life and lifelong needs. A child may live and work in their non-dominant language-speaking community even more after leaving school, and therefore this possibility should be planned for. These ideas are consistent with the World Health Organisation's International Classification of Functioning, Disability and Health (ICF) framework (Campbell & Skarakis-Doyle, 2007; Threats & Worrall, 2004) which gives equal weight to *activity, participation* and *context* in intervention.

Language education practices in bilingual countries can give us pointers to how the different languages might be used in speech pathology. For example, Pennington (1995, cited in Brice, 2000) observed bilingual Cantonese–English teachers (of English) in Hong Kong using Cantonese in class for the purposes of word definition, explicating ideas, giving directions, checking for understanding, expediting lessons, disciplining, motivating, as well as maintaining solidarity and group membership. This was so even while English was the target language. Bilingual speech pathologists could use the client's first language to explain language concepts (i.e., to teach English effectively, it is not always necessary to use English). For those who do not speak the client's first language, a skilled team approach, utilising others who speak that language, could also follow this principle.

Additionally, there is evidence that the use of a first language supports second language acquisition (Baker, 2000, 2003; Brice, 2001; Cummins, 2000, 2003; Mahon et al., 2003; Oller & Pearson, 2002). A number of authors recommend that this may be even more important when working with a bilingual child with language disorders (Brice, 2001; Perozzi & Sanchez, 1992), although there is as yet little hard evidence in the research literature. Thordardottir, Weismer and Smith (1997), in a small but informative study, found that children learned targeted language concepts in one language more effectively when given therapy in both languages. Perozzi and Sanchez (1992) compared the efficacy of teaching prepositions and pronouns to a group of bilingual children with language delay in their first language (Spanish) and then in English, compared to another group who were taught in English only. Some of the bilingual children acquired syntactic goals twice as quickly when taught in Spanish and then in English. Similar results were found by Thordardottir et al. in their case study of vocabulary acquisition. The theory is that learning in one language involves interrelated processes in the other for both typically developing and language impaired children. The transfer of language skills to a second language can be facilitated through mediation with the native language (Cummins, 2003; Gutierrez-Clellen, 1999; Perozzi & Sanchez, 1992), even where language disorders are present. However, there is still little published data of this kind, and more is needed.

A perspective often given by speech pathologists, and sometimes by teachers and parents, is that it is too hard to expect the child with a language disorder to learn two languages. This is logically appealing, but it is not supported by the evidence, nor by theories of language acquisition. Rather than abandoning the first language, the continued use and acquisition of the first language, along with acquisition of the socially dominant language, should be targets for speech pathology intervention.

Assessment

We would best serve this diverse caseload by using models that aim to study how a child's communication weaknesses prevent them from engaging in school, at home and with their peers in the playground. The ICF framework is again a model for this possibility. Although a full discussion about assessment practices goes beyond the scope of this paper, a few important points are highlighted (see table 2).

Table 2. Some recommendations on bilingual language assessment

- Assess the two languages, according to the uses they have for the client
- Assess across a range of contexts
- Examine language interactions
- Assess code switching; a skill, or an indicator of incompetence?
- Avoid norm-referenced tests; or adapt and treat as criterion-referenced
- "Language-free" non-word repetition and rapid automatic naming methods seem to have potential but are still unproven

As bilingual speakers have differential needs for their languages (Grosjean, 1989), assessment should take place in different settings, such as in school, at home, over the telephone or through the use of audio tapes (Speech Pathology Australia, 2000). This will enable an estimate of the amount of use of the different languages, the needs the child has for them, and the proficiency or adequacy that is shown. Interpreters and cultural informants will be needed to help analyse and interpret the data.

Use and proficiency in code switching should also be assessed. We know that code mixing and code switching are normal communicative behaviours in bilinguals of all levels of language proficiency (Brice, 2000; Brice & Anderson, 1999; Mahon et al., 2003; Oller & Pearson, 2002); however, it can also appear as a consequence of confusion or inadequacy in one language. There are few guidelines in the literature to assist the professional in deciding whether the child is code switching normally or is confused. Brice and Anderson (1999) found that a hierarchy of syntactic elements is common in code mixing, for example nouns in subject and object position were most common, followed by verbs, then verb phrases (p. 21). This hierarchy may be used as a guideline for assessing the appropriateness of code mixing in bilingual children. However, further research is needed to ascertain the appropriateness and efficacy of assessing code mixing in this manner.

The fact that the bilingual person is likely to use pragmatic, syntactic and morphological elements of another language when communicating in English should also be part of the assessment. An analysis of a language sample in English needs to apply information on language characteristics of the speaker's first language (such as that found in Swan & Smith, 2001). For example, since Chinese speakers do not formally distinguish parts of speech, we may expect English–Chinese bilingual speakers to use different English word classes such as *difficult* and *difficulty* interchangeably, and that this is a feature of bilingualism not a language disorder.

Standardised tests for which the normative population is not bilingual should not be used, or at the very least no standard scores should be reported. Paul (2007, p. 182) made a number of suggestions for how standardised tests might be used for this population, and all of them involve treating them as criterion-referenced tests and not using the standard scores as they are meaningless. Unfortunately, a normative sample of bilingual children from the same language background would be difficult to obtain because of the diversity of languages and varied levels of language exposure.

There are some psycholinguistic markers (rapid automatic naming and non-word repetition skills) that have come to prominence in recent literature which seem to be relatively language-free and which identify children with language impairments. For example, Wiig, Zureich and Chang (2000) found that monolingual English-speaking children with language disorders had a statistically significant reduction in rapid automated naming for tasks across semantic groups such as colour and shape. Estes, Evans and Else-Quest (2007) conducted a meta-analysis of the differences in non-word repetition skills between children with and without SLI and found children with SLI to exhibit significantly poorer skills in non-word repetition skills compared with children without SLI. However, the apparent promise of such findings may not carry over to other languages as we might have wished. Stokes, Wong, Fletcher and Leonard (2006) found that there was no significant difference in repeating Cantonese non-words between children with SLI and typically developing children of the same age. On the other hand, Kohnert and Windsor (2004) found that monolingual English-speaking children with SLI performed significantly poorer than typically developing bilingual Spanish and English-speaking children on non-linguistic processing tasks such as choice visual detection. This involved determining how accurate the children were in associating a particular colour presented with an associated response button. However, the bilingual and language-impaired monolingual groups of children performed comparably on identifying real and non-words as well as on response time for picture naming tasks (Windsor & Kohnert, 2004). It seems that the nature of psycholinguistic tasks as well as the languages spoken by the children are contributing factors in determining whether these tests can be used reliably to identify children from multilingual backgrounds with SLI. Certainly, further research in the area with children of diverse language backgrounds may provide clearer recommendations about the appropriateness of certain tests for certain populations.

Another issue that concerns assessment of children learning the language of instruction is that of nation-wide or district assessments. Assessing the academic potential of students who are still in the midst of learning English is likely to result in misleading impressions of their potential as well as their academic progress (Cummins, 2000). Cummins highlighted that students who have been learning English for about three years in school perform at about one standard deviation below age-equivalent norms in English academic skills. If such data are not incorporated into the interpretation of test scores, many students learning English as a second language in academic programs can be deemed as language delayed or language impaired.

Intervention

There are a number of implications for intervention from the material discussed so far. A summary is provided in table 3. Ideally, speech pathologists working with bilingual clients should themselves be bilingual. However, this is not a practical solution – we cannot be competent in all the languages our clients may present with. However, it is our argument that all clinicians have an obligation to work bilingually. They need to use the language skills and knowledge they have, in addition to the skills of interpreters, teachers, parents, language teachers and others. Achieving this may require the acquisition of new skills on the part of the clinician and changes in the way speech pathology students are educated.

Table 3. Some possible "new" intervention skills, goals or methods

- A monolingual SLP working in a bilingual "team"
  - Primary interactant can be an interpreter, family member, or ESL teacher
  - Conduct of session can be primarily in a non-English language
  - Conduct of session can be 50% in one language, 50% in another
- Teach code switching
- Use one language in the teaching of another; explanations in the "better" language
- Specifically teach enhanced metalinguistic skills: point out differences and similarities
- Teach the clinician the other language, with the client/team as expert.
  - Uncover those things that are unique to that language – no equivalents in English
  - Work with those activities/functions only used in the non-English language – cultural activities, family interactions, talking on the phone to community members, etc.

An example is the issue of code switching discussed earlier. As we reported, skilled bilinguals exhibit considerable code switching, which enhances their interactions with other bilinguals (Brice & Anderson, 1999; Grosjean, 1989). Logically therefore, competent code switching should be a goal in bilingual intervention. However, it is doubtful that this goal is being used in any speech pathology education program at present and there are no clear protocols for achieving it.

We also know that competent bilinguals have greater metalinguistic skills as a group than monolinguals. Using one language to support the other metalinguistically may be a new goal and a new speech pathology skill. Speech pathologists are well equipped to tackle detailed understandings of similarities and differences in the nature of the languages involved, with assistance from skilled bilinguals. As part of this, teaching the speech pathologist about the other language may be desirable – the negotiation of meaning between languages involved could itself become part of the therapy. Similarly, the functions or purposes that involve only the non-English language should be included as goals and practices in intervention, such as conducting phone conversations with grandparents, or cultural events which take place only in that language. The fact that the clinician does not speak that language is not a reason for leaving them out of the program, as there are ways to include them with a team approach.

As well as goals being different in a bilingual environment, the interactional skills within a language intervention session may also be quite different. The interpreter or other bilingual person may become the primary interactant, so the speech pathologist may need to plan for how she will become part of that interaction and at what points her knowledge about English and about the other language becomes a salient part of that interaction. For example, she may suggest the interpreter use 3-word utterances with a child, and must be aware of how this might vary between the two languages. Accordingly, decisions will need to be made about how and how much each language should be used. For example, should it be that each target or part of an activity should be conducted first in one language, then the other? Should both be involved? Should code switching be incorporated? Should interpreting from one language to another occur constantly, or intermittently? What kind of feedback should be used? All these possibilities should be available, and subjected to studies of outcomes and efficacies, to increase our evidence base.

A change in the role of the clinician in this direction is consistent with the family-centered practice, collaborative, and ICF frameworks, with their ideas of the social realities of the client and family and handing over of power and control towards those most involved. Therefore, it may not be a greater shift in thinking than we are already being urged towards from multiple sources, and it may be a way to enable us to put more of these best practice principles into operation. A new model of language intervention practice may be emerging.

Conclusion

Speech pathologists the world over tend to find working with communication disorders in bilingual clients to be problematic. We know that representation of non-dominant groups in speech pathology clinics tends to be lower than their proportion in the broader population, that clinicians tend to feel less competent in dealing with such client groups, that there is a lack of appropriate assessment tools and analysis techniques, and that there are many unknowns about how effective intervention is with these groups. There are many facets to possible solutions, including more research and the development of better tools. However, this paper has suggested that ways of thinking or concepts in the profession are also barriers to competence. We contend that one of these ways of thinking is that speech-language pathology as a profession treats bilingualism in children as a kind of multiple monolingualism: one language or the other. The literature, however, suggests that the whole is more than the sum of the parts, and that we need to change our thinking to encompass some potentially radical ideas about how we assess, set goals and conduct intervention with bilingual populations. We have also suggested that it is possible to do this in languages that the speech pathologist does not speak. These suggestions turn out to be consistent with a number of current best practice frameworks, including the ICF, family-centred practice, culturally competent practice, and collaborative and consultative practice.

This material has the potential to make our profession more effective, and also more approachable and more affirming for culturally and linguistically diverse populations. There are long-term consequences both for individual children and for greater social movements in this area of practice. For example, tests often form the basis of entry to special education, further education and employment, and thus the issue of fairness of language tests or language-based tests for children of bilingual backgrounds needs discussion at the level of policy-making. It has been suggested already that speech pathologists should act as advocates for these children and ensure that test scores are used fairly in their communities (Cummins 2003; Kritikos, 2003). Speech pathologists should also aim to understand the sociopolitical factors affecting their own professional decisions and whether these are justified in evidence based practice.

We would suggest that education in speech-language pathology should include more on the nature of bilingualism, more on alternative models of assessment and intervention that we could only suggest in this paper, and more research direction for investigating bilingualism and language disorder. These include developing assessment tools and protocols examining language competence in bilinguals that are not about separating two languages, and efficacy of intervention using some of the different models and practices we have suggested. The initial step of acknowledging that bilinguals communicate differently to monolinguals should give the clinician some insight into interpreting bilingual language data, and we look forward to more suggestions from future publications on how speech pathologists can better manage their multilingual caseload. Given that multilingualism is the norm for most of the world's communicators, further study of multilingual communication in a manner that embraces their natural communicative characteristics is essential for enhancing our understanding of how the majority of people in the world communicate and learn language.

References

Baker, C. (2000). *The care and education of young bilinguals: An introduction for professionals.* Clevedon, UK: Multilingual Matters.

Baker, C. (2003). *Foundations of bilingual education and bilingualism* (3rd ed.). Clevedon, UK: Multilingual Matters.

Battle D (Ed.) (2002). *Communication disorders in multicultural populations* (3rd ed). New York: Butterworth.

Brice, A. (2000). Code switching and code mixing in the ESL classroom: A study of pragmatic and syntactic features. *Advances in Speech-Language Pathology*, 2(1), 19–28.

Brice, A. (2001). Choice of languages in instruction: One language or two? *Teaching Exceptional Children*, *33*(4), 10–16.

Brice, A., & Anderson, R. (1999). Code mixing in a young bilingual child. *Communication Disorders Quarterly*, *21*(1), 17–22.

Campbell, W. & Skarakis-Doyle, E. (2007). School-aged children with SLI: The ICF as a framework for collaborative service delivery. *Journal of Communication Disorders*. *40*, 513–535.

Chang, J. (2001). Chinese speakers. In M. Swan & B. Smith (Eds.), *Learner English: A teacher's guide to interference and other problems* (2nd ed., pp. 310–324). Cambridge: Cambridge University Press.

Crystal, D. (2003). *English as a global language* (2nd ed.). Cambridge: Cambridge University Press.

Cummins, J. (2000). *Language, power and pedagogy: Bilingual children in the crossfire*. Clevedon, UK: Multilingual Matters.

Cummins, J. (2003). Bilingual education: Basic principles. In J. Dewaele, A. Housen & L. Wei (Eds.), *Bilingualism: Beyond basic principles* (pp. 56–66). Clevedon, UK: Multilingual Matters.

Department of Education Victoria. (1997). *Multicultural policy for Victorian schools: Community Information Service*.

Dopke, S. (Ed.) (2000). *Cross-linguistic structures in simultaneous bilingualism*. Amsterdam: John Benjamins.

Estes, K. G., Evans, J. L., & Else-Quest, N. M. (2007). Differences in nonword repetition performance of children with and without SLI: A meta-analysis. *Journal of Speech, Language, and Hearing Research*, *50*(1), 177–195.

Grosjean, F. (1989). Neurolinguists, beware! The bilingual is not two monolinguals in one person. *Brain and Language*, *36*, 3–15.

Gutierrez-Clellen, V. F. (1999). Language choice in intervention with bilingual children. *American Journal of Speech-Language Pathology*, *8*(4), 291–302.

Hammer, C. S., Detwiler, J. S., Detwiler, J., Blood, G. W., & Qualls, C. D. (2004). Speech-language pathologists' training and confidence in serving Spanish-English bilingual children. *Journal of Communication Disorders*, *37*, 91–108.

Hand, L., O'Sullivan, P., Plumer, K., Gupta, J., Mackaway, K., Young, W., Costello, M., Whitty, C. and Mahananda, P. (2000). Resources for culturally diverse populations; A Sydney survey. In C. Lind (Ed.), *Proceedings of the 2000 Speech Pathology Australia National Conference* (pp. 188–198). Melbourne: Speech Pathology Association of Australia.

Huer , T. & Blake, M. (2003). Testing strategies involving least biased language assessment of bilingual children. *Communication Disorders Quarterly*, *24*(4), 184–193.

Inglis, C. (2003). Contemporary educational issues in multicultural immigration societies. In M. W. Charney, B. S. A. Yeoh & C. K. Tong (Eds.), *Asian migrants and education: The tensions of education in immigrant societies and among migrant groups* (pp. 133–148). Dordrecht and Boston: Kluwer Academic Publishers.

Isaac, K. (2002). *Speech pathology in cultural and linguistic diversity*. London: Whurr.

Kayser, H. R. (2002). Bilingual language development and language disorders. In D. Battle (Ed.), *Communication disorders in multicultural populations* (3rd ed.). Boston: Butterworth-Heinemann.

Kim, K. H. S., Relkin, N. R., Lee, K. M., & Hirsch, J. (1997). Distinct cortical areas associated with native and second languages. *Nature*, *388*, 171–174.

Kohnert, K., & Windsor, J. (2004). The search for common ground: Part II. Nonlinguistic performance by linguistically diverse learners. *Journal of Speech, Language, and Hearing Research*, *47*(4), 891–903.

Kravin, H. (1992). Erosion of a language in bilingual development. *Journal of Multilingual and Multicultural Development*, *13*(4), 307–325.

Kritikos, E. P. (2003). Speech-language pathologists' beliefs about language assessment of bilingual/bicultural individuals. *American Journal of Speech-Language Pathology*, 12(1), 73–91.

Mahon, M., Crutchley, A., & Quinn, T. (2003). Editorial: New directions in the assessment of bilingual children. *Child Language Teaching and Therapy*, *19*(3), 237–243.

National Centre for Cultural Competence. (NCCC). Retrieved 14 November 2008 from http://www11.georgetown.edu/research/gucchd/nccc/

Oller, D. K., & Pearson, B. Z. (2002). Assessing the effects of bilingualism: A background. In D. K. Oller & R. E. Eilers (Eds.), *Language and literacy in bilingual children* (pp. 3–21). Clevedon, UK: Multilingual Matters.

Paul, R. (2007). *Language disorders from infancy through adolescence: Assessment and intervention* (3rd ed.). St Louis: Mosby.

Perozzi, J. A., & Sanchez, M. L. C. (1992). The effect of instruction in L1 on receptive acquisition of L2 for bilingual children with language delay. *Language, Speech, and Hearing Services in Schools*, *23*, 348–352.

Roseberry-McKibbin, C. (2002). *Multicultural students with special language needs: practical strategies for assessment and intervention* (2nd ed.). Oceanside CA: Academic Communication Associates.

Sochon, N. & Hand, L. (2001, May). *Australian speech pathologists' competencies in working with cultural and linguistic diversity: A survey*. Paper presented at the 2001 Speech Pathology Australia Conference, Melbourne.

Speech Pathology Association of Australia. (2000). *Code of ethics*. Melbourne: Speech Pathology Association of Australia.

Speech Pathology Association of Australia. (2001). *Position paper: Working in a multilingual and culturally diverse society*. Melbourne: Speech Pathology Association of Australia Limited.

Stokes, S. F., Wong, A. M. Y., Fletcher, P., & Leonard, L. B. (2006). Nonword repetition and sentence repetition as clinical markers of specific language impairment: The case of Cantonese. *Journal of Speech, Language and Hearing Research*, *49*(2), 219–236.

Swan, M. & Smith, B. (Eds.) (2001). *Learner English* (2nd ed.). Cambridge: Cambridge University Press.

Thordardottir, E. T., Weismer, S. E., & Smith, M. E. (1997). Vocabulary learning in bilingual and monolingual clinical intervention. *Child Language Teaching and Therapy*, *13*(3), 215–227.

Threats, T. T. & Worrall, L. (2004). Classifying communication disability using the ICF. *Advances in Speech-Language Pathology*, *6*(1), 53–62.

Wiig, E. H., Zureich, P., & Chan, H. N. H. (2000). A clinical rationale for assessing rapid automatized naming in children with language disorders. *Journal of Learning Disabilities*, *33*(4), 359–374.

Windsor, J., & Kohnert, K. (2004). The search for common ground: Part I. Lexical performance by linguistically diverse learners. *Journal of Speech, Language, and Hearing Research*, *47*(4), 877–890.

Winter, K. (1999). Speech and language therapy provision for bilingual children: Aspects of current service. *International Journal of Language and Communication Disorders*, *34*(1), 85–98.

Joyce Lew is a speech pathologist working at the National University Hospital in Singapore. She completed her speech pathology education at the University of Sydney, where she acquired and followed an interest in bilingualism.

Linda Hand was a lecturer in communication sciences and disorders at the University of Sydney for 20 years before recently moving to a senior lectureship in speech sciences at the University of Auckland. She was editor of the Multicultural Interest Group (MIG) Bulletin for over 10 years and has a major interest in cultural and linguistic diversity in speech-language pathology.

Correspondence to:
Joyce Lew
Speech Pathologist
National University Hospital
Singapore
email: joyce.lew@gmail.com

DEFINING LANGUAGE AND ITS RELATIONSHIP TO COGNITION, LITERACY AND CHAOS THEORY

Regina Walsh

The speech pathology profession stakes a claim as experts in language and language disorders. It is surprising, therefore, that no single, precise, widely used and practical definition of *language* is found in the speech pathology literature. Each professional has "working definitions" of key terms that underpin practice; however, these definitions may or may not be made explicit. This article explores the articulation of definitions of some key speech pathology terms and the development of a conceptual model of language.

Keywords:
conceptual model,
definition,
language,
speech pathology


Regina Walsh

This article tracks a personal professional journey of exploration into definitions and concepts around *language*. The context of the journey was the Literacy Outcomes and the Role of the Speech-Language Pathologist Project conducted in Brisbane from 2005 to 2007 (Education Queensland, 2008).

Speech pathologists stake a claim as experts in language and language disorders (Speech Pathology Australia, 2005). It is therefore surprising to find no single, precise, widely used and practical definition of *language* stated in our professional literature. Discussions with other speech pathologists revealed a widespread concern: the vagueness of a key term for the profession – *language* – and the impact on theories and practice. My colleague Kelly Stassi and I decided to tackle the challenge to find a definition of *language* that would better support our practice. Our journey included some of the professional literature, but was mainly based on the experiences and challenges of our everyday practice.

Definitions of *language*

The first stage in the journey to define *language* entailed a review of existing general and specialist definitions. Table 1 lists some definitions derived from WordNet (2008) and other everyday examples of the use of the word *language*.

In contrast to the everyday uses of language, our profession-specific definitions are more comprehensive with the added complexity necessary to underpin scientific thinking. For example:

- "Socially shared code or conventional system for representing concepts through the use of arbitrary symbols and rule-governed combinations of those symbols" (Owens, 2005, p. 7);
- "The communication system that enables an individual to function in society […] learned system of rules that enables a person to communicate ideas and express wants and needs" (Speech Pathology Australia, 2005, p. 4).

However, the professional definitions above are not consistently applied within our professional practice (Apel, 1999; Kamhi, 2004; Snow, 1996). This may indicate that the definitions are not accurate or perhaps not adequate to serve the needs of speech pathologists. For example, Owen's (2005) definition most accurately refers to what Clark (2006) calls the "material" language – the actual physical symbols or words. It better defines a language (such as English or Tagalog) than it defines the complex phenomenon of a meaning-making system which is language. Furthermore, in the common speech pathology terms below, the meaning of is not consistent, with some terms actually referring to everyday meanings of the word language, rather than professional definitions:

- language impairment
- language test
- expressive language
- language structures
- language learning
- language delay
- language cues
- decontextualised language.

Thus *language* is used to refer to a number of quite different concepts, even by speech pathologists themselves. Wilson (2005) has decried the situation where professionals neglect the definitions of key terms within their field. He stated that without attention to definitions, we literally do not know *what* we are talking about, leaving much theory and practice

Table 1. Common definitions of *language*

Use	Interpreted meaning of *language*
The language of flowers	Symbol/s
English language Language of the region	Specific set of symbols and rules for combining symbols
"He didn't have the language to fill out the form"	Individuals' knowledge of vocabulary
Teachers are interested in language arts	Reading and writing skills
Medical language	Profession/context specific vocabulary
"She used very expressive language"	Figurative or metaphoric tools for imagery
"The article used very dense language"	Concepts (and dense as in lots of concepts expressed through relatively few words)
"Watch your language" Street language	Appropriate communication in context
Language system	Symbols and rules for use
Written language	Words/sentences/discourse in text
Language processing	Mental processes involved in expression and comprehension of meaning

disconnected from the real world. He also said that even commonly used terms for which professionals think that they share definitions are used with a range of meanings and applications. Wilson went on to suggest that debates about precision and accuracy in definitions are often dismissed as "nit-picking".

Stage one of our journey concluded with recognition that *language* was used variably within the profession, either because it refers to a complex multifaceted phenomenon, or because it refers to a group of different phenomena. A single sentence definition may not be possible for something so complex. We began to consider whether a conceptual model may be a better tool to explore possible definitions of language.

Conceptual models of language

Conceptual models represent and delineate the facets of complex constructs, and relationships between these facets. Conceptual models provide a framework for reasoning. While they are idealised and abstract, they are evaluated on the basis of their coherence with experience and their usefulness in explaining the world (Stanford Encyclopedia of Philosophy, 2006).

Wilson (2005, p. 73) stated: "What we do is driven by how we think, and how we think is largely determined by the concepts we use." Each individual's conceptual model underpins what they do and what they believe their role is (Wallach & Ehren, 2004). Figure 1 represents the importance of conceptual models for practice and the role of the professional.

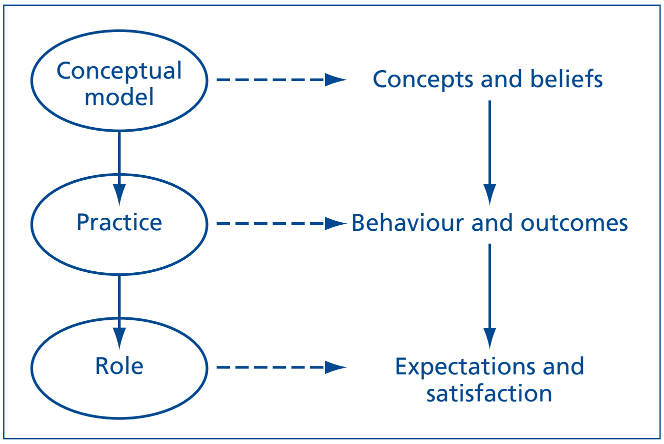


Figure 1. Conceptual model and professional practice

The second stage of the journey, therefore, was to look for a conceptual model which precisely articulated all the facets of language. Searches through speech pathology and related professional literature yielded a number of processing models (which explained "how" language worked), but these models did not explain "what" language actually "was". Eventually we found Duchan's (2006, p. 736) illuminating statement: "Conceptual frameworks are easy to ignore; like the air we breathe, their presence is everywhere, once they are looked for. Yet they are often taken for granted, underestimated and under-examined."

It seemed, as Duchan suggested, that the speech pathology profession had perhaps taken for granted and not sufficiently examined one of its central concepts. The only viable next step on our journey was to articulate and examine our own conceptual model of language.

Articulating our personal conceptual model of language

Articulating our personal conceptual model was an extended stop-start process involving long stimulating discussions, periods of reflection and integrating new information or experiences as they came to hand. It involved explicitly representing our existing but tacit beliefs about language, which were based on our professional experience as much as on research findings. Over a two-year period, we gradually developed what we have called our Conceptual Model of Language and Related Constructs (Walsh, 2007; Walsh & Stassi, 2007) (Figure 5 on page 20). The model is necessarily complex, reflecting the nature of language. The following sections explore individual aspects of the model.

The internal language system

Within our model, the internal language system in the brain is considered as a constantly self-organising, extremely complex system of symbolic representations that carry all information about an individual concept. Language development progresses over time from early single idiosyncratic symbols with some lexical (word) features, to symbols grouped according to certain lexical features, to conventional symbols within complex (and overlapping) hierarchies, to multiple and complex linking within hierarchies and other organisational systems, as illustrated in figure 2.

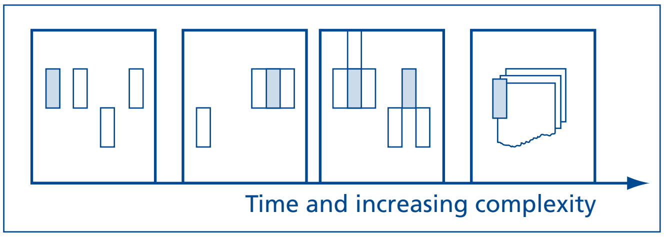


Figure 2. The internal language system organisation over time

As a child develops, more "information" is built into the symbolic representation for a concept (Shelton & Caramazza, 1999). Over time, visual, tactile, semantic, morphemic, likely occurrence, situational, syntactic, pragmatic, spoken word features (phonological), written word features (orthographic) and other features are added. The addition of new information allows the continual creation of new and/or more complex organisational systems of symbols. In other words, a major reorganisation of storage and links between symbols takes place. Our conception of the internal language system is therefore quite unlike a static filing system or a dictionary.

In figure 2, each shaded rectangle represents a concept. In early life, each concept is stored as a single entity without organisation, but as the number of concepts/words grows, basic organisation takes place: grouping words into, for example, semantic categories, i.e., "horse" is an animal, or "horse" is linked with concepts of situational co-occurrence ("horse" + "in the field" but not "in the lounge"); (Yeh & Barsalou, 2006). Over time, hierarchical and/or parallel organisation takes place, so that words are stored with preferential links to other words (Shelton & Caramazza, 1999), e.g., "horse" may be linked to a farm animal category, or links are developed between appropriate "noun + verb" combinations (e.g., horse + neigh). Over time these conceptual reorganisations and preferential links are influenced by newly learned features of the word, such as information about how a word/word class is pluralised. As the child grows, phonological awareness influences organisation. For example, "horse" might be preferentially linked or organised into a group of words with the onset /h/ or those with the rime /ɔs/. As the child develops and interacts with the world, lexical organisation is based on environmental demands and priorities. For example, learning to spell influences organisation; once a child has learnt sufficient written words, the brain undergoes a "lexical reorganisation" to favour retrieval of words according to spelling conventions (Leitão, 2001). For example, "horse" may be linked with other words spelled with "or" replacing the link with other words with the same rime but different spelling. Throughout development, links between related concepts/words form schemas or other efficient organisational systems for thinking and communicating (e.g., see Reynolds, Sinatra & Jetton, 1996; Rumelhart, 1980). A mature internal language system with multiple overlapping organisational systems is considerably more complex than can be represented in a drawing, so figure 2 only inadequately captures the increasing complexity by the inclusion of an arrow.

Sophisticated neural organisation according to relevant features is the key to efficient retrieval of symbols (Camarata & Nelson, 2002). Highly sophisticated and easily accessible language symbols within efficient organisational systems are required for thinking and for literacy. Factors in the environment, the person's genetic predisposition, the language context, and the person's emotional state impact on how an individual forms, organises and accesses symbolic representations (see figure 5). The environment is important in how/when/how many symbolic representations of concepts are formed. Thus, poor health or limited communicative opportunities can negatively impact on the development of the internal language system. The individual's response to interaction and situational events, general well-being, emotions and other factors all influence the formation and organisation of symbolic representations. This organisation has implications for efficient retrieval; failure to develop a sufficiently detailed and well-organised representational system may lead to difficulties or inefficient retrieval, i.e., language problems (Nash & Donaldson, 2005).

The link with visual images

A very close link exists between the symbolic representation and the visual/image representation for that concept. A longstanding debate about whether image and verbal representations are separate, parallel or the one underlying system, has been discussed in an enormous body of literature which was beyond us to fully cover (e.g., Ley, 1983; Paivio, 1971). We considered the researchers' very definition of *language* would influence their research methodology, and that findings might depend upon how it was investigated. Findings from positron emission topography (PET) investigations suggest that largely the same parts of the brain are activated for pictures and for words (Vandenberghe, Price, Wise, Josephs & Frackowiak, 1996). Clark (2006) also suggested that it is plausible that the internal language system plays a mediating role in image storage and access. Rather than trip on this early point, we decided simply to assume that the visual image and symbolic representation are very closely linked.

Links to cognition

We could find no widely used definition of *cognition*, even in psychologists' reviews of the literature (P. Clayton, personal communication, 20 August 2006), so we used the term *cognitive capacities* for simple mental processes, and *thinking* for higher level, integrated mental process.

Cognitive capacities, such as memory and attention, are necessary for the formation and organisation of symbols (Flavell, Miller and Miller, 1993). In our model these cognitive capacities are conceived of as a capacity of the brain structure, rather than as entities. These capacities are drawn upon for forming, organising and accessing the internal language system. The exercising of a cognitive capacity, such as memory, supports its further development, and this development in turn allows more sophisticated organisation of language – a sort of mutually expanding capacity and complexity in language organisation. This is represented in the model by an arrow spiralling outward through cognitive capacities and the internal language system shown in figure 3.

The application of a cognitive capacity to the formation or access of symbolic representations is the only way this capacity can be observed, i.e. a child can only "attend" when "attending to *something*". Thus, while cognitive capacities are conceptually distinct from language, they are functionally interwoven, and impossible to separate out in real-life situations. This is important for practice in that many supposedly language-free measures of cognitive functioning are directly or indirectly dependent on language (Camarata & Nelson, 2002). In our model, language is heavily dependent upon the cognitive capacities, but is itself a discrete construct.

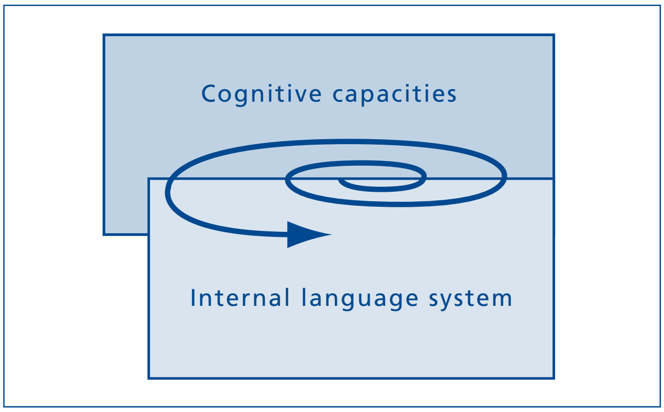


Figure 3. An increasing spiral of cognitive capacity and internal language complexity

Links to spoken and written codes

The internal language system is not observed directly; it is neurologically situated and manifest only through spoken, written and other codes. Spoken language symbols and written language symbols are the material manifestations of the same underlying language system in the brain (Clark, 2006). The written word is not a symbol for the spoken word. They are both symbols for the one underlying concept (although there is a relationship between the "form" of words in the spoken and written codes). Other codes for communicating, such as signs and pictorial symbols, are also the material manifestation of the same underlying language system. All forms of communicating and thinking use the same internal language system as illustrated in figure 4. For example, mathematic symbols are types of material symbolic representations for concepts that are stored and organised within the same internal language system as words (Clark, 2006). An individual's experience of these material (i.e., manifest in the world) symbols and codes influences development, represented by the feedback arrow on the model. This part of the model represents a specific challenge to common representations of language by speech pathologists. Typically, written language is considered as having material form (it can be seen on the page), whereas spoken language is equated with the internal language (and considered "immaterial"). However, both spoken and written symbols can be measured and should be considered as "material". Much of the literature outside speech pathology that we sourced stressed the importance of distinguishing between the internal language system and its material manifestation in the world: the actual spoken and written symbols themselves (e.g., Clark, 2006).

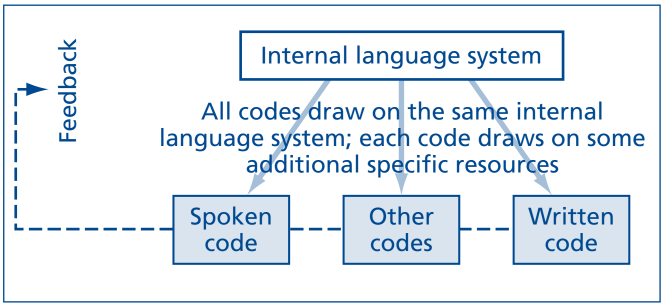


Figure 4. The internal language system is made material through spoken, other and written codes

Links to thinking and behaviour

The internal language system consists of neurologically situated symbolic representations, not specifically "words", with links and organised storage, and incorporates all sorts of symbols (maths, music, words, etc.). The effective integration of the maturing cognitive capacities and the maturing internal language system are integral to higher level thinking (e.g., problem-solving), learning and self-regulation or executive function. Language is thus enmeshed with executive control and ongoing learning (Singer & Bashir, 1999). It is the internal language system that is central to higher level cognitive functioning, not the words the child knows (i.e., not the "material" language). Effective integration of the internal language system, the cognitive capacities, and other resources (e.g., world knowledge) allows an individual to communicate, think, learn and self-regulate behaviour (Singer & Bashir, 1999).

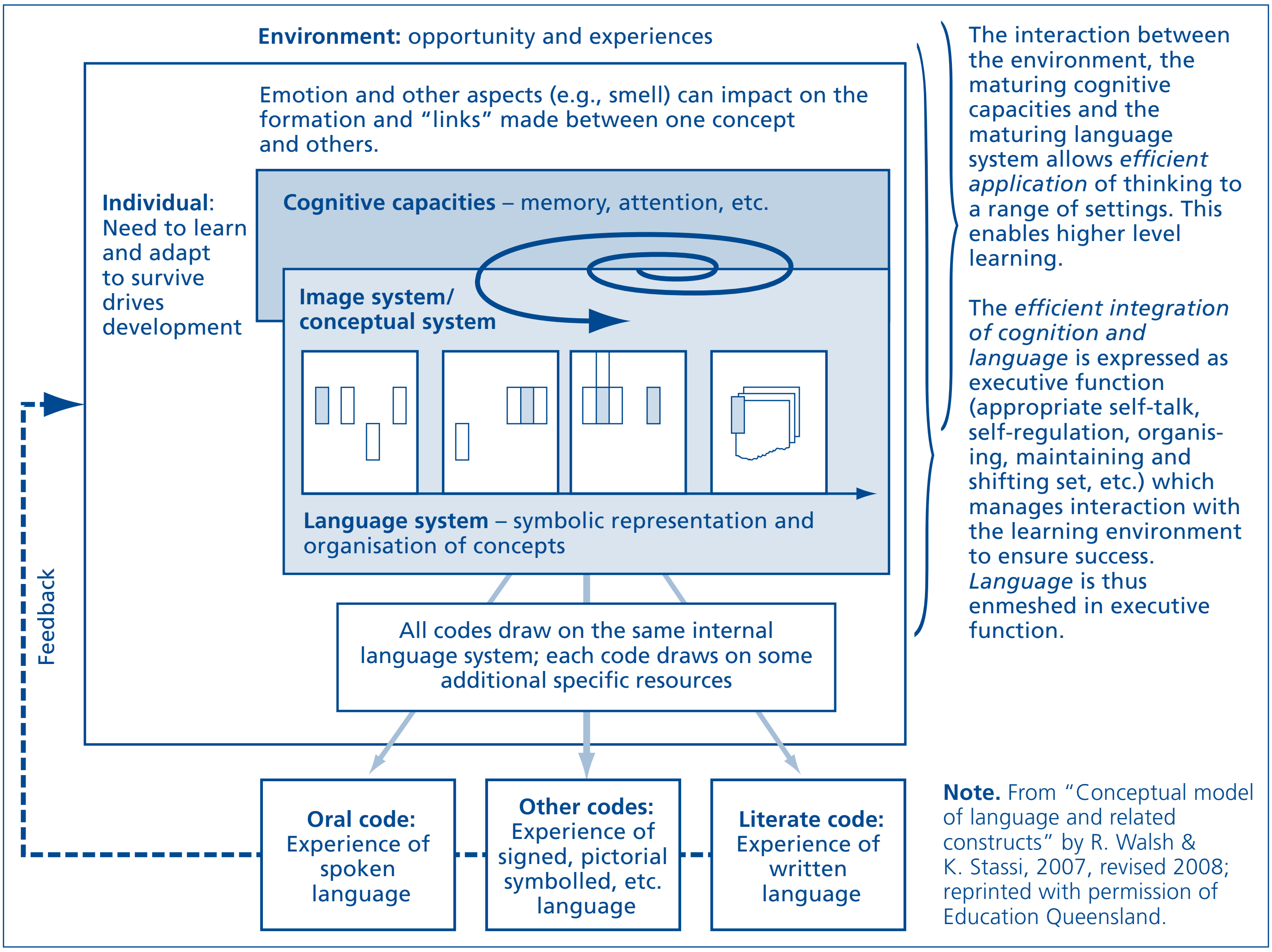
At the end of over two years of development and seven working drafts, we arrived at the Conceptual Model of Language and Related Constructs (figure 5) to illustrate our personal conceptual model of how language relates to literacy, how language is integral to learning and thinking, how cognitive capacities are functionally intertwined but conceptually separate from language, and how complex thinking processes involving executive function are built upon a sophisticated internal language system.

Implications

The current version of the Conceptual Model of Language and Related Constructs was included in the major project report (Education Queensland, 2008). It has helped us to understand and articulate our definition of language as well as our potential role in literacy, learning and behaviour. It illustrates how we, as speech pathologists, see language, rather than literacy, at the centre of learning.

Currently, we are in stage four of our journey, which is to explore how this conceptual model influences our practice. The questions we continue to ponder include:

- If most people outside speech pathology use the term *language* to label the material symbols, do we need to create another term for the "internal language system"?
- Can we craft definitions of primary language impairment that are related to the internal language system?
- What aspect of language does any specific assessment tool actually target within the complex multifaceted phenomenon of language?



The interaction between the environment, the maturing cognitive capacities and the maturing language system allows *efficient application* of thinking to a range of settings. This enables higher level learning.

The *efficient integration of cognition and language* is expressed as executive function (appropriate self-talk, self-regulation, organising, maintaining and shifting set, etc.) which manages interaction with the learning environment to ensure success. *Language* is thus enmeshed in executive function.

Note. From "Conceptual model of language and related constructs" by R. Walsh & K. Stassi, 2007, revised 2008; reprinted with permission of Education Queensland.

Figure 5. Conceptual model of language and related constructs

- Does dynamic assessment best fit a dynamic system such as language?
- What do tests of cognition assume about language?
- Is stimulating the organisation of the internal language system the "main game" in intervention?
- Can I use this model to explain my role in relation to literacy, behaviour management, learning, and so on?

Chaos theory

While the conceptual model was in development, a short side journey alerted me to the potential of chaos theory in understanding and defining language. Chaos theory (more properly called non-linear dynamic systems theory) supports investigations into the existence of order and organisation within complex systems (Sardar & Abrams, 1999).

Chaos theory explains how extremely complex systems create and maintain order: such systems are self-organising, are open and part of their environment, attain and maintain structure in changing conditions, are creative, have parts so numerous that simple causal relationships do not exist, and have components interconnected by networks of feedback loops (Sardar & Abrams, 1999). The theory is being applied to diverse areas of study and provides new insight into complex systems such as the stock market, population changes in animals and the functioning of the human brain (Gribbin, 2005). It provides a model much more closely representative of real life by incorporating feedback, "turbulence", multiple causal chains, environmental impacts and so on. Prior to chaos theory, models of complex systems omitted many details and complexities in order to simplify the subject under study, but these models have proven to be inadequate. For example, for many years the brain was viewed as a machine for processing input and directing behaviour, even though theories about the brain based on this mechanistic model simply failed to correspond to empirical evidence. With a model of brain function based on chaos theory, however, better understanding and significant research advances have been achieved (Gribbin, 2005). Within this perspective, the human brain is conceived as a complex, non-linear functioning, feedback-based, self-organising system (Sardar & Abrams, 1999).

This view of the human brain sounded very similar to the concept of language that we had developed and leads to my proposal for an alternative definition:

> Internal language is a complex, non-linear, feedback-driven, self-organising system of symbol representations in the brain.

We had arrived at a point on our journey where it seemed inevitable to look for separate definitions for the internal *language* system and its material counterparts in the spoken and written form of language. The common definitions of language used by speech pathologists (discussed earlier) refer to the latter only, and fail to provide a strong foundation for productive professional discussions about the links between language, literacy and cognition.

Summary

This article has followed a personal professional journey to define *language*, taking up Duchan's (2006, p. 741) challenge, "We should be not only examining and reporting on the methods we use, but also asking ourselves about the conceptual underpinnings of those methods." Our journey revealed that speech pathology lacks a widely used conceptual model of language, which in our opinion is a significant gap within the field. A conceptual model of language illustrates what we believe language is, and is therefore essential to be able to talk about the links between language, literacy and cognition.

Our journey has also revealed that speech pathologists use the term *language* to refer to a complex collection of phenomena. Speech pathology needs a more accurate definition (or definitions) of *language* that reflects its biological, psychological, behavioural, material, symbolic, propositional and social facets. Language is necessarily all of these and we need more accurate terms for distinguishing these various facets and for distinguishing between language and other related constructs. The term *internal language system* as used by professions other than speech pathology should be further considered.

The journey has been exciting, fruitful and professionally stimulating. Articulating our personal conceptual model of language has provided a clear and solid basis for all aspects of our professional practice. However, the model remains in draft form as it continues to be refined with new information, and readers' feedback is welcome. The model may never be formally "completed" and the journey to understand language fully may never end.

Acknowledgements

Funding for the Literacy Outcomes and the Role of the Speech-Language Pathologist (LORS) project was provided by the Queensland Department of Education, Training and the Arts. The author would like to thank speech pathologists Kelly Stassi (travelling partner) and Gaenor Dixon (travel consultant), without whose support and contributions this journey might never have taken place.

References

Apel, K. (1999). Checks and balances: Keeping the science in our profession. *Language, Speech, and Hearing Services in Schools*, *30*, 98–107.

Clark, A. (2006). Material symbols. *Philosophical Psychology*, *19* (3), 291–307.

Camarata, S., & Nelson, K. E. (2002). Measurement and the diagnosis and treatment of language disorders in children. *Peabody Journal of Education*, *77* (2), 106–116.

Duchan, J. (2006). How conceptual frameworks influence clinical practice: evidence from the writings of John Thelwall, a 19th-century speech therapist. *International Journal of Language & Communication Disorders*, *41* (6), 735–744.

Education Queensland. (2008). *Enhancing literacy outcomes: the benefits and issues of including SLPs in the literacy team*. Retrieved June 2008 from http://www.learningplace.com.au/deliver/content.asp?pid=32262

Flavell, J. H., Miller, P. H., & Miller, S. A. (1993). *Cognitive development*, 3rd ed. Englewood Cliffs, NJ: Prentice Hall.

Gribbin, J. (2005). *Deep simplicity: Bringing order to chaos and complexity*. Hawthorne, Victoria: Penguin Books.

Kamhi, A. G. (2004). A meme's eye view of speech-language pathology. *Language, Speech, and Hearing Services in Schools*, *35*, 105–111.

Leitão, S. (2001, 27 August). *A question of literacy: how can we be effective?* Speech Pathology Australia National Tour Videoconference Workshop, Brisbane.

Ley, R. G. (1983). Cerebral laterality and imagery. In A.A. Sheikh (Ed.), *Imagery: Current theory, research, and application* (pp. 252–287). New York: Wiley.

Nash, M., & Donaldson, M. L. (2005). Word learning in children with vocabulary deficits. *Journal of Speech, Language, and Hearing Research*, *48*, 439–458.

Owens, R. (2005). *Language development: An introduction*, 6th ed. Boston: Allyn & Bacon.

Paivio, A. (1971). *Imagery and verbal processes*. New York: Holt, Rinehart and Winston.

Reynolds, R. E., Sinatra, G. M., & Jetton, T. L. (1996). Views of knowledge acquisition and representation: A continuum from experience centred to mind centred. *Educational Psychologist*, *32*, 93–104.

Rumelhart, D. E. (1980). Schemata: The building blocks of cognition. In R. J. Spiro, B. C. Bruce, & W. F. Brewer (Eds.), *Theoretical issues in reading comprehension: Perspectives from cognitive psychology, linguistics, artificial intelligence, and education* (pp. 38–58). Hillsdale, NJ: Erlbaum.

Sardar, Z., & Abrams, I. (1999). *Introducing chaos*. Crows Nest, NSW: Allen & Unwin.

Shelton, J. R., & Caramazza, A. (1999). Deficits in lexical and semantic processing: Implications for models of normal language. *Psychonomic Bulletin & Review*, *6* (1), 5–27.

Singer, B. D. & Bashir, A. S. (1999). What are executive functions and self-regulation and what do they have to do with language-learning disorders. *Language, Speech, and Hearing Services in Schools*, *30*, 265–273.

Snow, C. (1996). Toward a rational empiricism: why interactionism is not behaviourism any more than biology is genetics. In M. L. Rice (Ed.), *Toward a genetics of language* (pp. 377–296). Mahwah, NJ: Lawrence Erlbaum.

Speech Pathology Australia. (2005). *Literacy teaching based on evidence: What roles can speech pathologists play?* Submission to the National Inquiry into the Teaching of Literacy Department of Education, Science and Training March 2005. Retrieved July 2008 from: http://www.speechpathologyaustralia.org.au/library/Literacy%20Submission%20App.pdf

Stanford Encyclopedia of Philosophy. (2006). *Models in science*. Retrieved May 2008 from http://plato.stanford.edu/entries/models-science

Vandenberghe, R., Price, C., Wise, R., Josephs, O., & Frackowiak, R. S. J. (1996). Functional anatomy of a common semantic system for words and pictures. *Nature*, *383*, 254–256.

Walsh, R. (2007, May). *Defining language and its relationship to cognition, literacy and chaos theory*. Presentation at Speech Pathology Australia National Conference, Sydney. http://www.learningplace.com.au/deliver/content.asp?pid=32262

Walsh, R., & Stassi, K. (2007). *Conceptual model of language and related constructs*. Retrieved July 2008 from http://www.learningplace.com.au/deliver/content.asp?pid=32262

Wallach, G. P., & Ehren B. J. (2004). Collaborative models of instruction and intervention: choices, decisions, and implementation. In E. R. Silliman & L. C. Wilkinson (Eds.) *Maximizing student's language and literacy learning* (pp. 39–49). New York: The Guilford Press.

Wilson, J. (2005). Psychological explanations: A reply to Thomas. *Educational Psychology in Practice*, *21* (1), 69–73.

WordNet. (2008). Retrieved July 2008 from http://www.answers.com/library/WordNet-cid-45439029

Yeh, W., & Barsalou, L. W. (2006). The situated nature of concepts. *American Journal of Psychology*, *111* (3), 349–384.

Regina Walsh has worked in education since 1985 and has an interest in language and early literacy and in the various paradigms of practice within the profession. She was the project officer for Speech Pathology Australia's Terminology Frameworks Project from 2005 to 2007.

Correspondence to
Regina Walsh
Speech Pathologist
Education Queensland
phone: 07 3239 6674 (Weds–Fri)
email: reginawalsh@powerup.com.au
Regina.walsh@ccypcg.qld.gov.au

Mentoring Program

Share and Develop Skills – Surprise Yourself with New Insights

Looking to maximise your learning and build on professional and personal capacities in 2009? – then Speech Pathology Australia's Mentoring Program is just the thing for you. Providing an opportunity for reflective practice, development of new skills and increased knowledge and networks for both mentees and mentors.

Anyone with two or more years experience in their work role can register as a mentor – you do not need to be an expert! With many new graduates now registering for the program, mentors are in high demand. We'd love to hear from mentors to match with these keen members.

On the other hand, if you are a new graduate recently employed, changing your field of practice, new to an area, embarking on a research project, new to management or isolated in a sole position, why not register as a mentee to gain some extra support.

The Association is please announce it now has a new brochure about the Mentoring Program. This brochure is now available via the Association website or by contacting the Association directly.

For more detailed information and registration forms please check out the Mentoring Program information on the website. www.speechpathologyaustralia.org.au

UPDATES FROM THE MULTICULTURAL INTEREST GROUP (NSW)

The Multicultural Interest Group (MIG) (NSW) has been very active in 2008. Three seminars were held during the year. They were:

- *Culturally and Linguistically Diverse Considerations in Stuttering Treatment* presented by Mary Erian, speech pathologist at the Stuttering Unit, Bankstown Health Service;
- *Building the Connections with Aboriginal Families and Communities* presented by Cynthia Grayston-Riley, casework consultant (Aboriginal specialist), Department of Ageing, Disability, and Home Care; and
- *Evidence-Based Practice in the Context of Cultural & Linguistic Diversity* presented by the MIG (NSW) committee.

All of the seminars were well attended by speech pathologists, case managers, and community workers from a range of agencies.

MIG (NSW) has been undertaking an evidence based practice project in the last 2 years. There have been monthly evidence base practice meetings attended by MIG members, the MIG (NSW) committee, and student speech pathologists. To date, we have mapped out the current evidence in the field of the culturally and linguistically diverse (CALD) area, the nature of the evidence and some of the gaps. A number of resources and tools have also been developed, including a database of current evidence and an evaluation tool to examine different types of evidence in the area of CALD. The database was developed utilising the EndNote Library referencing software. There are currently over 200 entries of various types of materials, including journal articles, books, and websites. Keywords and categories of various evidence were identified, for example, preschooler, assessment, intervention and Asian cultures. The EndNote Library has a search by keyword function which allows members to gain quick and easy access to all relevant evidence regarding a particular topic. The next phase of the project will involve identification of key research questions of interest to MIG members and attempt to answer these questions utilising the current EndNote database and evaluation tool.

The group meets on Friday afternoons and everyone is welcome. Meeting dates and times for 2009 have not yet been finalised, but will be posted on the Speech Pathology Australia website when they are available. Anyone who is interested in accessing the information about one of the seminars held or about the Evidence Based Project, please contact Candy Leung, MIG (NSW) Liaison Person via email: Candy.Leung@dadhc.nsw.gov.au

Candy Leung is a Manager Access at the Department of Ageing, Disability, and Home Care (DADHC) at Rosebery, Metro South Region, NSW. Candy manages a multidisciplinary team of speech pathologists, occupational therapists, physiotherapists, and psychologists. She has previously worked as a speech pathologist at DADHC, providing services to children, young people, and adults with a range of developmental and intellectual disabilities across different community settings. Candy is also one of the project leaders of various DADHC regional initiatives concerning CALD issues.

LETTER TO THE EDITOR

Dear Editor,

Because this *ACQ* issue deals with bilingualism, we would like to alert readers to a pertinent article about to be published in *Archives of Disease in Childhood*: "The effects of bilingualism on stuttering during late childhood" by Howell, Davis and Williams (available on-line at DOI:10.1136/adc.2007.134114). Howell et al. conclude that speaking two languages from birth increases the risk of developing stuttering and decreases the chances of recovery from stuttering. We and colleagues from the United States and Canada have written to the editor of the journal refuting this conclusion. We maintain that the data gathered in the study do not support the claims by the authors. As we see it, the main problem with the study is that conclusions about stuttering and the general population of bilingual children have been drawn from a limited clinical sample. Our letter has been accepted for publication.

In modern multicultural and multilingual societies many children speak more than one language from birth. The Howell et al. findings are already attracting considerable media attention worldwide and there are reports of concerned parents asking clinicians whether they should restrict their children to speaking only one language during the preschool years. It is critical, then, that speech pathologists and other health professionals are aware of our interpretation of the Howell et al. data; namely, that speaking two languages from birth has not been shown to increase the chances of stuttering nor to reduce the likelihood of recovery from stuttering.

Yours sincerely,

Ann Packman, PhD

Mark Onslow, PhD
Australian Stuttering Research Centre, The University of Sydney

Sheena Reilly, PhD
Murdoch Childrens Research Institute; Department of Pediatrics, University of Melbourne

TOP 10 RESOURCES FOR STUDENTS AND NEW GRADUATES WORKING WITH CALD CLIENTS

Elizabeth Old

I am Elizabeth Old and I'm about to complete my Masters Degree at Macquarie University. During my placements I've had the experience of assessing adult and paediatric clients with the help of an interpreter. I have also treated a paediatric client in his first language with the assistance of an interpreter. I look forward to working with more culturally and linguistically diverse (CALD) clients in my final placement. I was inspired to put this resource list together while I was at a meeting of the Multicultural Interest Group. I had seen a similar list for Aphasia resources which I thought was great, so I decided to apply the idea to resources to use with culturally and linguistically diverse clients. I have tried to make them practical – the sort of things I would like at my finger tips when I start working. I hope you find them useful!

1 *How to access interpreter services*

This policy directive from NSW Health contains comprehensive information regarding when to use and how to book health care interpreters from the NSW Health Care Interpreter Service. Also included is the code of ethics for the Australian Institute of Interpreters and Translators (AUSIT) which can assist clinicians gaining a greater understanding of how interpreters see their role and their boundaries: http://www.health.nsw.gov.au/policies/pd/2006/pdf/PD2006_053.pdf

Clinicians in private practice looking for interpreters can access them through the Australian Health Care Directory: http://www.healthdirectory.com.au/Health_industry_resources/Interpreters/search

2 *CALD play groups*

The Play Group Association of NSW has a facility on its website under “Find a play group” that allows you to search for playgroups where participants speak a particular language. Languages include Indigenous and most European languages. Free call 1800 171 882 or visit: http://www.playgroupnsw.com.au/nsw/go/find-a-playgroup

3 *CALD carers*

Carers NSW has four popular carer fact sheets translated into a range of languages. These fact sheets include information about Carers NSW and information about carer support groups. Other translated fact sheets include “the seven habits of highly effective carers” and “information regarding the impact of a home placement”. A free carer support kit can also be ordered in up to 13 languages. Free call 1800 242 636 or go to sitemap: caring in a culturally diverse community at http://www.carersnsw.asn.au/

4 *Translated resources*

This NSW Health website is part of the Multicultural Health Communication Service and contains excellent cue cards in many languages as well as a multicultural phrase book: http://www.mhcs.health.nsw.gov.au/mhcs/subpages/sands/signs_symbols_index.html

5 *Information regarding the values and beliefs of different cultures*

To deliver services in the best possible way it is appropriate to consider different cultural attitudes towards sickness, ageing and developmental disorders. The Multicultural Communities Gold Coast Inc. has fact sheets that provide information about history, culture and attitudes towards aged care, health and sickness for a variety of cultures: http://www.mccgc.com.au/?q=node/55

Books addressing how to treat language disorders in bilingual children and adults also contain useful cultural information. For example: Kohnert, K. (2008). *Language disorders in bilingual children and adults*. San Diego, CA: Plural Publishing.

6 *Phonemic inventories across languages*

The American Speech Language Hearing Association has information regarding the phonemic system of a number of languages which can be used to identify sounds in a client's phonological system in languages other than English. This website also has many other useful resources: http://www.asha.org/about/leadership-projects/multicultural/

7 *Dynamic assessment*

Dynamic assessment can be used to discover a client's current level of functioning and the best means of facilitating their further learning using tasks which are minimally dependent on prior knowledge or experience. Articles to start with include:

- Laing, S., & Kamhi, A. (2003). Alternative assessment of language and literacy in culturally and

linguistically diverse populations. *Language, Speech and Hearing Services in Schools*, *34* (January), 44–55.

- Moore-Brown, B., Huerta, M., Uranga-Hernandez, Y., & Pena, E. (2006). Using Dynamic assessment to evaluate children with suspected learning disabilities. *Intervention in School and Clinic*, *41*(4), 209–217.

8 *Speech Pathology Australia position paper*

The position paper is entitled Working in a Multilingual and Diverse Society (2001). This position paper can be accessed from www.speechpathologyaustralia.org.au. While the resources and contacts in this position paper are currently being updated, it is a great resource that helps clinicians to develop best practice guidelines and meet the needs of this client group.

9 *Multi-Cultural Interest Group*

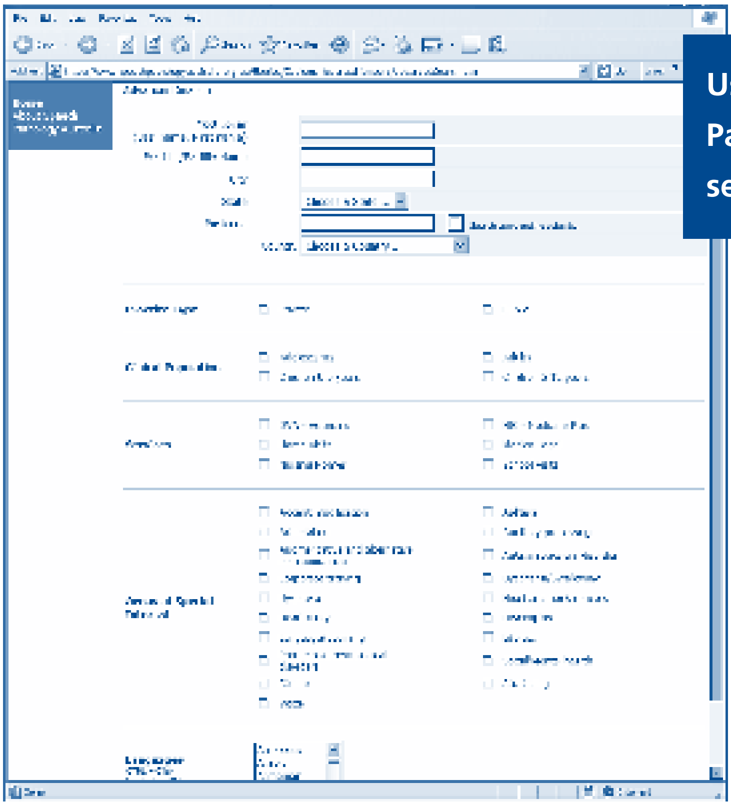
The Multi-Cultural Interest Group in NSW is a special interest group for clinicians working with CALD clients. The group has regular meetings as well as seminars on particular topics. Joining an interest group is an excellent way to build professional networks and learn from others' experiences. Contact Candy Leung, (02) 9310 6357, or email candy.leung@dadhc.nsw.gov.au

10 *Your team, mentors and other clinicians*

As a new graduate you are unlikely to be working alone. Benefit from the experience of others and discuss issues with your team. If you are working in a sole position, mentoring through Speech Pathology Australia is an excellent idea. Don't forget – the clinicians you graduated with will also be facing challenges. Why not pool ideas and resources?

National Online Speech Pathology Australia Search

Speech
Pathology
Australia



Use the National Online Speech Pathology Australia Search when searching for Speech Pathologists

Search For A Speech Pathologist

National Online Speech Pathology Australia Search

Don't forget to use and refer your clients to the National Online Speech Pathology Australia Search which is currently available on the Speech Pathology Australia website. On the homepage you will find a button on the bottom right hand corner titled **'Find a Speech Pathologist'.** Click this button to be linked to the Database.

www.speechpathologyaustralia.org.au

The National Online Speech Pathology Australia Search holds information on all our members, both private and public speech pathologists, Australia wide. If you are looking for a speech pathologists in your local area, it is as simple as entering your Postcode, and ticking the 'Search surrounding suburbs' box.

Speech Pathology Australia members are encouraged to keep their practice information up-to-date as much as possible either via your online 'User Profile' or by contacting National Office. The information you submitted at the time of renewing your membership is entered into the Database. This information will be available online unless you have indicated 'I do not want these details used for public referrals, private practice directory listings or online searches'

Remember this referral information is both a service to the public and a benefit to the marketing of your own practice/services.

SPEECH PATHOLOGY IN THE ASIA-PACIFIC REGION

Speech-language therapy in Singapore

Elizabeth Jane Teh and Melissa Hui Ling Chua

Singapore is a small city-state with a population of more than 4.5 million people. The society is multicultural and multilingual. The country has a comprehensive health care system and education system. Speech-language therapy (SLT) services started on a small scale in the 1960s. Today, a full spectrum of SLT services are offered by a growing population of speech-language therapists working in hospitals, schools, community settings and private practice. As the demand for speech-language therapy grows, the professional community faces increasing challenges to meet the needs of the population and to develop in new directions.

Keywords:
health care,
rehabilitation,
Singapore,
special education,
speech therapy

Elizabeth Jane Teh

Melissa Hui Ling Chua

Overview of Singapore

Singapore is an island state, just south of the Malay Peninsula. Singapore is one of the 16 smallest countries in the world at 707.1 sq km. It is also one of the most densely populated countries, with a population of 4.59 million people. The country's name is derived from the Malay "Singa" and "Pura" which together mean "Lion City". According to legend, the island was a quiet fishing village when a young prince visited from nearby Sumatra. He mistook a majestic-looking animal for a lion and gave the island its name.

Singapore was a British settlement in the 19th century. It was an important trading port for ships plying between Europe and East Asia. Singapore thrived as a trading port and also as an export centre for rubber. Self-government was attained in 1959 when the Singapore Constitution was signed in London, releasing Singapore from British rule. Singapore became an independent country in 1965 and continues to blossom and develop diverse industries. Today, Singapore has an established manufacturing industry, it is a leading financial and business centre in Asia, and is growing as a vibrant medical, education and research hub. Singapore has become the world's busiest port and a major player in the shipping industry.

Singapore is a cosmopolitan country made up of people from all over the world. The society is multicultural, multi-religion and multilingual. There is an ethnic mix of Chinese (75.0%), Malays (13.7%), Indians (8.7%), Eurasians and smaller minority groups (2.6%). English is the main language for administration and business, and other official languages include Malay, Chinese, and Tamil (Ministry of Information, Communication and the Arts, 2008).

Health care system

In 2005, Singapore spent 3.7% of its gross domestic product on health care (Ministry of Health, 2007). The philosophy behind Singapore's health care system is that good, affordable health care will be made available to all Singaporeans through subsidised medical services. At the same time, the health care system encourages personal responsibility towards medical expenses through a system of co-payment. Hence health care expenses are paid for through a combination of taxes, medical benefits, insurance, compulsory medical savings and out-of-pocket payment. There are several schemes in place to help Singaporeans "co-pay" their health care expenses. "Medisave" is a national medical savings scheme which helps individuals set aside a portion of their monthly salary for future health care needs for themselves or their family. A second scheme, "Medishield", is an optional medical insurance scheme which can be used to pay for prolonged illnesses and larger hospital bills. Another scheme called "Medifund" is a government financial assistance scheme to help patients from low-income groups. Needy families can also apply for financial assistance from charitable organisations.

Singapore's health care system is organised into three levels of care: primary health care, hospital care, and intermediate and long-term care. Primary health care refers to preventive health care and health education. Private practitioners provide about 80% of primary health care services while government polyclinics provide the remaining 20%. Hospital care is covered by seven public hospitals, as well as six specialty centres for cancer, cardiac, eye, skin, neuroscience and dental care services. Lastly, intermediate and long-term care needs are met by community-based health care providers. Facilities available include community hospitals, home nursing and home therapy services, day rehabilitation centres, daycare centres, and nursing homes. These facilities are funded by government grants, public donations, private donors and/or religious organisations. The community sector also provides a broad range of programs for disability services. These range from day activity centres where clients learn and practise basic self-help skills, to apprenticeship and work placement programs.

Education system

Singaporean children typically begin the first year at primary school at the age of six. The mainstream education program consists of six years of primary school education and four or five years of secondary school education. At the end of secondary school, students sit for the Cambridge GCE "O" Level examinations, which are conducted by examiners in the United Kingdom. Subsequently, students wishing to pursue tertiary education may enter a pre-university course (two years) followed by a degree course at university, or a polytechnic to obtain a diploma in their chosen field.

Many primary and secondary schools have trained "special needs officers" who provide learning support to students identified with learning difficulties. Additionally, some students are referred to external therapists for further therapeutic intervention. Alternatively, special education is available for children who are unable to fully participate in a mainstream school. These schools offer a low teacher-to-student ratio to give increased individual attention to each child. They may provide both academic programs and non-academic programs such as teaching independent living skills or pre-vocational training to prepare students for future employment. Students may also receive additional support from professionals such as speech-language therapists, occupational therapists, social workers and psychologists. Some special schools cater for specific client populations. For example, there are specialised schools for children with autism spectrum disorder, intellectual disabilities or cerebral palsy. These specialised schools also offer more training and educational resources for parents of children with those conditions.

History of speech therapy in Singapore

The history of speech therapy in Singapore is not well documented but interviews with key pioneers in the profession dates the start of the profession to be from the early 1960s, when a few expatriate speech-language therapists arrived in Singapore. The government noted the shortage of this profession and scholarships for overseas education as a speech-language therapist were awarded in the mid-1960s. The first speech therapy department was set up in the Singapore General Hospital in 1968. Subsequently, speech therapy departments were set up in a few hospitals in Singapore. These departments were mostly a one-staff set-up, and were mainly involved in speech and language intervention for children.

As the profession evolved, the scope of the speech-language therapist grew to include dysphagia assessment and management in the 1990s. Another monumental change occurred in 1994. A professional association – the Speech-Language and Hearing Association, Singapore (SHAS) – was created that year. In 2003 to 2004, the executive committee drew up the Code of Ethics and Scope of Practice with endorsement by the members. These documents serve as reference for the association and employers in Singapore.

Since the 1960s, local speech-language therapists had to train overseas as there were no local speech therapy programs. They would go mainly to universities in Australia, United Kingdom and the United States of America. This trend is slowly changing as Singapore has most recently started a local Graduate Entry Masters Programme. In 2007, after several years of preparation by a group of senior speech-language therapists and discussion with relevant government bodies and the National University of Singapore, the Master of Science in Speech and Language Pathology was launched at the National University of Singapore under the Division of Graduate Medical Studies. This two year full-time program is based on La Trobe University's curriculum and uses a problem-based approach in its teaching. The program accepted 20 applicants in its first intake. The intake is biennial due to the limited number of local clinical placements available for the students. The first group of students will graduate at the end of 2008. Most of the students applied for and received scholarships from major health care organisations, community health care organisations and special schools in Singapore. Upon graduation, these scholars will take up a speech-language therapist position in their respective organisations and serve out a bond period.

A mentorship program is currently being drawn up and will be available in time to guide these students when they begin their new careers in speech therapy next year. The next intake of students has been selected and will commence their studies in January 2009.

Demographics of speech-language therapists

Speech-language therapists in Singapore are commonly called "speech-language therapists" or "speech and language therapists" (SLT). There are 125 practising SLTs in Singapore. The largest portion, 40%, are employed by hospitals, while 24% are in community-based services, 30% are in the private sector and 6% are employed in private schools (Membership statistics obtained from the Speech-Language and Hearing Association Singapore, September 2008). The full spectrum of speech pathology services is available in Singapore, providing services to clients throughout the lifespan. Places of practice may be categorised roughly into five categories, as described below.

Special schools

SLTs in special schools provide speech and language support to students enrolled in these schools. They may adopt a classroom-based intervention model or pull-out model, depending on the needs of the child. They may also be involved in managing feeding issues for students with severe physical disabilities. Further, SLTs work closely with the school teachers to facilitate the child's learning in the classroom.

Restructured hospitals

SLTs in the six restructured hospitals offer a wide range of services to both inpatient and outpatient clients, focusing on specific client populations. KK Women's and Children's Hospital caters mainly to the paediatric patient population, offering services in cleft and craniofacial anomalies, developmental speech and language disorders and paediatric feeding. Singapore General Hospital and National University Hospital offer both paediatric and adult services. The remaining three hospitals cater only to the adult population. Services in all these hospitals typically include those for voice disorders, acquired speech and language disorders, swallowing disorders, fluency disorders and head and neck cancer management. With advances in skill, SLTs in these centres also offer fibreoptic endoscopic evaluation of swallowing (FEES) in the diagnosis and management of swallowing disorders.

Intermediate and long-term care (ILTC) facilities

ILTC facilities include rehabilitation centres, daycare centres and residential nursing homes. SLTs in rehabilitation centres and daycare centres may serve either paediatric or adult clients, depending on the facility's programs. Most rehabilitation centres schedule hourly therapy sessions for clients on a regular basis, whereas daycare centres provide day-long programs for clients up to 5 days a week. SLTs are typically involved in management of speech, language and swallowing issues. They also work closely with clients' caregivers on how to continue the management plan at home. In contrast, SLTs working in nursing homes serve a largely elderly clientele and often spend a significant amount of time working with care staff in the areas of feeding and swallowing management.

Specialised centres

Some SLTs in Singapore work in highly specialised areas, such as assistive technology. They are involved in recommending appropriate augmentative and alternative communication devices and training clients to use them. SLTs in such centres typically work very closely with other professionals such as occupational therapists.

Private practices

Most of the private practitioners in Singapore offer services to children for developmental speech and language disorders. A small group also offers services to adults for acquired language disorders and swallowing disorders. They also provide services to community-based health care providers.

Professional development

To ensure that local SLTs continually upgrade their skills, a range of professional development courses are organised throughout the year through three sources. Firstly, SHAS organises an average of three professional development courses involving internationally renowned speakers in the field every year. These workshops are open to all SLTs in Singapore and the region. In recent years, more special interest groups have also started to increase opportunities for sharing of experiences and discussion of ideas in specific professional areas in Singapore. Private training providers also organise varied training events for health care professionals throughout the year. Often, these are workshops targeting management of children with special needs and developmental speech and language disorders.

The restructured hospitals are the third source of training providers, filling in the gaps for training that caters towards management for the adult population. Singapore's Ministry of Health allocates funds each year towards bringing in overseas experts to update the skills and knowledge of the local speech-language therapists under the Health Manpower Development Plan (HMDP). Over the years, experts like Dr Jacintha Douglas, Dr Pam Enderby, Dr Giselle Mann, Dr Maggie-Lee Huckabee and Dr Leonard LaPointe, to name just a few, have visited Singapore under this scheme to train local SLTs in their areas of specialty.

Challenges

The demand for SLTs is increasing in all sectors and caseloads. Increased SLT numbers will be needed to allow lower therapist-to-client ratios and shorter waiting times for clients. In particular, manpower is needed in elderly care to meet the demands of an ageing population in Singapore. The restructured hospitals were recently granted substantial funding by the Ministry of Health for additional staff over the next five years. Likewise, more SLTs will be needed in community-based step-down care (ILTC) to service elderly clients.

Further, with increasing awareness of special needs in some children, more SLTs are needed to provide intervention to children in younger age groups. More SLTs are also needed to support children attending mainstream schools, and to provide education and guidance for teachers to identify and help students with speech-language difficulties. This is also a reason why the local Masters program in speech and language pathology has been eagerly anticipated, as it will help to provide a constant stream of qualified SLTs to meet the increasing demand for speech therapy services in Singapore.

Increased staffing will also allow SLTs to attend continuing professional development programs to upgrade and update their skills and knowledge, and to venture into the realms of research. Since the clientele of SLTs tends to come from bilingual backgrounds, it is frequently difficult to apply international (Standard English) norms to assessment and intervention. Hence local research is important to build up a base of evidence for language assessment and intervention.

On the professional front, there is a need to standardise practices and look into ethical issues surrounding the practice of speech therapy across sectors and organisations in Singapore. The professional body, SHAS, is fronting these efforts in a bid to protect the profession and ensure high professional standards in Singapore. There is also the continuing need to increase awareness about our profession's roles and scope of practice to the public and other health care professionals. These efforts are again being driven by SHAS, with the formation of a new sub-committee that looks into outreach activities. The inaugural Speech Therapy Day was declared on 1 November 2008. All speech-language therapists were encouraged to participate actively in this event. This move was exciting as it earmarked another chapter in our profession's young but vibrant history.

References

Ministry of Health. (2007). *Heathcare financing*. Retrieved September 2008 from http://www.moh.gov.sg/mohcorp/hcfinancing.aspx?id=104

Ministry of Information, Communication and the Arts. (2008). *Country profile: People*. Retrieved September 2008 from http://www.sg/explore/profile_people.htm

Elizabeth Jane Teh received her degree from Macquarie University, Sydney, and is now working with clients with physical disabilities at the Society for the Physically Disabled. She is also the Vice President of the Speech Language and Hearing Association Singapore.

Melissa Hui Ling Chua graduated from University College London and heads the Speech Therapy Department at Singapore General Hospital.

Correspondence to:
Elizabeth Jane Teh
Speech Language and Hearing Association Singapore
Killiney Road Post Office
PO Box 2142, Singapore 912353
phone: +65 6326 5481
fax: +65 6326 5497
email: lizjteh@gmail.com

Melissa Hui Ling Chua
Head, Speech Therapy Department
Singapore General Hospital
Outram Road, Singapore 169608
phone: +65 6321 4549
fax: +65 6326 5497
email: melissa.chua.h.l@sgh.com.sg

WEBWORDS 32

Multiculturalism in communication sciences and disorders

Caroline Bowen

When Hollywood cameraman John Alton wrote the first book on cinematography in 1949 he named it *Painting with Light*. His beautiful title may have been the inspiration for a radio sketch for **Hancock's Half Hour**[1] by Galton and Simpson (1958) called 'The Publicity Photograph'. Persuaded by Miss Pugh (Hattie Jacques), Bill (Bill Kerr) and Sid (Sid James) that he needs to update his image, Hancock (Tony Hancock) and Sid consult flamboyant theatrical photographer Hilary St Clair (Kenneth Williams: he of the soaring triphthongs). When Sid tells St Clair, "I want you to take some snaps", he is offended! "Snaps, Sidney? I don't take snaps; I paint with light!"

The worlds of Sid and Hilary were poles apart. Whether he expressed the request that way deliberately, provocatively or innocently, the culturally insensitive Sid had really blundered with one inappropriate word creating outrage and indignation. Precipitating such offence is the last thing we would want to do as speech-language pathologists working with multicultural populations and aiming for culturally effective care. But how can we nurture our cultural competence, and are there useful tips to be had?


Caroline Bowen

Tips

Frequent requests for "therapy tips" in electronic discussion and at professional development events can be irritating. They can even prompt an urge to mount one's high horse and emulate St Clair's snappish retort. *"Tips? Tips?* I don't do *tips*! I put solid theory and evidence into practice!" or whatever the speech-language pathology equivalent of *painting with light* might be. It must be said, however, that in intervention, clever little tips often work. Therapy breakthroughs may come when, without abandoning EBP, we put a tip from somewhere into practice. We play educated clinical hunches based on evidence and experience, apply inspired brainwaves shared by seasoned colleagues, or implement a natty trick from our repertoire that has worked for us before in making our jobs as scientific clinicians easier – especially with more complicated clients. Some clients with complex presenting pictures are from culturally and linguistically diverse (CALD) populations and a critical aspect of their complexity may be found in our personal shortfalls in **cultural competence**[2].

Cultural competence

The one helpful tip for us to know is that while cultural sensitivity is an essential component of cultural competence, it is not the whole story. Cultural competence is achieved through focused effort over time. It is a competency that implies the capacity to work effectively with people from diverse cultural and ethnic backgrounds, or in situations where several cultures coexist. It includes being able to understand the language, culture, customs and behaviour of other individuals and groups. In professional contexts it incorporates making appropriate recommendations; understanding to whom any recommendations should be made, and why; knowing when and when not to make recommendations; and designing suitable programs and materials that may or may not be culture specific, and delivering them appropriately. Culturally effective health care and education take cultural competence to a higher level and see the development of mutually respectful dynamic relationships between providers and consumers.

Steps

The overlapping steps in developing cultural competence go beyond tasks like having clinicians and administrators watch multicultural television, crib key no-no's for a culture or country from a tourism guide's tips for **responsible travel**[3], or make a general effort to be culturally sensitive.

Awareness

The first step in becoming culturally competent is to develop awareness: valuing population diversity, acknowledging cultural norms, attitudes and beliefs; owning personal prejudices, stereotypes and biases; and recognising one's comfort zone and expertise in a range of situations. Taking this first step enables us to extend ourselves physically and mentally to client populations, and to take the next step.

Knowledge

The second step is to acquire knowledge and understanding of other cultures and of how those cultures perceive us, and our culture, and our services. To do so we need to know what "us" means to others and who "they" are. To find out we can indeed watch television channels like **SBS**[4], view foreign movies, travel, read about other cultures, attend art exhibitions, cultural ceremonies, festivals and events, enjoy new cuisines, volunteer overseas (Bleile, Ireland & Kiel, 2006) and share our experiences with others.

Skills

The third is to acquire cross-cultural skills through coursework, reading, networking, mentoring, experience, informal "exposure", interaction and ongoing self-monitoring of personal feelings and reactions. This is the fun part that can include new friendships and professional working relationships with people from different cultures, learning a new language or dialect, understanding social mores, overcoming degrees of xenophobia, and becoming more accommodating and comfortable in cross-cultural settings.

Practice

At a practical level, in the context of effective health care and education, we can then work dynamically with clients in assessing what works and what does not, negotiate between client groups' beliefs and practices and our own profession's culture, and evaluate our performance, materials, interventions, programs and service delivery.

Institutions

As service providers and employers, many health care organisations, university programs in communication sciences and disorders, and professional associations have recognised the importance of going beyond antidiscrimination requirements and articulating their commitment to cultural competence. In so doing they have organised cultural-competence initiatives for their staff, students and members. This recognition may have arisen in part from increased awareness of the social impact of diversity, and heightened sensitivity provoked by societal and legal pressure from various population groups. As well, financial administrators behind these institutions may perceive that a commitment to diversity makes excellent business sense. The long-term effect of committing to cultural competence as an ideal may be to change institutional policies and procedures and to improve **employment equity**[5].

Resources

The International Guide to Speech Acquisition (McLeod, 2007), discussed in a 2008 **Lingua Franca**[6] interview with its editor on ABC radio is an essential addition to the library, not only for clinicians working with multicultural populations of speech impaired children but for *any* SLP in the process of acquiring cultural competence.

On the ASHA website, Stockman, Boult and Robinson (2004) provide an enlightening account of the challenges faced by academic programs in including and infusing multicultural issues in their curricula. Other pages of note on the ASHA site are those devoted to the **Office of Multicultural Affairs**[7], Multicultural Affairs Resources, Multiculturalism/Multilingual Issues in CSD, and fact sheets and readings on serving CALD populations. The University of Minnesota's **clinical decision making with CALD learners**[8] with its associated self-study curricula provides a wonderful resource for the motivated learner, and the University of North Carolina at Chapel Hill has a helpful list of **resources**[9]. On a related topic, Sharon Glennen at Towson University talks about **language development**[10] in internationally adopted children.

A round-up of Australian resources includes multilingual speech and swallowing **information**[11] from Queensland Health, while a series from NSW Health entitled "Does someone you know need a speech pathologist?" comprises **information**[12] about common speech problems in children and adults and how a speech pathologist can help in Arabic, Cantonese, Croatian, English, Italian, Korean, Macedonian, Portuguese, Russian, Spanish, Thai, Turkish and Vietnamese.

As a quick web search will show there is a plethora of relevant resources, and those included here represent just a small sample.

References

Bleile, K. M., Ireland, L., & Kiel, T. (2006, 26 Dec). The professions around the world: New web-based directory goes global. *The ASHA Leader*, *11*(17), 8–9, 26–27.

Galton, R. & Simpson, A. (1958). *The publicity photograph*, BBC Radio. Retrieved 20 Oct 2008 from http://www.archive.org/details/Hancocks_Half_Hour

McLeod, S. (Ed.). (2007). *The international guide to speech acquisition*. Clifton Park, NY: Thomson Delmar Learning.

Stockman, I. J., Boult, J., & Robinson, G. (2004, 20 July). Multicultural issues in academic and clinical education: A cultural mosaic. *The ASHA Leader*, pp. 6–7, 20.

Links

1. http://www.archive.org/details/Hancocks_Half_Hour
2. http://www.med.umich.edu/Multicultural/ccp/culcomp.htm
3. http://www.lonelyplanet.com/responsibletravel/travel_tips.cfm
4. http://www.sbs.com.au/
5. http://www.une.edu.au/eeo/
6. http://www.abc.net.au/rn/linguafranca/stories/2008/2387587.htm
7. http://www.asha.org/about/leadership-projects/multicultural/about.htm
8. http://www.slhs.umn.edu/bimep/cdmldl.html
9. http://www.fpg.unc.edu/~nv/pages/resources.cfm
10. http://pages.towson.edu/sglennen/index.htm
11. http://www.health.qld.gov.au/multicultural/public/speech.asp
12. http://www.mhcs.health.nsw.gov.au/mhcs/topics/Health_Services.html

Webwords 32 is at http://speech-language-therapy.com/webwords32.htm with live links to featured and additional resources.

EMERGING TRENDS IMPACTING ON ETHICAL PRACTICE IN SPEECH PATHOLOGY

Marie Atherton and Lindy McAllister

The significant societal, systemic and technological changes of the past two decades have contributed to the Australian health system now facing a number of specific challenges. The increasing diversity and sophistication of health technology, the proliferation of legislation, the ageing health workforce and changing community demographics are key trends impacting on the future viability of health service provision within Australia and internationally. These trends will also impact on health practitioners' ability to provide care that meets demand while simultaneously meeting the moral and ethical considerations which are inherently tied to health service provision. In 2006, Speech Pathology Australia members identified a number of key ethical concerns related to these trends and challenges, including not only those that arise at an individual client–practitioner level but also at a systemic level. Specifically, Speech Pathology Australia members expressed concern regarding prioritisation of services, the impact of fiscal constraints on service delivery, and the potential for conflict between professional values and values that may underpin management decisions and health policies. Ethical issues associated with the delegation of tasks, the need for continuing professional development and the use of evidence based practice were also identified. For the profession to meet current and future challenges, it is essential to remain vigilant and responsive to trends and changes that will impact on service provision. Practitioners must also demonstrate an ethical awareness that extends beyond specific "ethical dilemmas" as may arise in clinical practice to thinking and acting ethically in our daily routines.

Keywords:
ethics,
evidence based practice,
health workforce,
population trends,
resource allocation,
scope of practice

The speech pathology profession has undergone significant change over the past 15–20 years, and these changes have important implications for the ethical practice of speech pathology. The knowledge and skill-set of the discipline have changed dramatically due to both internal and external forces. Changes in work settings, types and complexity of clients, new technologies in health care, and reimbursement for services continue to raise new challenges for speech pathologists as they seek to implement evidence based ethical practice. Emerging technologies that can be used for telehealth, a growing trend for working in developing countries, and social models of practice offer exciting opportunities for expanding our practice along with increased risks to ethical practice.

Key trends impacting on ethical practice

A number of key trends raise the possibility of ethical risks to speech pathology practice as a whole.

Increasing health demands from an ageing population

The fact that Australia's population is ageing contributes to an increasing need for health services both in primary and tertiary care (Australian Government Productivity Commission, 2005). The increasing demand for limited health services poses a number of ethical considerations for the health practitioner. There is a need to ensure the limited health dollar is used most effectively and efficiently, but also to determine, at a transparent level, who will benefit from the limited health dollar and who will miss out. Often it is the speech pathologist who must adhere to the directives of individual organisations regarding prioritisation of caseload, while at the same time making independent decisions regarding how prioritisation should look. This often presents many ethical challenges for clinicians who must work hard to meet both client and organisational needs in an ethical manner.

Furthermore, the increasing demographic of well-educated, articulate and financially well-off elders will see a rise in demand for more intensive and conveniently located services, in community settings and/or client's homes. The challenges and opportunities this will pose in relation to service provision by speech pathologists are likely to include the increasing use of allied health assistants, the use of telehealth and an increased emphasis on community-based models of service delivery. Some of these issues will be discussed later in this article.

Increased prevalence of chronic disease and disability

Advances in the medical and surgical management of a range of conditions, diseases and injuries have reduced mortality, but increased morbidity and life expectancy. Examples include the improved survival rate of very premature infants and the survival of persons with severe head injuries. Life-prolonging procedures and technologies result in survivors now presenting with significant long-term disabilities that extend to communication and swallowing. As is likely the case with all health professionals, speech pathologists may hold concerns about the quality of life that ensues for people living with severe and complex disabilities.

Concerns may exist in relation to service provision for persons with chronic disease and disability; specifically, where this service should sit as part of a larger caseload, and how the speech pathologist should maximise the potential of clients with chronic disease and disability within the limited available resources. Ongoing limitations in the health budget will continue to place pressure upon clinicians to demonstrate the benefits of intervention with this group of clients, as with all clients; however, such gains may be more difficult to quantify if they are made over extended periods of time as is often the case with chronic disease and disability.

Chronic shortage of health workers

The chronic shortage of health workers in Australia has been recognised by both state and federal governments, and a suite of initiatives have been proposed to address the inherent problems of inadequate service provision (Australian Government Productivity Commission, 2005). For the speech pathologist, as with all health workers, a number of ethical considerations arise in relation to this, apart from those addressed earlier in relation to caseload prioritisation.

Speech pathologists may, on the one hand, consider that any service is better than no service. However, when armed with the knowledge and evidence that outcomes are maximised by certain types of interventions provided over certain timeframes, speech pathologists face a dilemma as to how and what to provide. Cost-driven decisions based on ever increasing waiting lists and caseloads may force clinicians to terminate client treatment even though the potential for ongoing client gains is very real.

The increasing profile of allied health assistants and support workers reflects the unmet demand for health services. Suitably qualified allied health assistants offer an opportunity for allied health practitioners not only to increase the level of service provision to clients, but also to expand the profession's scope of practice. The concern for the speech pathologist, however, may be in understanding the role of the allied health assistant and the adequacy of their prior training, and in determining what type of work should be delegated. While guidance is provided to the profession through the *Parameters of Practice* document (Speech Pathology Australia, 2007b), this document reflects the position of the membership only and as such may hold only limited weight with other key stakeholders. Given that legal and professional responsibility rests ultimately with the clinician, the speech pathologist may grapple with questions related to the type and quality of services to be provided by allied health assistants, the degree of supervision that should be provided, and the mechanisms that must be in place to ensure client outcomes and safety are maximised. The issue of protectionism and its potential to limit the development of the allied assistant role will need to be addressed by the profession, as will the standards of allied health assistant training, supervision and monitoring.

Increased complexity of clients and settings

Speech pathologists are providing services to clients who are sicker, and who present with more complex conditions, in more complex medical and community settings than ever before. Practitioners rightly express concern regarding the acquisition of skills and competencies to meet the demands associated with working effectively and safely with such clients. Unless a clinician is working in an organisation which has a well-developed competency attainment program, the individual clinician may be left to determine whether they possess the skills and knowledge that is required. As stated in the Association's *Code of Ethics* (2000), as practitioners we must "recognise the limits of our competence" (p. 2). This issue may be further compounded when an organisation does not acknowledge the benefit or need to support the clinician in attaining the necessary skills. A situation may then arise where the clinician must decide whether to refuse to see the client, see the client and engage in practice outside their level of expertise (hopefully while simultaneously engaging in professional development and mentoring to achieve competence in management of such clients), or refer the client on to another service, if indeed one exists. Clinicians and clients jointly must decide whether any service is better than no service, if geography or client immobility or social isolation preclude access to other more skilled clinicians.

Increasing client complexity has also coincided with increasing costs associated with professional indemnity insurance and with increasing rates of professional litigation. Practitioners, while acknowledging the right of all clients to receive the best care available, may be reluctant to engage in clinical practices that have the potential to pose an "increased risk" to the client. Not only does such a decision, based upon fear of litigation, restrict client autonomy in relation to their treatment, it also curbs aspects of speech pathology practice.

The increasing complexity of clients also raises the issue of caseload prioritisation. Nowhere is this more evident than in the profession's increased focus on the management of clients with dysphagia. The emphasis upon reduced length of hospital stay and community-based rehabilitation has seen those clients with dysphagia prioritised over those with communication problems. This surely poses an ethical dilemma when the maximisation of both communication and swallowing functions is (and must remain) a joint priority of the profession. Such situations are premised on the need for clients to be "safe" enough to discharge. Safe swallowing is undoubtedly needed, but so too is "safe" communication which will allow a client to maintain some level of social interaction with family and community to preserve mental health, and for example, to call for help in emergencies.

Increased emphasis upon evidence based practice

The need for speech pathologists to inform their practice through the best available evidence was addressed in the first of the "Ethics Conversations" columns (Eadie & Atherton, 2008). As noted in that article, "best evidence needs to be integrated with clinical reasoning in order to make ethical decisions around service delivery for each of our clients" (p. 94). Undoubtedly, it is an ethical responsibility for individual clinicians to know what the literature says and what the available evidence is.

It is also critically important that speech pathologists stay abreast of developments in clinical knowledge and practice by engaging in continuing professional development (CPD) – this is an ethical responsibility, as reiterated in the Association's *Code of Ethics* (2000): "We strive to continually update and extend our professional knowledge and skills… and work towards the best possible standards of service to our clients" (p. 3).

Ethical concerns may arise, however, when due to caseload and other demands, time is not available to undertake CPD and/or access to relevant facilities and technology, such as the Internet, is restricted. This may be particularly the case for those services limited by budget and for those clinicians in rural and remote areas where access is not reliable. Such situations raise questions of "whose responsibility is it to ensure competence and fitness for practice: the employer's or the speech pathologist's?" Where employers decline or are unable to support CPD, our ethical duties to clients and colleagues and the profession mean individual speech pathologists must assume responsibility (and cost, in dollars and time) for their own CPD. The means by which a practitioner ensures currency of knowledge and ongoing fitness to practice may require creative and lateral thinking. A willingness to access mentoring, to engage the assistance and expertise of colleagues, as well as devote time to ongoing education may conflict with long waiting lists and organisational targets.

Extended scope of practice

The ongoing development of our profession together with workforce re-engineering precipitated by the health workforce shortage will lead to changes in our scope of practice. At one end of the continuum, scope of practice will extend to include roles and tasks not currently part of our practice, and at the other end our scope of practice may retract as more tasks are delegated to assistants or other professionals. Considerations in relation to changed scope of practice highlight a number of key professional issues: identifying the scope of speech pathology practice, determining the role of governance and risk management frameworks, specifying responsibilities for supervision of those to whom tasks are delegated, and determining the boundaries of legal liability.

Speech pathology practice in Australia is informed by key Association documents such as *Scope of Practice in Speech Pathology* (Speech Pathology Australia, 2003) and *Parameters of Practice* (Speech Pathology Australia, 2007a). Association position papers further inform specific areas of specialist clinical practice – for example, *Dysphagia: Modified Barium Swallow; Tracheostomy Position Paper; Fiberoptic Endoscopic Evaluation of Swallowing* (Speech Pathology Australia, 2005a, 2005b, 2007a). However, a speech pathologist's involvement in particular clinical practices will always be dependent upon a number of key factors including the preferred model of service delivery of an employing organisation, the support and explicit authorisation of an employing organisation for speech pathologists to perform particular tasks, access to training and demonstration of competence, and consideration of clinical governance issues. The challenge for the practitioner will be to ensure that service delivery models in which they work meet the requirements of minimising risk and harm, while at the same time facilitating new skill development and ongoing expansion of the profession.

Community expectations

Through access to the Internet and other forms of media, consumers are now better informed about health care services. They have a greater expectation that services provided will reflect best practice and will provide value for money. This expectation requires practitioners to remain abreast of current knowledge and practice, and the information gleaned will arm consumers with the confidence to question practices which may be inappropriate or outdated. In addition, consumers may request services they have read or heard about which our profession considers to be unsupported by evidence. Speech pathologists will therefore need to be aware of the evidence across the range of their practice and be able to explain and defend their recommendations for management.

Increased consumer expectations will also inevitably lead to demand for more convenient location of services, including services closer to home and actually in the home. Practitioners therefore will need to consider new models of service delivery. As services increasingly move from secondary and tertiary medical settings to primary care (community-based) settings, practitioners may need to extend their repertoire of skills in needs assessment, training of others, delegation of tasks and supervision and mentoring of assistants, volunteers and carers.

Telehealth offers considerable promise for more flexible community-based and domiciliary service delivery. Elspeth pathology using high-end video-teleconference suites is already in use across Australia, enabling practitioners in major centres to provide services to rural and remote clients. Elspeth pathology using web-based delivery into clients' homes is rapidly becoming an option (Theodoros, 2008). These developments raise a number of ethical and legal concerns including maintaining privacy, confidentiality and security of information transmitted and held in electronic health records (Stanberry, 2000); ensuring standards for providing legally and professionally recognised services (Reed, McLaughlin & Milholland, 2000); and issues of reimbursement for services delivered by telehealth (Chetney, 2002). A growing ethical concern about telehealth in any form (via video-teleconference suites or webcam) is the impact it may have on what Stanberry (2000) refers to as the "traditional clinician–patient relationships" (p. 615). Cornford and Klecun-Dabrowska (2001) caution against "substitution of care with treatment" (p. 161). Speech pathologists do not yet have enough experience with telehealth to know how it impacts on consumer satisfaction with services.

The views of Australian speech pathologists regarding emerging ethical risks to practice

The authors ran a workshop at the National Conference of Speech Pathology Australia in Sydney in May 2006 to ascertain what Australian speech pathologists perceived as emerging ethical risks to practice. After a brief presentation summarising some of the above trends, some 50 speech pathologists were asked to discuss in small groups and then summarise emerging ethical issues. These are presented in table 1. The emerging ethical issues identified by workshop participants fell into 10 categories of concern. By far the largest category of concerns were those related to resource allocation. These categories are discussed below.

Discussion

The emerging ethical issues identified in the workshop align well to the trends presented in the first part of this paper, particularising these to our professional practice, as well as raising some new concerns. Of interest in the discussions at this workshop was the focus on ethical issues at the systemic level rather than at the individual client–practitioner level. Inevitably, system level pressures will impact on services to clients but the discussion in the workshop was primarily around the larger contexts in which ethical practice must be ensured. Speech pathologists at the workshop spoke of the ethics of a medical emphasis on "saving lives at all costs", especially when the costs to quality of life are high. As a result, allied health professionals increasingly work with clients with complex disabilities who have care needs across the lifespan. This in turn impacts on resource allocation and prioritisation of services, which are already under strain with population ageing, fiscal constraints and a shrinking health care workforce.

Workshop participants identified several worrying trends in resource allocation and prioritisation, including the cutting of services to some client groups (e.g., those with fluency or voice disorders, children with speech and/or language impairments in the absence of concurrent behavioural problems) and some age groups. For example, in some states without school-based therapy services, school-aged children are not a high priority at health services. Further, service management policies sometimes limit the number of occasions of service to clients in ways which are not consistent with evidence based practice or which may lead to discharge before an episode of care has achieved the established goals. As a result, practitioners often experience tension and conflict between the values of the profession and the values underpinning management policies (Cross, Leitão & McAllister,

Table 1. Emerging ethical concerns for Australian speech pathologists

Medical focus on saving lives versus quality of life
Resource allocation and prioritisation issues
Tension between service policies and values of profession
Restricting rights of others by focusing on particular service areas
Narrowing of services to some groups (e.g., fluency, voice)
Families forced to seek private therapy due to decreased service in public sector
Prioritisation – clinician choice versus service direction
Clients with speech and language alone – low priority compared with clients with behaviour problems for "early intervention"
Uneven decision making – acute versus disability
Tightening of eligibility for service related to age
How you engage with clients – limitations of service available
Individual/one-size-fits-all decisions
Push for discharge versus completion of episode of care
Time limits imposed not evidence-based practice
Services to clients of non-English speaking backgrounds especially in remote areas

Occupational Health and Safety (OH&S) risk management for organisation overrides client quality of life
Changing scope of practice
Consultancy role for speech pathologists
Expansion of roles in workplace in areas of care planning, advocacy

Use of allied health assistants/support workers
Training needs
Clarification of roles
Accountability to whom? ward? team?
Safety and risk

Discipline specific versus multi-disciplinary student placements
Managing expectations of clients
Private practice standards
Accreditation issues

Evidence based practice
What evidence? New/old evidence?
Hard to "manage" the evidence
Lack of evidence
Are we ethically bound to research areas with poor/little evidence?

Fitness for practice
Problems with access to continuing professional development (CPD)
Supervision re "standards" for rural and remote speech pathologists
Access to professional development resources and opportunities restricted by employers (e.g., backfill time not available to go to CPD; firewalls prevent access to Internet at work)

2008). Such conflicts highlight the needs for continued work on expanding our evidence base and for advocacy at individual and professional levels. McLeod, writing in Body and McAllister (in press), suggests that reference to the United Nations *Convention on the Rights of the Child* (1989) and *Rights of Persons with Disabilities* (2006) may provide speech pathologists and their professional associations with arguments against resource allocation and prioritisation which exclude children and people with disabilities from speech pathology services.

It is clear that resources for health care need to undergo an allocation process; however, how such decisions are made is an ethical matter. If we want our clients to have access to a "decent minimum" (Beauchamp & Childress, 2009, p. 260) of health care, then the principles of "equal share" and "need" can be drawn upon. Allocating resources on the basis of an equal share for all belies the reality that some people have more health care needs than others. It may also result in virtually nobody getting effective care, "the jam being spread so thinly it can no longer be tasted" (Sim, 1997, p. 127). The alternative of providing different levels of health care according to need presents some challenges as well. A disproportionate amount of service may be needed to achieve gains, for example, for those whom we label "disadvantaged". On the other hand, a small amount of service may be all that is required to achieve significant outcomes for some people in so-called low priority categories. Body and McAllister (in press) consider the ethics of health economics and provide some discussion of factors to be considered in making resource allocations across health services and within speech pathology services themselves.

One of the outcomes of reducing services available in the public sector has been the growth of private practice. While recognising the many benefits of this trend to both clients and the profession, workshop participants expressed concern about standards in private practice, especially with regards to knowledge of the evidence base and maintenance of fitness for practice. It is worth noting that a majority of inquiries about possible ethics complaints received at National Office of Speech Pathology Australia pertain to service provision within private practice.

Staying on top of the growing evidence base for our practice and maintaining fitness for practice are concerns for the whole profession, not just private practice. Earlier in this paper we raised the issue of responsibility for CPD, which becomes particularly important as consumer expectations and knowledge of our evidence base increase with rising Internet access and information literacy of the community. In this context, and also that of changing scope of practice, ensuring fitness for practice of new graduates, clinicians changing work sectors (e.g., from health to disability, from education to health), and rural and remote practitioners becomes a major ethical obligation for employers, individuals and the professional association. Ensuring the competence and standards of practice for allied health assistants and other support workers will also become a major ethical issue as reshaping of the workforce occurs and delegation of some speech pathology tasks becomes more common.

The ethical issues involved in delegation should not be allowed to mask what Threats, writing in Body and McAllister (in press), refers to as "protectionism", however. In the absence of evidence that speech pathologists deliver superior treatment to that provided by assistants under their supervision, Threats argues that there are ethical considerations (as well as economic considerations) in allowing the extension of speech pathology services using assistants and volunteers to reach a greater number of people than the speech pathology workforce alone could deliver.

While fiscal constraints, workforce concerns, population trends and consumer preferences are driving shifts in resource allocations and modes of service delivery, increasing litigation is also driving management policies. As organisations seek to limit risk and litigation, some practitioners in the workshop reported incursions on clients' autonomy and quality of life.

One workshop participant gave the example of an adult client requesting and successfully managing scotch thickened to accommodate his dysphagia, only to have this decision overturned by a risk-averse management. A "one-size-fits-all" approach to services is not working to ensure access and equity for all actual and potential speech pathology clients.

Concluding comments

Our workplaces will continue to experience significant societal, systemic and technological change, and in turn influence our practice. We will not be able to anticipate, prepare for, shield or pre-empt the impact of all these changes on ethical provision of our services. Consequently we need to stay vigilant, scanning the environment for trends and changes that may influence our practice, discussing their potential impacts on our services and engaging in CPD about ethics. As McAllister (2006) has previously discussed, we need to be ethically aware and think about ethics as a part of our daily planning, delivery and evaluation of services, not just as something that is called on when confronted with "dilemmas" pertinent to individual clients.

References

Australian Government Productivity Commission. (2005). *Australia's health workforce. Productivity Commission Research Report*. Canberra: Commonwealth of Australia.

Beauchamp, T., & Childress, J. (2009). *Principles of biomedical ethics* (6th ed.). Oxford: Oxford University Press.

Body, R. & McAllister, L. (in press). *Ethics in speech language therapy*. London: Wiley & Sons.

Chetney, R. (2002). Interactive home telehealth: moving from cost savings to reimbursement. Creative, proactive strategies help agencies turn telehealth into a revenue generator. *Telemed Today*, *9*(3), 19–20.

Cornford, T. & Klecun-Dabrowska, E. (2001). Ethical perspectives in evaluation of telehealth. *Cambridge Quarterly of Healthcare Ethics*, *10*, 161–169.

Cross, R., Leitão, S. & McAllister, L. (2008). Think big, act locally: responding to ethical dilemmas. *ACQ* 10(2) 39–41.

Eadie, P. & Atherton, M. (2008). Ethical conversations. *ACQ 10*(3), 92–94.

McAllister, L. (2006) Ethics in the workplace: More than just using ethical decision making protocols. *ACQuiring Knowledge in Speech, Language and Hearing*, *8*(2), 76–80.

Reed, G., McLaughlin, C. & Milholland, K. (2000). Ten interdisciplinary principles for professional practice in telehealth: Implications for psychology. *Professional Psychology: Research and Practice*, *31*(2) 170–178.

Sim, J. (1997). *Ethical decision making in therapy practice*. Oxford: Butterworth Heinemann.

Speech Pathology Australia. (2000). *Code of ethics*. Melbourne: Author.

Speech Pathology Australia. (2003). *Scope of practice*. Melbourne: Author.

Speech Pathology Australia. (2005a). *Dysphagia: Modified barium swallow*. Melbourne: Author.

Speech Pathology Australia. (2005b). *Tracheostomy management*. Melbourne: Author.

Speech Pathology Australia. (2007a). *Fibreoptic endoscopic evaluation of swallowing*. Melbourne: Author.

Speech Pathology Australia. (2007b). *Parameters of practice: Guidelines for delegation, collaboration and teamwork in speech pathology practice*. Melbourne: Author.

Stanberry, B. (2000). Telemedicine: barriers and opportunities in the 21st century. *Journal of Internal Medicine*, 247, 615–628.

Theodoros, D. (2008). Telerehabilitation for service delivery in speech-language pathology. *Journal of telemedicine and Telecare*, *14*, 221–224.

United Nations. (1989). *Convention on the rights of the child*. Geneva: Office of the United Nations Commissioner for Human Rights.

United Nations. (2006). *Convention on the rights of persons with disabilities*. Geneva: Office of the United Nations Commissioner for Human Rights.

Marie Atherton is the Senior Advisor Professional Issues at Speech Pathology Australia National Office in Melbourne. In her current role Marie supports the management of ethical complaints to the Association and provides professional and clinical knowledge input to a variety of project and policy activities.

Lindy McAllister is a Senior Council Appointed Member of the Ethics Board of Speech Pathology Australia. She is currently Deputy Head (Teaching and Learning) of the Mayne Medical School at the University of Queensland. Lindy has a long history in teaching and writing about ethics in speech pathology.

Correspondence to:
Marie Atherton
Senior Advisor Professional Issues
Speech Pathology Australia
Level 2, 11–19 Bank Place,
Melbourne VIC 3000
email: matherton@speechpathologyaustralia.org.au

FREE WATER PROTOCOLS

A review of the evidence

Claire Langdon

For many years in dysphagia management thickened fluids have been prescribed to patients who aspirate thin liquids. In the United States, certain facilities have allowed access to water for aspirating patients without an increase in adverse events. There is much interest in these "Free Water" protocols, which reportedly result in increased patient satisfaction and reduced dehydration. This article reviews aspiration pneumonia and factors that may contribute to development of respiratory infections. Free water protocols may be a useful alternative for patients with good oral care and minimal co-morbidities, though there is a need for further research to explore this.

Keywords:
dysphagia,
free water,
aspiration pneumonia,
dehydration

The most common reason for prescribing thickened fluids to dysphagic patients is to avoid respiratory infections and pneumonia as a result of aspirating thin liquids. Most clinicians working with dysphagic patients recognise that compliance with recommendations for thickened fluids can be challenging, particularly in patients with cognitive impairments who may not understand why speech pathologists prescribe thickened fluids. Because of this, there has been considerable interest in "free water protocols" in recent years in Australia and overseas. These protocols advocate access to water rather than thickened fluids, provided certain strict conditions are met. The most well-known protocol is the Frazier Free Water Protocol, which is summarised in table 1.

In 2005, via the Dysphagia listserv (http://www.dysphagia.com/), Janis Lorman, an American speech-language pathologist invited facilities that were using a free water protocol to complete a survey. There were 19 respondents: all indicated that the protocol was working and that there was no greater incidence of pneumonia. Full details of the survey are presented in table 2.

To increase our understanding of why free water protocols have received so much interest, it is important to understand the factors that have led to the development of these protocols. These include the risk of dehydration in patients on thickened fluids, as well as risk factors associated with aspiration pneumonia, such as colonisation by bacteria.

Dehydration

To be well hydrated, an average adult male requires 2.9 litres of fluid per day, whereas an average adult female requires 2.2 litres (Kleiner, 1999). Poor compliance with thickened fluid recommendations may be associated with an increased risk of patients becoming dehydrated. Studies into the fluid intake of stroke patients have found a negative impact of prescription of thickened fluids such as a need for supplementary fluids (Whelan, 2001), and failure to meet daily fluid requirements for patients on thickened fluids (Finestone, Foley, Woodbury, & Greene-Finestone, 2001). A recent randomised controlled trial (RCT) found that dehydration was more prevalent in subjects assigned to thickened fluids as opposed to postural strategies, and that the 3-month cumulative incidence of pneumonia in known aspirators was lower than expected (Robbins et al., 2008). Dehydration levels of as little as 1% may adversely impact on cognitive performance (Lieberman, 2007). It is therefore interesting to note in the free water protocol survey (table 2) that several facilities reported improved hydration/decreased dehydration and improved cognition as a result of access to water.

Aspiration pneumonia

The body's defence systems

The first line of respiratory defence comes from barriers such as mucous and cilia (Boyton & Openshaw, 2002). Respiratory defences against solid particles include alveolar macrophages, while the lymphatic system copes with fluids (Curtis & Langmore, 1997). The immune response includes lactoferrin, lysozyme, collectins and defensins (Boyton & Openshaw, 2002). Cell surface fibronectin has been shown to prevent the adherence of gram-negative rods to receptors on oropharyngeal cells in normal hosts (Cassiere, 1998). However, in patients with underlying illness, cell surface fibronectin is cleaved off, leaving receptors to gram-negative rods exposed (Cassiere, 1998; Woods, 1987). Although many challenges are dealt with by the immune system, concentrated pathogens or a weakened immune system can mean that respiratory tract infections develop (Boyton & Openshaw, 2002; Cassiere, 1998; Duits et al., 2003; Finucane, Christmas, & Travis, 1999; Kikawada, Iwamoto, & Takasaki, 2005; Nicod, 1999). Patients with underlying respiratory disease such as chronic obstructive pulmonary disease (COPD) are not as likely to be able to clear aspirated pathogens; in fact, there is speculation that patients with COPD are chronically colonised by bacteria, with exacerbations occurring when the balance between the immune system and bacterial overgrowth is altered (Wilson, 1998). Smoking suppresses ciliary action (Terpenning, 2001) and impairs mucociliary clearance, the chief defence mechanism for solid particles (Crystal, West, Barnes, Cherniak & Weibel, 1991). Stroke patients with impaired cough reflex have been found to be at greater risk of aspiration pneumonia (Addington, Stephens, Gilliland, & Rodriguez, 1999; Addington, Stephens, & Gilliland, 1999).

Colonisation by bacteria

In the model proposed by Langmore et al. (1998) colonisation of the oropharynx by bacteria is the first step in a sequence that may lead to the development of pneumonia. The oral cavity is colonised by more than 400 species of aerobic and anaerobic bacteria (Brook, 2003). Most aspiration pneumonia is bacterial in origin (Millns, Gosney, Jack, Martin, & Wright, 2003). Reduction in salivary flow and poor oral clearance of bacteria are potentially the first steps that lead from oropharyngeal colonisation to pneumonia (Palmer, Albulak, Fields, Filkin, Simon & Smaldone, 2001). Langmore et al.

(1998) found that aspiration of secretions and excess secretions in the mouth were both significantly associated with pneumonia in dentate subjects. However, normal healthy adults commonly aspirate saliva/secretions while sleeping, without any obvious health effects (Cassiere, 1998; Gleeson & Maxwell, 1997).

Any condition that increases the volume or bacterial burden of oropharyngeal secretions in a person with impaired defence mechanisms may lead to aspiration pneumonia (Marik, 2001). While normal saliva has 10^8 organisms/mL, periodontal disease or poor oral hygiene may result in a higher concentration of oral pathogens in the saliva, with saliva from a patient with gingivitis (inflammation of the gums around the roots of the teeth) containing up to 10^{11} organisms/mL (Mojon, 2002). In the elderly debilitated patient, both salivary flow and swallowing are frequently abnormal (Palmer et al., 2001).

Langmore et al. (1998) conducted a cohort study of male veterans and reported a significant increase in the number of decayed teeth in subjects with aspiration pneumonia, with significantly more patients who reported they occasionally or never brushed their teeth proceeding to develop aspiration pneumonia. In a study that looked at 50 subjects who developed aspiration pneumonia from a population of 358 veterans, Terpenning et al. (2001) found the presence of Porphyromonus gingivalis, Streptococcus sobrinus and Staphylococcus aureus in saliva was significantly higher in subjects who developed aspiration pneumonia, regardless of presence or absence of dentition.

Professional oral care has been associated with a reduction in aspiration pneumonia in nursing home patients (Abe, Ishihara, & Okuda, 2001; Adachi, Ishihara, Abe, Okuda, & Ishikawa, 2002). Elderly patients in residential care have high oral yeast counts and oral candidiasis which are associated with poor oral hygiene and neglect of care of dentures (Budtz-Jorgensen, 1996). These factors are easily modifiable, and may

Table 1. The Frazier Free Water Protocol

After several years of a conventional dysphagia program, Frazier's swallowing management protocol changed dramatically. Concern over patient and family non-compliance with thin liquid restrictions both within the facility and after discharge led us to alter our protocol in 1984. Previously prohibited, oral intake of water became a major feature in both treatment and day-to-day hydration. Features of Frazier's program include the points listed below.

Safety of water

- The human body is about 60% water. Small amounts of water taken into the lung are quickly absorbed into the body pool.
- Unlike other liquids, water has a neutral pH. Water is free of bacteria and other contaminants and does not contain the chemical compounds found in beverages. Aspiration of other liquids can lead to respiratory infections and pneumonia.
- Water provides a safe means of assessing patients with thin liquids. All patients (of any diagnosis) referred to speech pathology are screened for dysphagia with water sips.
- Water is safely utilised in daily treatment of thin liquid restricted patients. Water therapy permits better recognition of patient readiness for repeated videofluoroscopy and diet advancement.

Hydration

- Free water consumption is encouraged for all patients and makes a significant contribution in hydration for many.
- The risk and cost of IV fluids should be decreased.
- Post-discharge surveys of Frazier dysphagic patients indicate water often is the primary means of hydration.

Frazier Rehab Center's water protocol – water between meals

- By policy, any patient NPO or on a dysphagic diet may have water.
- All patients are screened with water. Patients exhibiting impulsivity or excessive coughing and discomfort will be restricted to water taken under supervision. Patients with extreme choking may not be permitted oral intake of water due to the physical stress of coughing.
- For patients on oral diets, water is permitted between meals. Water intake is unrestricted prior to a meal and allowed 30 minutes after a meal. The period of time following the meal allows spontaneous swallows to clear pooled residues.
- After the screening described above, NPO patients are often permitted water.
- Patients who are thin liquid restricted wear blue bands to communicate the liquid restriction to all staff. Typically, the band reads "No thin liquids except water between meals." All staff are oriented to blue bands and check for bands before offering liquids to patients.
- Water is freely offered to patients throughout the therapy day.
- Medications are never given with water. Pills are given in a spoonful of applesauce, pudding, yogurt, or thickened liquid.
- Family education includes emphasis on the rationale for allowing water intake. The guidelines for water intake are repeated by the speech pathologist, dietitian, and nurse during the education process.

Compliance

- Complaints of thirst were frequently voiced prior to 1984. Patients reported thickened liquids did not quench thirst.
- Water eliminates thirst and patient complaints are now much less frequent.
- Many patients and families object to thickened liquids. Since water is an option, patients appear more likely to comply with the thin liquid restriction.
- Once home, preparation of thickened liquids often becomes burdensome. After days or weeks at home the family may tire of patient complaints and abandon thickened liquids.
- Availability and cost of thickening agents and/or prepackaged thick liquids may preclude patient compliance.
- Thick liquid preparation in addition to other time and energy consuming patient care tasks can overwhelm families.

Source: http://www.kysha.org/06%20Handouts/MS%203F%20Panther%20Handout2.pdf

Table 2. 2005 Survey of facilities using a free water protocol

Facility	Started	Modified protocol?	Notes on participants and program	Who they exclude	Is it working?	More pneumonia?
Frazier Institute for Rehab, Louisville, Kentucky	1984	Yes, oral care	Watch chronic lung and immuno-comp people carefully; use sips and ice chips in acute care	Acute discomfort	Yes	No
VAMC, Chillicothe, Ohio	1999	No	Need to be cognitively alert, able to sit, good oral care	Acute discomfort, poor oral care, non-compliant	Yes	No
VAMC, Dayton, Ohio	1999	No	Use with outpatients; COPD watched carefully	Acute patients; aspiration on other than thin liquids	Yes	No
VAMC Cleveland Ohio	1998	Yes – oral care	Encourage fluids and push water; good oral care	Profuse aspiration; acute discomfort	Yes	No
St Mary's Healthcare, Grand Rapids, Michigan (acute care)	1998 for individuals; formalising protocol for facility 2004	Yes sips and ice chips, water and ice chips, water	No straws used on free water; if cough on >50% of water trials then have water via spoon; have used with some vent patients	Severe respiratory; bed rest; poor cognition, acute discomfort	Yes	No
Mary Free Bed Rehab. Grand Rapids, Michigan	1998	Yes, as above	Strict oral care with "Sage" products. Increases strength, coordination and speeds progression to least restrictive diet; outpatients following protocol as well	As above	Yes	No
Paradise Valley Hospital, National City, California	1992	Yes – safe liquids diet = no lipids	Now use good oral care; calorie counts; will trial people before excluding	Medical fragility, severe respiratory problems, exclude very few from water	Yes	No
South Bay Rehab Centre, National City, California	1992	Yes, as above	Haven't used thickeners for 12 years	As above	Yes	No
Scripps Memorial Hospital, La Jolla, California	1996	Yes, oral care	Work closely with pulmonologist; trying ice chips in ICU with patients with trachs; also use flavoured gloves with water inside and freeze for ICU patients to suck on for oral stim and increased salivation	Severe pulmonary patients; may exclude if non-compliant	Yes	No
Miami Valley Hospital, Dayton, Ohio	June 2004	Yes, oral care	Trialling on Rehab Unit patients before expanding to others; hoping to get a 30-person trial sample; using strict oral care; using on a few acute patients per MD referral	Samples only so exclusion criteria as with original protocol	Yes	No
St Boniface General Hospital, Winnipeg, Manitoba, Canada (acute & rehab)	1999	Yes, oral care	Strict oral care and see if can maintain before putting on free water. Really watch head/neck cancer patients, respiratory and immuno-compromised patients	Medically severe in ICU, severe discomfort; those who are non-compliant with protocol	Yes	No
Rehabilitation Hospital of Indiana	March 2001	Yes, oral care	Oral care critical for success	Exclude "super coughers", advanced PD and brainstem pts	Yes	No

Table 2. 2005 Survey of facilities using a free water protocol (continued)

Facility	Started	Modified protocol?	Notes on participants and program	Who they exclude	Is it working?	More pneumonia?
Archibold Memorial Hospital, Thomasville, Georgia	Sept. 2004	Yes, oral care	Eliminated all thickened liquids. Insist on strict oral care. Use ice chips if patient has marked coughing	Exclude those with excessive discomfort/ coughing	Yes	No
Kindred HealthCare, Atlanta, Georgia (trach/vent)	Sept. 2004	Yes, oral care	As above	Trached or vent patients with history of pulmonary disease	Yes	No
Cape Fear Valley Health System, Fayetteville, North Carolina	1999	Yes, limited the amount 3x/day and oral care	Strict oral care mandatory. Increased compliance, improved hydration, increased patient satisfaction	Significant coughing, decreased pulmonary status or history of aspiration pneumonia; also very poor oral care	Yes	No
San Antonio, Texas (long-term acute hospital)	2000	Yes, case by case implementation	Strict oral care – written orders for staff compliance; have noted increased speed of improvement, cognitive improvement and decreased dehydration	Non-compliant, "super-coughers" or those who demonstrate no real pleasure from free water protocol	Yes	No
Moncton Hospital, New Brunswick, Canada (acute & rehab)	2003	Yes	Use neon yellow signs at bedside and in chart; watch COPD patients carefully; patients are much happier; most tolerate protocol well	Compromised respiratory status or immune suppression; those with severe coughing	Yes	No
Missouri Rehab Centre, Mount Vernon	2002	Yes, oral care	Use antibacterial mouthwash in addition to oral care. ICU patients watched carefully. Improvement noted in pneumonia incidence, dehydration, cognition, speed of improvement; people much more compliant	Significant respiratory issues, non-ambulatory, bedridden	Yes	No
Caulfield General Medical Centre, Melbourne, Australia	2003	Yes, oral care	Strict oral hygiene; include medically stable patients – mainly in residential care; no negative outcomes thus far	Unstable patients	Yes	No

Note. Compiled by Janis Lorman, MA CCC/S&A, Senior Lecturer, The University of Akron, Ohio.

be particularly important in maintaining residents' health, due to a link between poor oral health and increased risk of stroke (Joshipura, Hung, Rimm, Willett, & Ascherio, 2003).

In a case-control study comparing residents of a chronic care facility with age-, race- and gender-matched dental clinic outpatients, chronic care patients had fewer teeth, but much higher plaque levels than outpatients. Chronic care patients took a greater number of medications, were more often current or ex-smokers and were more likely to have COPD. Twenty five percent of chronic care subjects carried respiratory pathogens in their dental plaque, and 57% of these subjects were found to be colonised. While a similar percentage of the control group carried respiratory pathogens in plaque, none of the controls were colonised (Russell, Boylan, Kaslick, Scannapieco & Katz, 1999).

If the aspirated material is small in volume, but highly contaminated with bacteria, even relatively strong host defences may be overwhelmed and pneumonia develops (Cassiere, 1998; Finucane et al., 1999; Mojon, 2002). If the aspirate is large in volume, but small in contagion, then pneumonia results only if the aspirated organisms are highly virulent or host defences severely compromised (Cassiere, 1998). A direct association between pulmonary infection and oral diseases seems to only occur in patients with severely compromised health, such as frail elderly and patients with chronic pulmonary diseases (Mojon, 2002), with pneumonia occurring due to the inability of lung defences to clear or kill aspirated challenge (Gibson & Barrett, 1992).

Risk factors

Tube feeding Tube feeding in elderly patients is associated with pathogenic colonisation of the oropharynx. A study of 215 patients demonstrated oropharyngeal colonisation rates of 81% in nasogastric tube-fed patients, 51% of patients fed by percutaneous endoscopic gastrostomy (PEG) tubes and 17.5% of patients fed orally (Leibovitz, Plotnikov, Habot, Rosenberg, & Segal, 2003).

A study of factors that predicted development of pneumonia in a sample of 102,842 American nursing home residents found 18 significant predictors. These included suctioning, COPD, congestive heart failure (CHF), presence of a feeding tube, bedfast, reduced alertness, weight loss, dysphagia, number of medications/day, urinary tract infection (UTI) and dependence for activities of daily living (ADLs). Compared to an earlier study (Langmore et al. 1998), dependent for feeding, presence of a feeding tube and number of medications were significant predictor variables in both studies (Langmore, Skarupski, Park, & Fries, 2002).

Dentures. A study of 233 elderly in a long-term hospital ward found 72% of patients who wore dentures had denture stomatitis, while many of those with natural teeth were affected by caries. They concluded high oral yeast counts and prevalence of oral candidiasis were associated with poor oral hygiene and neglect of denture care (Budtz-Jorgensen, Mojon, Banon-Clement & Baehni, 1996).

Preston, Gosney, Noon, and Martin (1999) found a correlation between presence of oral gram-negative bacteria and use of dentures. Forty-three percent (n = 12) of subjects had intra-oral gram-negative bacteria, and 43% had Candida albicans. They found that 61% of subjects who wore dentures had debris covering part of their denture (Preston et al., 1999). Sumi, Sunakawa, Michiwaki, and Sakagami (2002) evaluated the dentures of 50 dependant elderly patients who required full assistance for denture care. They isolated aerobic bacteria from all 50 patients, with potential respiratory pathogens colonising dental plaque in 23 of 50 cases (Sumi, 2002).

Saliva and xerostomia. Saliva plays an important role in homeostasis ("state of balance") of the oral cavity. It contains many components including immunoglobulins, lactoferrin, lactoperoxidase, lysozyme and proteins. Saliva provides a fluid environment for lubrication of the oral cavity to aid in speech, swallowing and cleansing of the oral tissues. Salivary proteins possess antibacterial properties and inhibit microbial adherence (immunoglobulins) (Diaz-Arnold & Marek, 2002). Saliva seems to undergo chemical changes with ageing, with the amount of ptyalin decreasing and mucin increasing, causing saliva to become thick and viscous (Astor, Hanft, & Ciocon, 1999). It has been reported that saliva production does not decrease with normal ageing (Vissink, Spijkervet, & Van Nieuw Amerongen, 1996), rather xerostomia (a lack of saliva in the mouth) is a side effect of many of the medications taken by the elderly; more than 400 medications are associated with oral dryness (Diaz-Arnold & Marke, 2002). Multiple medications are commonly prescribed to many older patients, with resulting xerostomia a common problem (Sreebny & Valdini, 1987).

Other causes of xerostomia include mouth breathing, radiation therapy, dehydration and autoimmune diseases (e.g., Sjogren's syndrome), and systemic illness (e.g., diabetes, nephritis and thyroid dysfunction) (Astor et al., 1999). Xerostomia can lead to dysgeusia, glossodynia, sialadenitis, cracking and fissuring of the oral mucosa and halitosis, difficulties with denture retention and problems with mastication and swallowing (Astor et al., 1999). The presence of saliva appears to be a defence against colonisation with bacteria (Smaldone, 2001). There was a greater than two-fold increase in adherence of Klebsiella pneumoniae to buccal cells of patients with xerostomia compared with normal subjects and colonisation by gram-negative bacteria in patients receiving head and neck radiation treatments increasing from 8% prior to treatment to 36% during treatment (Gibson & Barrett, 1992).

Progression of aspiration to pneumonia

Logically, it would seem that dysphagic patients who are very sick are at higher risk of mortality than patients with swallowing impairment who are otherwise well; however, this distinction is not clearly described in the literature (DeLegge, 2002). Despite an association between aspiration and the development of pneumonia, it is not an inevitable sequence (Cook & Kahrilas, 1999) even if subjects demonstrate aspiration on modified barium swallow (Addington, Stephens, & Gilliland, 1999; Teasell, McRae, Heitzner, Bhardwaj, & Finestone, 1999). It has been estimated that only 25% to 50% of all aspirations progress to pneumonia (Cassiere, 1998). Most mortality rates reported for aspiration pneumonia are in very ill, hospitalised patients (DeLegge, 2002).

In a study of 304 acute stroke patients, 29 (9.5%) developed aspiration pneumonia in the first year post stroke. Neither penetration nor aspiration on videofluoroscopy correlated with development of pneumonia (Johnson, McKenzie, & Sievers, 1993). In a study using videofluoroscopy to examine 55 male patients within the 5 days post stroke, Daniels, Brailey, Priestly, Herrington, Weisberg and Foundas (1998). found aspiration occurred in 21 patients (38%) with 14 of these aspirating silently. Notably only one patient developed aspiration pneumonia during hospitalisation.

Low, Wyles, Wilkinson and Sainsbury (2001) found subjects with documented aspiration who did not comply with dysphagia recommendations were more likely to be admitted to hospital with chest infections. However, they were not statistically more likely to develop a chest infection or require a course of antibiotics than those who always complied with recommendations. The non-compliant subjects tended to be younger, living at home and therefore presumably in better general health (Low et al. 2001).

To date, there has been one randomised control trial investigating the effect of access to free water by stroke patients who were documented aspirators. The control group received thickened fluids only, while the intervention group had all liquids thickened, but were allowed free access to water in addition to the thickened liquids. No patient in either group developed pneumonia, dehydration or complications during the study, or in a 30-day follow-up period (Garon, Eagle, & Ormiston, 1997). However, participant numbers were small, with only 10 subjects in each group, and the patients were at least 3 weeks post stroke when enrolled in the study, so they may have experienced some spontaneous recovery of swallow function.

Aspiration pneumonia in paediatric populations

An investigation into development of pneumonia in a paediatric population with known dysphagia found that the impact of aspiration on development of pneumonia is correlated with the presence of other factors, such as gastroesophageal reflux, asthma and Downs syndrome (Weir, McMahon, Barry, Ware, Masters & Chang, 2007). However, a Cochrane database investigation found there is currently insufficient evidence to support or contradict use of free water in paediatric populations (Weir, McMahon, & Chang, 2005).

Impact of aspiration of thickened liquids

A randomised control trial noted that patients who aspirated very thick liquids were the most likely to go on to develop pneumonia (DePippo, Holas, Reding, Mandel & Lesser, 1994). A recent trial has also noted that participants who aspirated honey thick fluids were at greater risk of developing respiratory complications than those on thin fluids and on nectar thick fluids (Robbins et al., 2008).

Summary and conclusions

In summary, the literature indicates that free water protocols may be a promising alternative for patients without significant co-morbidities and good oral hygiene, both in terms of patient satisfaction and improved health markers. It would be extremely beneficial to conduct a large-scale trial examining use of free water versus thickened fluids in a population of dysphagic patients with known aspiration to complement/confirm previous research results.

References

Abe, S., Ishihara, K., & Okuda, K. (2001). Prevalence of potential respiratory pathogens in the mouths of elderly patients and effects of professional oral care. *Archives of Gerontology and Geriatrics*, *32*(1), 45–55.

Adachi, M., Ishihara, K., Abe, S., Okuda, K., & Ishikawa, T. (2002). Effect of professional oral health care on the elderly living in nursing homes. *Oral Surgery Oral Medicine Oral Pathology Oral Radiology*, *94*(2), 191–195.

Addington, W. R., Stephens, R. E., Gilliland, K., & Rodrigueiz, M. (1999). Assessing the laryngeal cough reflex and the risk of developing pneumonia after stroke. *Archives of Physical Medicine and Rehabilitation*, *80*(2), 150–154.

Addington, W. R., Stephens, R. E., & Gilliland, K. A. (1999). Assessing the laryngeal cough reflex and the risk of developing pneumonia after stroke: an interhospital comparison. *Stroke*, *30*(6), 1203–1207.

Astor, F. C., Hanft, K. L., & Ciocon, J. O. (1999). Xerostomia: a prevalent condition in the elderly. *Ear Nose Throat Journal*, *78*(7), 476–479.

Boyton, R. J., & Openshaw, P. J. (2002). Pulmonary defences to acute respiratory infection. *British Medical Bulletin*, *61*, 1–12.

Brook, I. (2003). Management and prevention of dental infections. 1. Retrieved 24 April 2003, from http//www.medscape.com/viewprogram/2241_pnt

Budtz-Jorgensen, E., Mojon, P., Banon-Clement, J. M., & Baehni, P. (1996). Oral candidosis in long-term hospital care: comparison of endentulous and dentate subjects. *Oral Disease*, *2*(4), 285–290.

Cassiere, H. A. (1998). Aspiration pneumonia: Current concepts and approach to management. Retrieved 2 January 2002 from http://www.medscape.com/medscape/REspiratoryCare/jouranl/1998/v02.n01/mrc3075.ca

Cook, I. J., & Kahrilas, P. J. (1999). AGA technical review on management of oropharyngeal dysphagia. Gastroenterology, 116, 455–478.

Crystal, R., West, J. B., Barnes, P. J., Cherniack, M. S., & Weibel, E. R. (Eds.). (1991). *The lung: Scientific foundations*. vol. 2. New York: Raven.

Curtis, J. & Langmore., S. E. (1997). Respiratory function and complications related to deglutition. In Perlman & K Schulze-Delrieu (Eds.), *Deglutition and its disorders: Anatomy, physiology, clinical diagnosis and management*, pp. 99–214. San Diego, CA: Singular.

Daniels, S.K., Brailey, K., Priestly, D.H., Herrington, L.R., Weisberg, L.A., Foundas, A.L. (1998). Aspiration in patients with acute stroke. *Archives of Physical Medicine and Rehabilitation*, *79*(1):14–19.

DeLegge, M. H. (2002). Aspiration pneumonia: Incidence, mortality and at-risk populations. *Journal of Peranteral and Enteral Nutrition*, *26*(6), s19–s25.

DePippo, K. L., Holas, M. A., Reding, M. J., Mandel, F. S., & Lesser, M. L. (1994). Dysphagia therapy following stroke: A controlled trial. *Neurology*, *44*, 1655–1660.

Diaz-Arnold, A. & Marek, C. A. (2002). The impact of saliva on patient care: A literature review. *Journal of Prosthetic Dentistry*, *88*, 337–343.

Duits, L. A., Tjabringa, G. S., Aarts, N. J., van't Wout, J. W., Hiemstra, P. S., Nibbering, P. H., et al. (2003). Plasma secretory leukocyte protease inhibitor in febrile patients. *Clinical Microbiology & Infection*, *9*(7), 605–613.

Finestone, H. M., Foley, N. C., Woodbury, M. G., & Greene-Finestone, L. (2001). Quantifying fluid intake in dysphagic stroke patients: a preliminary comparison of oral and nonoral strategies. *Archives of Physical Medicine and Rehabilitation*, *82*(12), 1744–1746.

Finucane, T. E., Christmas, C., & Travis, K. (1999). Tube feeding in patients with advanced dementia: a review of the evidence. *Journal of the American Medical Association*, *282*(14), 1365–1370.

Garon, B. R., Engle, M., & Ormiston, C. (1997). A randomized control study to determine the effects of unlimited oral intake of water in patients with identified aspiration. *Journal of Neurological Rehabilitation*, *11*, 139–148.

Gibson, G., & Barrett, E. (1992). The role of salivary function on oropharyngeal colonization. *Specialist Care Dentist*, *12*(4), 153–156.

Gleeson K. E. D., & Maxwell S. L. (1997). Quantitative aspiration during sleep in normal subjects. *Chest*, *111*, 1266–1272.

Johnson, E. R., McKenzie, S. W., & Sievers, A. (1993). Aspiration pneumonia in stroke. *Archives of Physical Medicine and Rehabilitation*, *74*(9), 973–976.

Joshipura, K. J., Hung, H. C., Rimm, E. B., Willett, W. C., & Ascherio, A. (2003). Periodontal disease, tooth loss, and incidence of ischemic stroke. *Stroke*, *34*(1), 47–52.

Kikawada, M., Iwamoto, T., & Takasaki, M. (2005). Aspiration and infection in the elderly: epidemiology, diagnosis and management. *Drugs and Aging*, *22*(2), 115–130.

Kleiner, S. M. (1999). Water: An essential but overlooked nutrient. *J Am Diet Assoc*, *99*(2), 200–206.

Langmore, S. E., Skarupski, K. A., Park, P. S., & Fries, B. E. (2002). Predictors of aspiration pneumonia in nursing home residents. *Dysphagia*, *17*(4), 298–307.

Langmore, S.E., Terpenning, M.S., Schork, A., Chen, Y., Murray, J.T., Lopatin, D., & Loesche, W.J. (1998). Predictors of aspiration pneumonia: How important is dysphagia? *Dysphagia*, *13*69–81.

Leibovitz, A., Plotnikov, G., Habot, B., Rosenberg, M., & Segal, R. (2003). Pathogenic colonization of oral flora in frail elderly patients fed by nasogastric tube or percutaneous enterogastric tube. *Journal of Gerontology Series A: Biological Sciences and Medical Science*, *58*(1), 52–55.

Lieberman, H. R. (2007). Hydration and cognition: a critical review and recommendations for future research. *Journal of the American College of Nutritionalists*, *26*(5 Suppl), 555S–561S.

Low, J., Wyles, C., Wilkinson, T., & Sainsbury, R. (2001). The Effect of Compliance on Clinical Outcomes for Patients with Dysphagia on Videofluoroscopy. *Dysphagia*, *16*(2), 123–127.

Marik, P. E. (2001). Aspiration pneumonitis and aspiration pneumonia. *New England Journal of Medicine*, *344*(9), 665–671.

Millns, B., Gosney, M., Jack, C. I., Martin, M. V., & Wright, A. E. (2003). Acute stroke predisposes to oral gram-negative bacilli – a cause of aspiration pneumonia? *Gerontology*, *49*(3), 173–176.

Mojon, P. (2002). Oral health and respiratory infection. *Journal of the Canadian Dental Association*, *68*(6), 340–345.

Nicod, L. P. (1999). Pulmonary defence mechanisms. *Respiration*, *66*(1), 2–11.

Palmer, L. B., Albulak, K., Fields, S., Filkin, A. M., Simon, S., & Smaldone, G. C. (2001). Oral clearance and pathogenic oropharyngeal colonization in the elderly. *American Journal of Respiratory and Critical Care Medicine*, *164*(3), 464–468.

Preston, A. J., Gosney, M. A., Noon, S., & Martin, M. V. (1999). Oral flora of elderly patients following acute medical admission. *Gerontology*, *45*(1), 49–52.

Robbins, J., Gensler, G., Hind, J., Logemann, J. A., Lindblad, A. S., Brandt, D., et al. (2008). Comparison of 2 interventions for liquid aspiration on pneumonia incidence: A randomized trial. *Annals of Internal Medicine*, *148*(7), 509–518.

Russell, S. L., Boylan, R.J., Kaslick, R.S., Scannapieco, F.A., & Katz, R.V. (1999). Respiratory pathogen colonization of the dental plaque of institutionalized elders. *Special Care in Dentistry*, *19*(3), 128–132.

Smaldone, G. C. (2001). Deposition and clearance: unique problems in the proximal airways and oral cavity in the young and elderly. *Respiratory Physiology*, *128*(1), 33–38.

Sreebny, L. M., & Valdini, A. (1987). Xerostomia. A neglected symptom. *Archives of Internal Medicine*, *147*(7), 1333–1337.

Sumi, Y., Sunakawa, M., Michiwaki, Y., & Sakagami, N. (2002). Colonization of denture plaque by respiratory pathogens in dependent elderly. *Gerodontology*, *19*(1), 25–29.

Teasell, R. W., McRae, M., Heitzner, J., Bhardwaj, A., & Finestone, H. (1999). Frequency of videofluoroscopic modified barium swallow studies and pneumonia in stroke rehabilitation patients: a comparative study. *Archives of Physical Medicine and Rehabilitation*, *80*(3), 294–298.

Terpenning, M. (2001). The relationship between infections and chronic respiratory diseases: An overview. *Annals of Periodontology*, *6*(1), 66–70.

Vissink, A., Spijkervet, F. K., & Van Nieuw Amerongen, A. (1996). Aging and saliva: A review of the literature. *Specialist Care Dentistry*, *16*(3), 95–103.

Weir, K., McMahon, S., Barry, L., Ware, R., Masters, I. B., & Chang, A. B. (2007). Oropharyngeal aspiration and pneumonia in children. *Pediatric Pulmonology*, *42*(11), 1024–1031.

Weir, K., McMahon, S., & Chang, A. B. (2005). Restriction of oral intake of water for aspiration lung disease in children. *Cochrane Database Systematic Reviews* (4), CD005303.

Whelan, K. (2001). Inadequate fluid intakes in dysphagic acute stroke. *Clinical Nutrition*, *20*(5), 423–428.

Wilson, R. (1998). The role of infection in COPD. *Chest*, *113*(4 Suppl), 242S–248S.

Woods, D. E. (1987). Role of fibronectin in the pathogenesis of gram-negative bacillary pneumonia. *Review of Infectious Diseases*, 9 Supplement 4, S386–390.

Claire Langdon is currently a senior dysphagia specialist at Sir Charles Gairdner Hospital in Nedlands, WA, with an acute care caseload. She also lectures at Curtin University. She has a Master of Applied Epidemiology and completed a PhD entitled “Pneumonia in Acute Stroke: What are the Clinical and Demographic Factors?” Claire has presented at national and international conferences, and has several publications in peer-reviewed journals. She is also a Fellow of the Australian College of Health Service Executives.

Correspondence to
Claire Langdon
Senior Dysphagia Specialist
Sir Charles Gairdner Hospital
Hospital Avenue, Nedlands WA 6009
email: Claire.Langdon@health.wa.gov.au

FREE WATER PROTOCOLS

Collecting the evidence

Jo Murray and Anna Correll

This article has been peer-reviewed

Free water protocols are promoted as improving hydration, without adverse consequences, in patients who aspirate thin fluids. There is limited evidence for the relative advantages of free water protocols versus traditional thickened fluid management. A planned randomised control trial is outlined, and the challenges it has presented are discussed. We propose to continue the study as a multi-centre randomised control trial. As clinicians, we have found conducting research both rewarding and challenging and would like to extend an invitation to other stroke units to join us in our research efforts.

Keywords:
aspiration,
dysphagia,
free water protocol,
stroke

Jo Murray and Anna Correll

The background

In 2008, approximately 60,000 Australians suffered a stroke (National Stroke Foundation, 2008). An estimated 37% to 78% of patients will have dysphagia as a result of their stroke and 20% to 50% will aspirate (Martino et al., 2005). Traditionally, the treating speech pathologist's priority has been prevention of aspiration, because of the relationship between aspiration and development of pneumonia. Various studies have shown that thickened fluids reduce the risk of aspiration (for example, the Kuhlemeier, Palmer and Rosenberg (2001) study of mild–moderately dysphagic patients) and so prescription of thickened fluids has become the treatment of choice for patients at risk of aspirating thin fluids.

In recent years, clinicians have become more cognizant of pneumonia risk factors. The characteristics of the aspirate (volume, pH, bacterial load), the individual's health status (including efficiency of pulmonary clearance, presence of chronic obstructive pulmonary disease (COPD), and immune status), and their oral hygiene are crucial in determining whether a patient is at increased risk of developing pneumonia (Langmore et al., 1998). In addition, the chance of developing pneumonia or of dying is 9.2 times greater if a patient aspirates thickened fluids or more solid substances as compared with thin fluids (Schmidt, Holas, Halvorsen, & Reding, 1994). See Langdon in this issue (p. 36) for a more detailed discussion of pneumonia risk factors.

Clinicians have also become increasingly concerned about the fluid intake and hydration of their patients on thickened fluids. Although the fluid intake of patients consuming thickened fluids may be inadequate (Finestone, Foley, Woodbury, & Greene-Finestone, 2001; Patch, Mason, Curcio-Borg, & Tapsell, 2003), opinion is divided as to whether this is a result of being prescribed thickened fluids. It is hypothesised that patients' dislike of the taste and viscosity of thickened fluids may result in a reduced intake (Finestone et al., 2001; Patch et al., 2003). The alternative explanation, that the inadequate fluid intake is the result of dysphagia, cannot be excluded, however (Bulow, Olsson, & Ekberg, 2003). The Frazier Rehabilitation Centre in the USA decided to change the traditional practice of prescribing thickened fluids to all patients with dysphagia because of concern over patients' non-compliance with thickened fluids (Panther, 2003). From 1984, oral intake of water by dysphagic patients has been permitted, following a protocol typically labelled the Frazier Water Protocol (see Langdon, this issue, table 1). It was argued that the aspiration of water, a pH neutral substance, did no harm, and that the benefits of allowing water outweighed risk associated with aspirating it. Positive outcomes are reported (Panther, 2003), but limited evidence supporting the use of free water protocols has been published.

Garon, Engle and Ormiston (1997) investigated the outcomes for dysphagic stroke patients of allowing controlled access to water versus thickened fluids. In a randomised control study of 20 in-patients with known aspiration of thin fluids in a stroke rehabilitation unit, no patient in either the thickened fluid group or the group allowed access to water developed pneumonia, dehydration or complications. There was no significant difference between the groups in the time taken for the resolution of aspiration of thin liquids, nor in total daily fluid intake. Poor satisfaction with thickened fluids was reported by 19 of the 20 patients. The study has made a valuable contribution to our knowledge, but is limited in its clinical application by small subject numbers, strict exclusion criteria (including co-morbidities that are common in the stroke population), and employment of a rigid water protocol where participants had to ask for water. It is, to date, the only published research comparing these two management options.

To our knowledge only a few institutions in Australia are currently implementing free water protocols in a formal, deliberate way with explicit care pathways and systematic collection of outcome data. Their project outcomes have been presented at Speech Pathology Australia conferences (Carroll, Ledger, Cocks, & Swift, 2007; Mills, 2008; Scott & Benjamin, 2007) but as yet are unpublished. The protocols used in these studies are aligned with the Frazier Water Protocol with reported minor modifications. Collectively, they have used free water protocols across multiple clinical populations including stroke, neurosurgery, general medical, and dementia, and in a variety of settings including acute, inpatient rehabilitation, community and residential care settings. None of these studies, however, are randomised control trials with control groups against which the health outcomes of their patients can be directly compared. To our knowledge they also did not routinely confirm the presence of aspiration of thin fluids by objective assessment before introducing the free water protocol to their patients.

Our research – plans and reality

At the Royal Adelaide Hospital (RAH) and its Hampstead Rehabilitation Centre (HRC) campus in Adelaide, it was decided in 2003 to instigate research on this topic. Implementing free water protocols would have significant implications for both institutional and community dysphagia management, with possible benefits in terms of increased compliance and reduced cost, as well as the posited health outcomes. We did not want to change clinical practice, however, without the evidence to support these changes. To determine which of two treatments implemented by speech pathologists results in the best outcomes for dysphagic stroke patients who aspirate thin liquids, and to obtain evidence for the relative influence of dysphagia versus thickened fluids on fluid intake and hydration, a randomised control trial (RCT) was designed and ethics approval was sought and granted.

Research design and methodology

The study was designed as a randomised control trial. This design comprised a treatment group with two treatment conditions and a control group.

1 The treatment group would comprise stroke patients aspirating thin fluids, as determined by clinical assessment and flexible endoscopic evaluation of swallowing (FEES) (Langmore, 2001). The participants in the treatment group would be randomly allocated to one of two treatment conditions, thickened fluids only or thickened fluids plus access to water, as discussed in more detail below.
2 The control group would comprise stroke patients with no evidence of dysphagia experiencing the same institutional and stroke-related conditions. This group was included to allow comparison to the fluid intake and hydration of non-dysphagic stroke patients, a unique feature of this study's design. This would allow us to determine if the dysphagia rather than other conditions would influence the amount of fluid intake as there is currently no evidence that this population meets average fluid requirements.

Participant selection criteria and initial assessment

For inclusion in the study, the patient had to have experienced an acute stroke event and be medically stable. Exclusion criteria were specific medical conditions, i.e., neurodegenerative process, neurosurgery, previous head and neck cancer or surgery, tracheostomy, COPD, pneumonia or compromised immune status; factors compromising fluid intake or measurement i.e., supplementary non-oral fluid provision or renal failure; and known aspiration of pureed food or thickened fluids. "Aphasia friendly" information sheets and consent forms were used for communication impaired patients (Braunack-Mayer & Hersh, 2001; Kagan & Kimelman, 1995). Presence or absence of aspiration would be confirmed by FEES. All participants would also undergo an initial clinical assessment of swallowing, a 100ml water test (Wu, Chang, Wang, & Lin, 2004) and an oral health assessment (Chalmers, King, Spencer, Wright, & Carter, 2005).

Treatment

Participants in the treatment group would be prescribed the appropriate thickened fluid consistency and would be randomly allocated to one of two treatment groups. Treatment group 1 would receive traditional management and would be permitted to drink only thickened fluids. They would have free access to these thickened fluids, with a jug at bedside and in the dining room, and staff assistance as necessary. Treatment group 2 would receive thickened fluid plus access to water according to the RAH Free Water Protocol (please contact authors for a copy) which is similar but not identical to the Frazier Water Protocol. Key features of this protocol include access to water but not to any other thin liquids, and preclusion of water at meal times or when taking medication in order to prevent aspiration of food and tablets along with the water. With these restrictions, free access to water and thickened fluids is permitted, with jugs of water and thickened fluids at bedside, thickened fluids in the dining room, and staff assistance or supervision as necessary. One point of difference between the RAH Free Water Protocol and the original Frazier Water Protocol is that the latter explicitly outlines the need for routine oral care.

Procedure

For all participants, fluid intake would be recorded daily by nursing and allied health staff on standard daily fluid balance charts, with thin and thickened fluid consumption recorded separately. Chest status would be checked weekly by medical officers. Diagnosis of pneumonia would be based on medical diagnosis confirmed by X-ray. Weekly blood tests would provide urea:creatinine ratio, as an indicator of hydration (Institute of Medicine of the National Academies, 2004). Oral health examinations would also be conducted weekly. Dysphagic participants would complete drink satisfaction surveys when discharged from the study, rating both thick fluids and water. The survey tool is a 5-point Likert scale, and rates factors such as taste, feel in the mouth, thirst, and coughing.

All participants would be asked to follow an oral hygiene protocol and record their compliance with this, with nursing support as necessary. The protocol is based on the oral health protocols for residential aged care facilities developed by the South Australian Dental Service and Australian Dental Association (South Australian Dental Service, 2004). Please contact the authors for a copy.

Participants without dysphagia would be discharged from the study after 21 days or on discharge from the hospital, whichever occurred earlier. Participants with dysphagia would be discharged from the study when dysphagia for thin fluids resolved or on discharge from the hospital, whichever occurred earlier.

Education would be provided to all staff assisting with data collection including nursing, medical and allied health staff. This would be supplemented with written information sheets and protocols.

The reality

Consecutive admissions (97 in total) to the Medical Rehabilitation Unit at HRC were screened across a 9-month period. Of these, 31 (32%) did not satisfy the inclusion criteria, 44 (45%) did not consent and 4 (4%) consented but were unable to participate in the FEES. Eighteen (19%) participants were recruited and completed the study. Of these 18 participants, 15 were non-dysphagic controls and 3 were dysphagic. However, on FEES, the three dysphagic participants demonstrated airway penetration of thin fluids, but not aspiration. Therefore, none of the recruited participants met the eligibility requirements for the treatment groups.

Another 103 stroke admissions were screened at the Royal Adelaide Hospital over 7 months. Of the 28 eligible patients, none were recruited into the study: Patients were too unwell, or overwhelmed by their recent stroke, or excluded because they were receiving non-oral fluid supplements.

In summary, recruiting participants was a challenge. Of the 200 patients screened across the two stroke units, only 22 were recruited, and 4 of these withdrew. Many refused consent either because of the invasive nature of the FEES or because they wanted to concentrate on their recovery and rehabilitation without distraction. No recruited patients were eligible for the treatment group, because none were found to be aspirating on objective assessment.

Future directions

Our intention in embarking on this study was to determine the best outcomes for dysphagic stroke patients who aspirate thin liquids, and to obtain evidence for the relative influence of dysphagia versus thickened fluids on fluid intake and hydration. Unfortunately, because of recruiting difficulties, we have not succeeded in gathering sufficient data to date to draw any conclusive results.

We have not given up. We have found the research process rewarding, and we consider the question we are attempting to answer a vital one in our clinical practice. Our study differs from the outcome data collection being conducted elsewhere in Australia in that it is a randomised control trial that will directly compare health outcomes of those patients on free water protocols with those on thickened fluids only.

We have decided to modify our research protocol in the light of our experience to date, re-apply for ethics approval and then recommence recruitment. The research protocol will closely follow that described above with the most significant change relating to the instrumental assessment of aspiration. FEES was selected as the objective measure of aspiration because at the time the study commenced, it was more accessible for research purposes in our institution, and as valid as a modified barium swallow study (MBS) in discriminating between penetration and aspiration (Colodny, 2002). However, many eligible patients declined participation because of the invasive nature of the FEES. As MBS may be more acceptable to potential participants, and as most institutions we have contacted have better access to MBS than FEES, we have decided to change our research protocol and use MBS as our objective measure of aspiration.

To reveal a statistical difference between groups, sufficient subject numbers are required and it is now apparent that it is not possible to recruit the required number of participants from within one institution. We are hopeful that other institutions with stroke patients will be able to assist with participant recruitment and data collection.

An invitation

We are hereby extending an invitation to acute or inpatient rehabilitation stroke units to join us in our research efforts. We could make this an Australian multi-centre randomised control trial, which along with the other evidence being collected in Australia, would potentially provide cutting edge information on the use of free water protocols. If you are interested in joining us, or for more information, please contact the authors.

Concluding thoughts

The main benefits of conducting research in the workplace have been the raised awareness and appreciation of evidence based practice, and a higher profile for the Speech Pathology Department both within and beyond our institution. Moreover, benefits in patient care have been observed, with positive changes in nursing staff's regular care of stroke patients, with respect to their knowledge of and practice in dysphagia, oral care and patient hydration.

References

Braunack-Mayer, A., & Hersh, D. (2001). An ethical voice in the silence of aphasia: Judging understanding and consent in people with aphasia. *Journal of Clinical Ethics*, *12*, 388–396.

Bulow, M., Olsson, R., & Ekberg, O. (2003). Videoradiographic analysis of how carbonated thin liquids and thickened liquids affect the physiology of swallowing in subjects with aspiration on thin liquids. *Acta Radiologica*, *44*, 366–372.

Carroll, L., Ledger, M., Cocks, N., & Swift, L. (2007). *I'm still thirsty: What are the consequences of allowing elderly patients with dysphagia to drink water?* Paper presented at the Speech Pathology Australia National Conference, A Different Perspective, Sydney, 28–31 May 2007.

Chalmers, J. M., King, P. L., Spencer, A. J., Wright, F. A. C., & Carter, K. D. (2005). The oral health assessment tool: Validity and reliability. *Australian Dental Journal*, *50*, 191–199.

Colodny, N. (2002). Interjudge and intrajudge reliabilities in fibreoptic evaluation of swallowing (Fees®) using the penetration–aspiration scale: A replication study. *Dysphagia*, *17*, 308–315.

Finestone, H. M., Foley, N. C., Woodbury, M. G., & Greene-Finestone, L. (2001). Quantifying fluid intake in dysphagic stroke patients: A preliminary comparison of oral and non-oral strategies. *Archives of Physical Medicine and Rehabilitation*, *82*, 1744–1746.

Garon, B. R., Engle, M., & Ormiston, C. (1997). A randomized control study to determine the effects of unlimited oral intake of water in patients with identified aspiration. *Journal of Neurological Rehabilitation*, *11*, 139–148.

Institute of Medicine of the National Academies. (2004). *Dietary reference intakes for water, potassium, sodium, chloride, and sulfate*. Washington DC: National Academies Press.

Kagan, A., & Kimelman, M. D. Z. (1995). Informed consent in aphasia research: Myth or reality. *Clinical aphasiology*, *23*, 65–75.

Kuhlemeier, K. V., Palmer, J. B., & Rosenberg, D. (2001). Effect of liquid bolus consistency and delivery method on aspiration and pharyngeal retention in dysphagia patients. *Dysphagia*, *16*, 119-122.

Langmore, S. E. (2001). *Endoscopic evaluation and treatment of swallowing disorders*. New York: Thieme.

Langmore, S. E., Terpenning, M. S., Schork, A., Chen, Y., Murray, J., Lopatin, D., et al. (1998). Predictors of aspiration pneumonia: How important is dysphagia? *Dysphagia*, *13*, 69–81.

Martino, R., Foley, N., Bhogal, S., Diamant, N., Speechley, M., & Teasell, R. (2005). Dysphagia after stroke: Incidence, diagnosis, and pulmonary complications. *Stroke*, *36*, 2756–2763.

Mills, K. (2008). *Wet your whistle: The introduction of a free water policy at the Royal Melbourne Hospital – City campus*. Paper presented at the joint conference of the New Zealand Speech-Language Therapists Association and Speech Pathology Australia, Reflecting Connections, Auckland, 25 – 29 May 2008.

National Stroke Foundation. (2008). *What is a stroke: Fact, figures and stats*. Retrieved 28 July 2008, from http://www.strokefoundation.com.au/facts-figures-and-stats

Panther, K. (2003). *The Frazier Rehab Institute Water Protocol*. Retrieved 27 July 2008 from http://www.kysha.org/06%20Handouts/MS%203F%20Panther%20Handout2.pdf

Patch, C. S., Mason, S., Curcio-Borg, F., & Tapsell, L. C. (2003). Thickened fluids: Factors affecting wastage. *Advances in Speech-Language Pathology*, *5*, 73–77.

Scott, A., & Benjamin, L. (2007). *The introduction and review of a free fluid protocol in an aged care facility*. Paper presented at the Speech Pathology Australia National Conference, A Different Perspective, Sydney, 28–31 May 2007.

Schmidt, J., Holas, M., Halvorsen, K., & Reding, M. (1994). Videoflouroscopic evidence of aspiration predicts pneumonia and death but not dehydration following stroke. *Dysphagia*, *9*, 7–11.

South Australian Dental Service. (2004). *Oral health protocols for residential aged care facilities*. Retrieved June 2008 from http://www.sadental.sa.gov.au/

Wu, M., Chang, Y., Wang, T., & Lin, L. (2004). Evaluating swallowing dysfunction using a 100ml water swallowing test. *Dysphagia*, *19*, 43–47.

Acknowledgements

We would like to thank the Primary Health Care Research Evaluation and Development, Department of General Practice, Flinders University for their initial set-up grant of $4,880 and their writing grant of $3000; and Allied Health Research Grants, Royal Adelaide Hospital, SA, for two grants of $6000 and $1900. We would also like to acknowledge our co-researchers: Maree Creevy, Debra Ormerod, Alinka Krol and Alison Mapleson.

Jo Murray is a speech pathologist of 22 years who works with adults with acquired neurological conditions. **Anna Correll** is a speech pathologist who works in adult rehabilitation in Adelaide.

Correspondence to:
Jo Murray
Hampstead Rehabilitation Centre,
207–255 Hampstead Road,
Northfield SA 5085
email: Jo.Murray@health.sa.gov.au

A CONSUMER SPEAKS

Ken Rauber

This is my story of my involvement with the speech therapy staff at the Royal Brisbane Hospital.

After I semi-retired in early 2006 from my occupation as a building surveyor, my wife and I hooked up our van and went off "around Australia". We had been on the road for six months by the time we arrived at Perth, WA. Our grandchildren were missing us (and we them), so our youngest son, his wife and their two children flew to Perth to meet us for the Queensland school holidays in September/October. They hired a car and we travelled along behind them, south of Perth and towards the Margaret River district. There we all went off in their hire car one afternoon to see the sights and became involved in an horrific road accident. All aboard were badly injured and sadly our (only) grandson survived on life support for only another four days. The remainder, although with ongoing problems, have thankfully survived.

I recall nothing of the accident, the minutes leading up to it and nothing of the next two weeks, as I was in an induced coma for that time. I was in the Royal Perth Hospital for all of six weeks until I was deemed able to fly to Brisbane (with my wife as carer) and then by ambulance to the Royal Brisbane Hospital where I spent another six weeks. I had been told in Perth that as I had sustained fairly major head injuries and had nerve damage affecting the right side of my throat and tongue, I would be unlikely to ever eat or speak normally again. I was fed with a nasogastric tube.

Whilst I have clouded memories of my time there, I can clearly recall not being able to communicate, except with a pad and pen. I could not even swallow my own saliva, let alone any water or food. I had not had a bowel movement for weeks (but that is yet another story).

So my story of my involvement with the speech therapy staff starts from my arrival in Brisbane. By that time I had lost about 15 kg (from about 81kg to 65kg) and was quite weak. I had been reasonably fit prior to the accident. So I was determined to exercise by walking around the ward. I can remember falling a couple of times as my balance was (and is) affected but I made some progress there, with the aid of a walking frame.

I was feeding myself by bottle and tube but was still unable to swallow, which was very frustrating. Even the pills I needed to take (for all time) as a consequence of the accident had to be crushed finely and force-fed through the same tube. I was told I could have a "peg" placed in my stomach area and I would need to feed myself that way for the rest of my life. Although that was quite a daunting prospect, I resigned myself to the "peg" idea as the best (only) option and I was "booked in" for the operation the next week.

Meanwhile, I had a visit from the speech pathologist, Cindy, who examined me and after a short time told me she believed she could get me swallowing again and perhaps speaking reasonably. That was the best news I had heard for quite some time and I recall her asking that the operation be put off for two weeks while she "worked on me". Cindy had me doing endless throat exercises, often with pulsating wires attached to my neck, swallowing practice, etc., etc. I remember doing endless tongue exercises both in hospital and later at home. Of course Cindy had more to do than look after me. She was ably assisted by two or three others whose names escape me, although I recall Alana being one. All of these staff members went out of their way to help me and their kindness and professionalism is very much appreciated.

After lots of intense and regular daily practice and hard work, I could feel improvement and then Cindy came one day with some thick water (yuk) and some ice cream (which I love) and taught me how to swallow again without the liquids (or solids) going down my throat and choking me. That was one of the most scary moments, having something in my mouth … like "what do I do now"? I had not swallowed anything for about two months. Thankfully I did not choke!!

Slowly I found I could manage some pureed food and as I could shower myself by then, I went home (just before Christmas 2006). Before my discharge, Cindy had arranged further treatment for me at GARU (Geriatric Assessment and Rehabilitation Unit) in the new year. I went to GARU as an outpatient, practising with various foods (lunch with Cindy), gradually progressing from "mush", to finely ground food to eventually being able to manage several of the coarser foods such as minced meat, fish and the like. Although I am still selective and careful about what I eat and frequently have to cough back some foods which try to "go down the wrong way", I am grateful to be able to eat without having one of those dreadful "pegs" in my stomach.

Following assessment, I was then scheduled for further intense speech therapy, to hopefully improve my loudness, as some of my vocal cords were also damaged. Again that therapy has involved a lot of effort both on my part and the part of the staff members. In particular, I have to thank Jane and Penni who also took a keen interest in my case. They would be able to quantify the amount of progress I have made over the four weeks of treatment (four days per week). For myself, I can say I have learned to communicate again at an acceptable level, much better and clearer than before, to the point where life is that much more enjoyable, much, much better than it was before treatment.

Although I can never be "the same as before", I know I am that much better off having been treated and cared for by such professional people as Cindy, Jane and Penni, together with the friendly nursing staff, Claire and Julie, in particular. I am ever indebted to them and urge any other patients with similar problems to ask for their help and put in the effort. The outcome will be well worth it.

A FATHER-INCLUSIVE MODEL OF PAEDIATRIC DYSPHAGIA INTERVENTION

Erin Palmowski and Bernice Mathisen

Dysphagia in infants and children is commonly the result of delayed global development (Joanna Briggs Institute, 2000) or associated with chronic diseases, neuro-developmental disorders and frequently, oral-motor dysfunction (Puntis, 2008). Interest in the management of dysphagia in children has rapidly increased over the past decade (Bell & Sheckman Alper, 2007) and it is known that for optimal outcomes for the child and the family, an interdisciplinary approach is required (Arvedson & Brodsky, 2002; Bell & Sheckman Alper, 2007; Joanna Briggs Institute, 2000; Lefton-Greif & Loughlin, 1996; Mathisen, 2003, 2008; Morgan & Reilly, 2006; Newman, 2000; Puntis, 2008). The type of intervention(s) for the child with dysphagia in the context of family-centred practice (Mathisen, 2008) is dependent on the individual cause(s) of the dysphagia and the results of clinical and instrumental assessments (Puntis, 2008). At present, there are some epidemiological data on dysphagia in typically developing children; however, the incidence of dysphagia is higher in children who have a lifelong disability, such as cerebral palsy (Mathisen, 2008).

The literature frequently mentions the experiences and feelings of mothers (Joanna Briggs Institute, 2000; Mathisen, Worrall, O'Callaghan, Wall & Shepherd, 2000; Selley et al., 2001) and family-focused experiences (Joanna Briggs Institute, 2000; Mason, Harris & Blissett, 2005; Puntis, 2008). However, the experiences of the father of the child with dysphagia are frequently missing. In coping with the demands of a child with complex health problems including swallowing disorders, mothers are at risk of mental health problems such as anxiety and depression (Joanna Briggs Institute, 2000), especially where they are unsupported. With the majority of the literature focused on the maternal role in dysphagia intervention, are speech pathologists missing the crucial role of fathers?

Family-centred intervention

Family-centred intervention has emerged as a successful form of service delivery for speech pathologists working in paediatric dysphagia and across a diverse number of educational and health professions (Mathisen, 2008). The Joanna Briggs Institute (2000) reported level 3.2 and level 4 evidence to support the inclusion of parents of children with dysphagia in the intervention program to reduce the stress to the child, siblings and to the parents. Puntis (2008) recently reported that dysphagia in early childhood causes huge psychosocial stress for families and emphasised the need for increased support for families by professionals in the form of education, reassurance and/or counselling. Mathisen et al. (2000) emphasised the demand for increased parental education in dysphagia. The literature urges education and health professionals not to assume that parents understand the nature of their child's difficulties or the implications for intervention (Feeley, Gottlieb & Zelkowitz, 2007).

Implementing a family-centred service delivery model in paediatric dysphagia is multidimensional, as health professionals must engage each member of the family differently, dependent upon their age, gender, culture and belief system. Gender differences present as the prominent issue when dealing with families. Therefore, speech pathologists need to tailor their communication skills for the different sexes and alter the support they offer to family members to ensure that it is gender-appropriate (Broadhurst, 2003).

Family-centred intervention aims to include the family in the decision-making process in terms of assessment and intervention, encouraging the child and parents to be actively involved with the professionals. The family is provided with the appropriate information they need to manage the child's condition and reassurance is provided regarding the care they provide for the child (Joanna Briggs Institute, 2000). It is easy for educational and health professionals to collectively class "parents" as one entity with agreed emotions and views (Auslander, Netzer & Arad, 2003). However, the feelings of mothers and fathers about their child's health care are different. Literature that addresses the role of speech pathologists in the management of paediatric dysphagia consistently focuses on the centrality of family engagement in the whole process (Mathisen, 2008).

Current father-inclusive research

Fägerskiöld (2006) examined the support provided to Swedish fathers by health care nurses and found that fathers wanted increased personal contact with nurses in order to gain more information. Nurses offered little attention to the father and many nurses gave fathers an information sheet instead of demonstrating the intervention to them. Interestingly, Fägerskiöld found that most of the inadequate education given to fathers was about breast-feeding, bottle-feeding and dysphagia, hence strengthening the need for specific father-directed intervention practice. Fägerskiöld concluded that the majority of fathers wanted to be involved with the health care of their child and were happy to seek support via a fathers' support group, chaired by a male professional.

Supporting fathers requires speech pathologists to tailor the skills they have acquired from undergraduate coursework and professional development to develop a support network appropriate for fathers. Stereotyping the emotional status of fathers will only decrease the efficacy of support that health professionals offer to fathers (Heesacker et al., 1999) and ultimately reduces the inclusion of fathers in resolving family disputes (Fletcher, 2008).

Supporting fathers in fatherhood has a strong evidence base. It is well known that specific father-directed intervention practices will benefit the whole family (Fägerskiöld, 2006; Fegran, Helseth and Fagermoen, 2008), so why does the father's role in the child's health care continue to be dismissed? Hallberg et al. (2007) conducted a phone interview with 237 fathers to explore this issue. The interview asked specific questions regarding the father's role and participation in family life to gain information about how much involvement fathers actually wanted in their child's health care. Fathers viewed their role in their child's health as important and 55% of participants demonstrated an active role in their child's health care. Hallberg et al. agreed that more research into father-inclusive health care and intervention practices needs to be conducted. The researchers acknowledged that new service delivery models for health care that include fathers "could be designed and researched" (p. 1086). Currently, there is no up-to-date literature that examines the efficacy of a father-inclusive service delivery model for dysphagia intervention in children.

Why should we involve fathers?

A study by Bronte-Tinkew, Carrano, Horrowitz and Kinukawa (2008) examined the effects of early father involvement in the child's life and found that early positive interactions between the father and his child reduce later cognitive delay in the child. Interestingly, the study found that the reduction in cognitive delay was greater in male children and was also greater in children who had a disability in contrast to those who did not. Positive outcomes for the child also included increased social competence, general well-being and school performance (Oliver, Schmied & Gailey, 2001).

Increased father involvement in the care of their child has shown to increase the mental and emotional state of the mother. Misri, Kostaras, Fox and Kostaras (2000) conducted a study on the impact of partner support for a mother who had postnatal depression. The results revealed that mothers who had supportive partners who were actively involved in the infant's care showed a significant decrease in their depressive symptoms.

Just as postnatal depression in mothers has a disastrous effect on a child's overall developmental status, so does postnatal depression in fathers (Fletcher, Matthey & Marley, 2006; Ramchandani, Stein, Evans, O'Connor & the ALSPAC Study Team, 2005). Depression among new fathers is high, due to societal expectations of the father and the unexpected changes to their former lifestyle after having a child (Fletcher et al., 2006). Depression in fathers has many negative effects on the child, the child's mother, other siblings and on the family as a whole. Therefore, speech pathologists can potentially reduce the risk of ongoing mental health issues in fathers by significantly increasing support to them. It is argued that promoting and using a father-inclusive model for dysphagia intervention in children is one powerful way this issue could be addressed.

How can we adopt a father-inclusive model in intervention?

Fletcher (2008) asserts that adopting a father-inclusive service delivery model is not easy, and that even extensively-trained health and educational practitioners still find it difficult to adequately interact with fathers. All aspects of the service need to be reviewed so that it appeals to both the mother and the father. This will include areas such as the service's opening hours, signage and the nature of any staff postgraduate education (see table 1).

Establishing a father support group, chaired by a male leader, has been found to be an effective method of support for fathers (Fägerskiöld, 2006). This type of group enables fathers to speak openly about their experiences and to discuss any issues with other fathers who they can relate to (Fägerskiöld, 2006; Porter & Mabbutt, 2005). A fathers' group could be organised for other services (e.g., a hospital ward or a community health clinic) that is not specific to paediatric dysphagia or within a paediatric dysphagia service.

Information on the development and growth of infants is well utilised by new parents to gain advice on effective parenting (Fletcher, Vimpani, Russell & Keatinge, 2008). Information for fathers, however, needs to be tailored, in order for them to actively seek and use the parenting information available. Providing information for fathers via the Internet may increase and encourage fathers' access to information (Fletcher et al., 2008) about issues they may not be comfortable discussing in person. Parenting and support network websites for fathers need to be user-friendly and fathers need to be consulted regarding their appropriateness. This will increase the efficiency of use and therefore decrease the frustration of users.

How can speech pathologists further develop a father-inclusive service delivery model?

In order for speech pathologists to effectively engage fathers, they must be trained to do so (O'Brien & Rich, 2002). Male speech pathologists still require specific father-inclusive

Table 1. Suggested guidelines for a father-inclusive model of paediatric dysphagia intervention

Be flexible	Speech pathologists need to be flexible to accommodate the father's work schedule. The service needs to offer extended office hours to families. This may include evenings and weekend clinic operating hours.
Encourage attendance appointments	It is vital that speech pathologists encourage fathers to attend their child's from the initial visit. Positive reinforcement will affirm the importance of the father's attendance and encourage the father to continue to be involved in their child's intervention.
Appreciate and acknowledge	Speech pathologists should warmly welcome the father at every session, appreciating that he may be out of his comfort zone. They need to speak directly to the father and always seek his opinion as well as that of the mother. Acknowledging the father's involvement and attendance at the session will provide positive feedback that will encourage the father's continuing involvement.
Engage	Speech pathologists, once acquainted with both parents, need to respectfully investigate the father's relationship to the other parent, the father's role in the child's life, the father's beliefs and his expectation of the intervention offered. They should always engage the father during the session, explaining everything that is happening in the session and the rationale (without jargon) for intervention options.
Ask	Speech pathologists need to be aware that the father may be anxious about parenting so need to ask him how he is coping with parenting and ask his opinion about the suggestions offered. It is likely that this is a stressful time for both parents so it is crucial that speech pathologists ask the parents how they are supporting each other.
Value the opinions of both parents	Not all parents agree on the same method of parenting. Therefore it is important to value the opinions of both parents, whether they agree or not. The speech pathologist can act as a mediator and discuss different methods of intervention together without showing bias. The father's involvement in his child's intervention is very different to the mother's involvement.
Professional development	Speech pathologists need to pursue further professional development opportunities that address father-inclusive practice. Father-inclusive practice has received large interest in the field of sociology and there are many professional development opportunities offered to education & health care professionals by sociologists.

Note. Adapted from Coleman, Garfield & the Committee on Psychosocial Aspects of Child and Family Health, 2004.

education – simply being a father or male does not exclude the need for this education (Fletcher, 2008). As the demand for father-inclusive practice increases, competencies for speech pathologists working with fathers will develop. To date, the need for these competencies has been neglected (Fletcher, 2008). The introduction of specific father-inclusive practice during tertiary education would provide future speech pathologists with the academic knowledge and clinical skills to adequately include fathers in speech pathology intervention.

Conclusion

It is clear from the literature that an interdisciplinary team (Arvedson & Brodsky, 2002; Bell & Sheckman Alper, 2007; Joanna Briggs Institute, 2000; Lefton-Greif & Loughlin, 1996; Mathisen, 2008, 2003; Morgan & Reilly, 2006; Newman, 2000; Puntis, 2008), working in a family-centred model is best practice in managing the dysphagia of a child (see also Mathisen, 2008). An increase in community attitudes about the inclusion of fathers has been recommended across many education and health care professions (Fletcher, 2008). Currently, there are no documented or specific father-inclusive models of intervention in paediatric dysphagia practice. Therefore speech pathologists are encouraged to establish such models to engage fathers. Doing so will have significant benefits not only for the child but also for the mother, the siblings, the extended family and of course, the father (Bronte-Tinkew et al., 2008; Misri et al., 2000; Oliver, Schmied & Gailey 2001).

References

Arvedson, J. C., & Brodsky, L. (2002). *Pediatric swallowing and feeding*. San Diego, CA: Singular Publishing Group.

Auslander, G. K., Netzer, D., & Arad, I. (2003). Parental anxiety following discharge from hospital of their very low birth weight infants. *Family Relations*, *52*(1), 12–21.

Bell, H. R., & Sheckman Alper, B. (2007). Assessment and intervention for dysphagia in infants and children: beyond the neonatal intensive care unit. *Seminars in Speech and Language*, *28*(3), 213–222.

Broadhurst, K. (2003). Engaging parents and carers with family support services: What can be learned from research on help seeking. *Child and Family Social Work*, *8*, 341–350.

Bronte-Tinkew, J., Carrano, J., Horrowitz, A., & Kinukawa, A. (2008). Involvement among resident fathers and links to infant cognitive outcomes. *Journal of Family Issues*, *29*(9), 1211–1244.

Coleman, W. L., Garfield, C., & Committee on Pyschosocial Aspects of Child andFamily Health (2004). Fathers and pediatricians: Enhancing men's roles in the care and development of their children. *Pediatrics*, *113*, 1406–1411.

Fägerskiöld, A.(2006). Support of fathers of infants by the child health nurse. *Scandinavian Journal of Caring Sciences*, *20*, 79–85.

Feeley, N., Gottlieb, L., & Zelkowitz, P. (2007). Mothers and fathers of very low birthweight infants: similarities and differences in the first year after birth. *Journal of Obstetric, Gynecologic and Neonatal Nursing*, *36*(6), 558–567.

Fegran, L., Helseth, S., & Fagermoen, M. S. (2008). A comparision of mother's and father's experiences in the attachment process in a neonatal intensive care unit. *Journal of Clinical Nursing*, *17*, 810–816.

Fletcher, R. (2008). Father-inclusive practice and associated professional competencies. *Australian Family Relationships Clearinghouse Briefing, No. 9*. Retrieved 22 October 2008, from http://www.aifs.gov.au/afrc/pubs/briefing/briefing9.html

Fletcher, R., Matthey, S., & Marley, C.G. (2006). Addressing depression and anxiety among new fathers. *Medical Journal of Australia*, *185*(8), 461-463.

Fletcher, R., Vimpani, G., Russell, G., & Keatinge, D.(2008). The evaluation of tailored and web-based information for new fathers. *Child: Care, Health and Development*, *34*(4), 439 – 446.

Hallberg, A .C., Kristiansson, R., Beckman, A., Petersson, K., Råstam, L., & Håkansson, A. (2007). Fathers and their children's health: a telephone interview study. *ACTA Paediatrica*, *96*, 1083–1087.

Heesacker, M., Wester, S. R., Vogel, D. L., Wentzel., Mejia-Millan, C. M., & Goodholm, C. R. J. (1999). Gender-based emotional stereotyping. *Journal of Counselling Psychology*, *46*, 483–495.

Joanna Briggs Institute. (2000). Identification and management of dysphagia in children with neurological impairment. *Best practice: Evidence based practice information sheets for health professionals*, *4*, 1–6.

Lefton-Greif, M. A., & Loughlin, G. M. (1996). Specialized studies in pediatric dysphagia. *Seminars in Speech and Language*, *17*(4), 311–330.

Mason, S. J., Harris, G., & Blissett, J. (2005). Tube feeding in infancy: Implications for the development of normal eating and drinking skills. *Dysphagia*, *20*, 46–61.

Mathisen, B. (2003). Re-inventing the delivery of paediatric dysphagia services. *ACQuiring Knowledge in Speech, Language and Hearing*, *5*(2), 79–82.

Mathisen, B. A. (2008). Working with families of children with dysphagia: An interdisciplinary approach. In N. Watts Pappas & S. McLeod (Eds.), *Working with families in speech-language pathology*, pp. 245–278. San Diego, CA: Plural Publishing.

Mathisen, B., Worrall, L., O'Callaghan, M., Wall, C., & Shepherd, R. W. (2000). Feeding problems and dysphagia in six-month-old extremely low birth weight infants. *Advances in Speech-Language Pathology*, *2*(1), 9–17.

Misri, S., Kostaras, X., Fox, D., & Kostaras, D. (2000). The impact of partner support in the treatment of postpartum depression. *Canadian Journal of Psychiatry*, *45*, 554–558.

Morgan, A. T., & Reilly, S. (2006). Introduction: Clinical signs, aetiologies and characteristics of paediatric dysphagia. In J. Cichero & B. Murdoch (Eds.), *Dysphagia: Foundation, theory and practice*, pp. 391–465. London: John Wiley & Sons Ltd.

Newman, L. A. (2000). Optimal care patterns in pediatric patients with dysphagia. *Seminars in Speech and Language*, *21*(4), 281–291.

O'Brien, C., & Rich, K. (2002). *Evaluation of the men and family relations ininative: Final and supplementary report*. Canberra: Department of Family and Community Services.

Oliver, J., Schmied, V.& Gailey, P. (2001). *Meeting the needs of men in preparation for parenthood programs*. Paper presented at the 7th National Conference of the National Association of Childhood Educators, Gold Coast, April.

Porter, S., & Mabbutt, J. (2005). Fathering the effects can last a lifetime: Supporting men in the biggest challenge of all – fatherhood. *Journal of the Child and Family Health Nurses Association (NSW) Inc.*, June, pp. 14–15.

Puntis, J. W. L. (2008). Specialist feeding clinics. *Archives of Disease in Childhood*, *93*, 164–167.

Ramchandani, P., Stein, A., Evans, J., O'Connor, T.G., & the ALSPAC Study Team. (2005). Paternal depression in the postnatal period and the child development: A prospective population study. *Obstetrical and Gynecological Survey*, *60*(12), 789–790.

Selley, W. G., Parrott, L. C., Lethbridge, P. C., Flack, F. C., Ellis, R. E., Johnston, K. J., Foumeny, M. A., & Tripp, J. H. (2001). Objective measures of dysphagia complexity in children related to suckle feeding histories, gestational ages and classification of their cerebral palsy. *Dysphagia*, *16*, 200–207.

Erin Palmowski is currently completing her studies at the University of Newcastle and will graduate in June 2009. She has a keen interest in paediatric dysphagia and the impact it may have on the family.

Dr Bernice Mathisen is the Speech Pathology Program Convenor at The University of Newcastle and former director of its Interdisciplinary Dysphagia Clinic (IDC). She has 35 years experience in Australia and in the United Kingdom (University College, London) with a broad spectrum of research, teaching and clinical service roles.

Correspondence to:
Erin Palmowski
erin.p87@gmail.com
Bernice Mathisen
bernice.mathisen@newcastle.edu.au

CLINICAL INSIGHTS

22q11 Deletion Syndrome (Velocardiofacial Syndrome)

Alex Forsyth and Maeve Morrison

22q11.2 microdeletion syndrome (22q11DS) is reported to be the second most common chromosomal abnormality following Down syndrome. However, routine genetic testing has only been available since the early 1990s, so it is likely there are undiagnosed cases within the greater population. Figures continue to increase, with an agreed incidence of 1:4,000 (McDonald-McGinn, 2004) and prevalence being predicted as high as 1:1,600 (Shprintzen, 2008). This condition is also known as DiGeorge syndrome, velocardiofacial syndrome, conotruncal anomalies syndrome, Shprintzens syndrome, Cayler cardiofacial syndrome, and less favourably, "Catch 22". The majority of patients are found to have a common deletion band 11 on the long arm of the chromosome 22. 22q11 DS can be inherited in an autosomal dominant fashion, however the majority (93%) of cases are not transmitted by either parent (McDonald-McGinn & Zackai, 2004).

With over 180 different medical difficulties currently reported in this syndrome (VCFS foundation, 2007), patients require comprehensive multidisciplinary management. No single anomaly occurs in 100% of cases. McDonald-McGinn (2004) reports the most common problems to be cardiac issues (76%), velopharyngeal dysfunction (VPD) (76%), immunodeficiency (77%) and hypocalcaemia (49%). Significantly delayed motor and language development are also frequently reported in this condition. Solot et al. (2001) found that 90% of children presented with delayed language at 2 years. Typical facial characteristics include narrow eyes, long face, cupped ears and bulbous nose, though the facial features are often subtle.

Early management is often, by necessity, medically focused – on account, for example, of cardiac problems – with the speech and language therapist's (SLT) involvement often centring on feeding and early communication. As the child moves through the preschool years into the educational setting, the SLT may continue to be involved with persistent feeding problems, but often the main focus at this stage moves to velopharyngeal function and speech and language. In the older child, the balance shifts towards higher level language and social communication. Difficulties in these areas may be exacerbated by emerging psychological and psychiatric problems.

The following two sections are authored by two speech pathologists working in specialist centres with a focus on 22q11DS. Alex Forsyth provides information on dysphagia in 22qDS while Maeve Morrison outlines speech, language and other developmental issues associated with this syndrome.

Dysphagia in 22q11DS

Alex Forsyth

At Great Ormond Street Hospital for Children in London, United Kingdom, there are over 300 children on the speech and language therapy caseload with a confirmed microdeletion of 22q11.2 (22q11DS). These patients are monitored closely by a multidisciplinary team, including paediatrics, immunology, genetics, speech and language therapy and clinical psychology. There are active links to other teams within the wider hospital, including cleft lip and palate, gastroenterology, otolaryngology, respiratory medicine, and a specialist behavioural feeding team.

Mother and 2 daughters, all with 22q11 deletion syndrome

Mother was diagnosed with 22q11DS after her older daughter was diagnosed as an infant. The mother had submucous cleft palate repair at age 3 and pharyngoplasty at age 6. She now has no evidence of speech disorder. Her older daughter, now aged 6, has had pharyngoplasty which has improved speech clarity. The younger daughter, aged 4 years, is currently being investigated for VPD. She continues to depend on gastrostomy tube feeding and has had frequent hospitalisation for respiratory and cardiac concerns.

Note the subtle facial features which are typical in 22q11 deletion syndrome.

The plethora of medical issues that can predispose a patient with 22q11DS to swallowing and feeding difficulties is significant. With palatal/velopharyngeal, cardiac, gastrointestinal and airway problems among the myriad of difficulties reported, it is often difficult to determine which underlying system is affecting feeding and/or swallowing, and therefore how to provide appropriate management. In addition, altered immune status leading to respiratory infections and use of preventative medications to reduce infection may make differential diagnosis of respiratory compromise resulting from aspiration especially difficult.

When reviewing the literature on 22q11DS, "feeding difficulties" are acknowledged, with a general agreement in prevalence of 30–40% (McDonald-McGinn, 2004). Most papers, however, are level 1 or 2 evidence, being case studies, expert opinion, or anecdotal reports. The term "feeding difficulties" is often poorly described, leaving the speech and language therapist with little clarity as to their nature or aetiology.

Some papers, particularly earlier references, attribute these problems to three of the main medical issues associated with this condition – namely velopharyngeal dysfunction (VPD), cardiac problems and gastro intestinal issues. It has been suggested that feeding difficulties were often transient, resolving within the first year of life (Devrient, Rommel, & Casteels, 2005). Feeding difficulties are increasingly acknowledged as persistent, often requiring long term (over 1 year) tube feeding (Eicher et al. 2000).

Some of the more common feeding difficulties, and strategies for their management, are outlined below.

Palatal anomalies/velopharyngeal dysfunction (VPD)

The incidence of VPD in patients with 22q11DS is reported to be at least 70% (Solot et al., 2001). Within this group, there may be an obvious structural defect such as cleft palate (10%) or submucous cleft palate/bifid uvula (20%). In other cases, VPD exists because of multiple additional factors, resulting in an inability of the soft palate and the posterior pharyngeal wall to shut off effectively and with appropriate timing. The relationship between VPD in feeding and subsequent speech development is not known. Research has shown that palate movement during speech and swallowing differs Nohara, K., Kotani, Y., Ojima, M., Sasao, Y., Techimura, T., & Sakai, T. (2007), and one should thus not assume that VPD associated with feeding will automatically transfer to VPD during speech.

Early feeding efficiency in patients experiencing VPD may be characterised by a lack of negative pressure in the oral cavity, leading to decreased sucking efficiency. As a result, only small boluses of milk are extruded from the nipple/teat per suck. The infant with feeding-related VPD may appear to feed vigorously over time but only manage small volumes, experiencing associated limited weight gain. The infant may also present as a frequent feeder, falling asleep regularly on the breast or bottle. Clinical assessment may show a fast sucking rate or nasal regurgitation. Strategies which are commonly applied to the cleft population such as adapted bottles and positioning may increase feeding efficiency.

Cardiac issues

Approximately 75% of infants with 22q11DS experience some type of cardiac problem (McDonald-McGinn, 2004). It is widely acknowledged that infants with unresolved cardiac problems present as breathless, tiring quickly during feeds, and are frequently disorganised in terms of suck–swallow–breathe. Often problems can be resolved by presenting the infant with frequent, short, high energy feeds, although sometimes a period of tube feeding is required. Feeding problems should resolve as cardiac conditions improve. Persistent hoarse or absent voice post cardiac surgery, especially accompanied by deterioration in feeding skills, may indicate vocal fold damage or paralysis, as a result of intubation injuries or recurrent laryngeal nerve damage. The infant may therefore be more vulnerable to swallowing difficulties, and subsequent aspiration.

Gastrointestinal issues

There is general agreement in the literature that infants with 22q11DS are prone to various gastrointestinal difficulties, including reflux and constipation (Eicher et al., 2000). These difficulties can lead to smaller food volumes taken, poor weight gain, food refusal, and slower transition on to more textured food. Oesophageal atresia and tracheo-oesophageal fistula are reported. Referrals for a detailed gastroenterological examination are critical in patients where problems are suspected, in an attempt to minimise potential long-term feeding problems. Eicher et al. (2000) indicated that following the treatment of reflux, patients showed better progression with food textures, in contrast to oral motor therapy alone.

Behavioural feeding difficulties

Behavioural difficulties, or “fussy” or “aversive” feeding behaviours, are reported. These may occur as a result of complex medical interventions, where a child is repeatedly exposed to negative experiences around the face, or to gastrointestinal problems, where a child receives a negative experience in response to eating or drinking. In addition, infants who have required tube feeding since infancy, or for prolonged periods, may not have fully established a relationship between oral intake and a desire to eat, or may never have experienced hunger or thirst. Behavioural feeding difficulties can also be seen as part of the larger behavioural phenotype associated with this condition, with young children often preferring structure, routine and showing strong food preferences. A multidisciplinary approach is essential to rule out any ongoing organic reason for food refusal, prior to behavioural intervention.

Oral motor development

Delayed global motor development can lead to a delay in maturation of chewing skills, and thus a delay in moving on to more textured foods (Eicher et al., 2000). Anecdotal experience shows parents often report unchewed food pocketed in the mouth “hours” after a meal. Children tend to gain skills as their global motor development improves. Parental support regarding graded texture progression and awareness of encouraging the development of feeding milestones is often critical.

Otolaryngologic issues

Congenital airway and vascular anomalies are reported in patients with 22q11DS. Dyce et al. (2002) performed a retrospective medical review of 102 children with 22q11DS to determine presence of airway difficulties and found 14% to have laryngotracheal anomalies such as subglottic narrowing, vocal cord paralysis, tracheomalacia, and laryngeal cleft. Vascular problems such as vascular rings and aortic arches with tracheobronchial compression were also found. An absent, hoarse, or high-pitched cry indicates a need for onward referral to otolaryngology. The presence of any of the aforementioned difficulties significantly increases the risk of feeding or swallowing problems and a subsequent vulnerability to aspiration. A detailed swallowing assessment including objective measures should be undertaken where structural difficulties are reported.

Swallowing difficulties

Swallowing difficulties are reported in approximately 10% of children with 22q11DS (Eicher et al., 2000). Difficulties at all phases of the swallow have been described in the literature, with particular attention paid to the crico-oesophageal phase. Eicher et al. (2000) and Rommell, Davidson, Cain, Hebbard and Omari (2008) describe difficulties with material passing smoothly from the pharynx into the oesophagus. The aetiology of this problem and appropriate management is unknown. Rommell et al. (2008) assessed four patients with crico-oesophageal phase swallowing difficulties, combining manometry with videofluoroscopy swallow study (VFSS). Each patient was reported to present with a unique pattern of cricopharyngeus movement, thus requiring different management in each case. Assessment of pulmonary consequences of aspiration, both chronic and acute, can be difficult to determine due to potentially altered immunology, as outlined earlier. An objective assessment such as VFSS or fibre endoscopic evaluation of swallow should be carried out whenever aspiration is suspected. At Great Ormond Street Hospital, our clinical experience using VFSS indicates thin fluids and sticky textures prove more problematic for patients with 22q11DS. The use of thickened fluids, and avoidance of textured substances, often reduces aspiration risk.

Summary

Feeding and swallowing difficulties in 22q11DS can be complex and multifactorial, often not simply related to any one underlying problem. Feeding problems can be persistent, lasting throughout childhood. Detailed multidisciplinary assessment and management is critical in order to ensure oral intake is safely optimised at all stages of development. Both clinical and objective assessment is essential to ensure appropriate management of feeding and swallowing difficulties.

Speech, language and general development in 22q11DS

Maeve Morrison

Communication impairment is one of the most reported and commonly occurring features in 22q11DS and includes problems ranging from disorders of articulation, resonance, voice and hearing to delayed language comprehension and expressive language. Communication competence is also affected by cognitive ability and behaviour. In addition, learning difficulties and social behavioural disturbances are considered to be part of the profile of 22q11DS.

Speech and communication issues may be the presenting features that alert the clinician to consider 22q11DS and the speech-language therapist is often the first to suspect the syndrome.

Velopharyngeal dysfunction

Velopharyngeal dysfunction (VPD) is one of the anomalies that occurs with most frequency in 22q11DS and is reported to occur in 70% to 80% of individuals with the syndrome. The terms *velopharyngeal inadequacy* (VPI) and *velopharyngeal dysfunction* (VPD) are both used to describe abnormality of velopharyngeal function.

The speech characteristics of velopharyngeal dysfunction (which can be analysed through perceptual assessment of speech) are:

- hypernasal tone
- nasal emission of air
- nasal turbulence
- disordered articulation particularly affecting pressure sounds.

VPD can be the result of a cleft palate or submucous cleft palate but it can also exist in the absence of a cleft. In fact in 22q11DS only 20% to 30% are reported to have a cleft palate or submucous cleft palate, while 40% to 50% present with VPD without cleft. Hypotonia of the velopharyngeal musculature, a deep pharynx and small or absent adenoidal pad have all been hypothesised to contribute to the VPD in 22q11DS.

Children with 22q11DS should be referred to a cleft palate team to have a comprehensive assessment and to determine if velopharyngeal surgery is indicated. Instrumental assessment by videofluoroscopy can confirm VPD in speech and children can manage this procedure from about age 3 years. Nasendoscopy is another procedure used to investigate velopharyngeal function, although children do not usually manage this until about age 6 years.

Early surgical management of VPD in 22q11DS is recommended to provide better structure and function of the velopharynx for speech and language development. Surgery however may be delayed or contraindicated if the child has significant cardiac complications or illness. In Middlemore hospital, cleft palate repair is carried out at around 9 months of age. Submucous cleft palate is repaired when there are symptoms of VPD in speech. For individuals presenting with VPD in the absence of cleft, a Hynes pharyngoplasty is the first surgical option and is considered from age 2 to 3 years. Hynes pharyngoplasty may also be indicated if VPD persists after cleft palate repair. As speech and language is frequently delayed in 22q11DS, it may not be till age 3 or 4 that VPD can be confirmed. If VPD still persists, pharyngeal flap surgery may be considered in subsequent years.

Velopharyngeal surgery should reduce hypernasal tone and nasal emission as well as increase the ability to create intraoral pressure. Compensatory speech, including glottal and pharyngeal articulation which is typical in 22q11DS, should be addressed by speech-language therapy and is beneficial both before and after surgery.

The severity of VPD in children with 22q11DS may be increased by adenoidectomy. Adenoidectomy prior to diagnosis of 22q11DS is not uncommon (Lipson et al., 1991) as many children with the syndrome present with upper respiratory tract infections. Early identification of the syndrome might prevent this occurrence.

Speech and language impairment

Onset of speech and language is typically delayed in 22q11DS and children may be non-verbal until 2 or even 3 years of age. (Scherer, D'Antonio, & Kalbfleisch, 1999). Hearing loss is also commonly reported and was documented in 60% of children of which 15% were sensorineural and 45% had a conductive hearing loss, secondary to otitis media (Cable & Mair, 2003). Audiological evaluation is therefore recommended for all children with 22q11Ds.

Learning difficulties, hearing loss and VPD may impact on speech and language development; however, specific speech and language impairment is evident in some children with the syndrome. Dyspraxia has been reported in 30% of children with 22q11DS (Mills, Gosling & Sell, 2006). While limited expressive language may persist until the age of 3, there is frequently rapid growth in development of language, typically between the ages of 3 and 4 years. By school entry most children are intelligible, but may continue to show difficulty in syntax, vocabulary, concepts, word finding and discourse (Solot et al., 2000).

Early intervention is indicated and a total communication approach is encouraged to alleviate the frustration associated with limited expressive language. Although language comprehension is often delayed, it is not as severely affected as expressive language (Glasser et al., 2002).

Motor development

Development of motor skills can be delayed and children may benefit from occupational therapy and physiotherapy. Low motor tone may also impact on speech development.

Learning skills

Cognitive deficit is reported in nearly all individuals with 22q11DS. This ranges from mild to severe learning disability but is typically mild to moderate. Children with 22q11DS commonly have particular difficulty with mathematics and have been found to have special learning styles (Cutler-Landsman, 2007).

Behaviour and personality

Behavioural disorders are frequently reported and two quite distinct behavioural styles have been described: highly active and impulsive or shy, anxious and inhibited (Gerdes et al., 1999). Many clinicians recognise a particular personality associated with the syndrome. Autistic behaviours are also common.

Psychiatric issues are reported in up to 30% of individuals with the syndrome. Symptoms may develop in early teens or

20s and can vary from mild mood swings to bipolar disorder or schizophrenia.

Conclusion

22q11 deletion syndrome is an important syndrome for the speech-language therapist to recognise and understand in order to make appropriate referrals and offer appropriate treatment at optimum stages. Referral to a paediatrician is indicated if this syndrome is suspected and referral to a cleft palate team speech-language therapist is important to assess and plan management for VPD. The local speech-language therapist should continue to have a key role working with the family. The SLT should also be involved in liaising with medical and educational professionals, both in the management of the communication and feeding issues and in promoting early diagnosis of this complex but common syndrome.

References

Cable, B. & Mair, E. (2003). Avoiding the perils and pitfalls in velocardiofacial syndrome: An otolaryngologist's perspective. *Ear Nose & Throat Journal*, *82*(1), 56–60.

Carneol, S. O., Marks, S. M. & Weik, L. A. (1999). The speech-language pathologist: Key role in the diagnosis of velocardiofacial syndrome. *American Journal of Speech-Language Pathology*, *8*(1), 23–32.

Cutler-Landsman, D. (2007). *Educating children with velo-cardio-facial syndrome*. San Diego, CA: Plural Publishing.

D'Antonio, L. L., Scherer, N. J., Miller, L. L., Kalbfleisch, J. H. & Bartley, J. A. (2001). Analysis of speech characteristics in children with velocardiofacial syndrome (VCFS) and children with phenotypic overlap without VCFS. *Cleft Palate-Craniofacial Journal*, *38*(5), 455–467.

Devrient, K., Rommel, N. & Casteels, I. (2005). Nephro-urologic, gastrointestinal, and opthalmic findings. In K. C. Murphy, & P. J. Scambler (Eds.), *Velo-cardio-facial syndrome: A model for understanding microdeletion disorders* (pp. 105–122). Cambridge: Cambridge University Press.

Dyce, O., McDonald-McGinn, D., Kirschner, R. E., Zackai, E., Young, K., & Jacobs, I. N. (2002). Otolaryngologic manifestations of the 22q11.2 deletion syndrome. *Archives of Otolaryngology, Head and Neck Surgery*, *128*, 1408–1412.

Eicher, P.S., McDonald-Mcginn, D. M., Fox, C. A., Driscoll, D. A., Emanuel, B. S., & Zackai, E. H. (2000). Dysphagia in children with a 22q11.2 deletion: Unusual pattern found on modified barium swallow. *Journal of Pediatrics*,*137*(2),158–64.

Gerdes, M., Solot, C., Wang, P., Moss, E., LaRossa, D., Randall, P., Goldmuntz, E., Clark, B. J., Driscoll, D., Jawad, A., Emanuel, B., McDonald-McGinn, D., Batshaw, M. & Zackai, E. (1999). Cognitive and behavior profile of preschool children with chromosome 22q11.2 deletion. *American Journal of Medical genetics*, *85*, 127–133.

Glaser, B., Mumme, D., Blasey, C., Morris, M., Dahoun, S., Antonarakis, S., Reiss, A., & Eliez, S. (2002). Language skills in children with velocardiofacial syndrome (deletion 22q11.2). *Journal of Pediatrics*, *140*(6), 753–758.

Lipson, A. H., Yuille, D., Angel, M., Thompson, P. G, Vandervoord, J. G. & Beckenham, E. J. (1991). Velocardiofacial (Shprintzen) syndrome: An important syndrome for the dysmorphologist to recognise. *Journal Medical Genetics*, *28*, 596–604.

McDonald-McGinn, D. M. (2004). Much ado about 22q? *Proceedings* of the 10th Annual International Meeting of the Velo-Cardio-Facial-Syndrome Education Foundation, Inc and the Fourth International Conference for 22.11.2 Deletions, Atlanta, Georgia.

McDonald-McGinn, D. M. & Zackai, E. H. (2005). Genetic counselling. In K. C. Murphy, & P. J. Scambler (Eds.), *Velo-cardio-facial syndrome: A model for understanding microdeletion disorders* (pp. 200–218). Cambridge: Cambridge University Press.

Mills, L., Gosling, A. & Sell, D. (2006). Extending the communication phenotype associated with 22q11.2 microdeletion syndrome. *Advances in Speech-Language Pathology*, *8*(1), 17–27.

Nohara, K., Kotani, Y., Ojima, M., Sasao, Y., Tachimura, T., & Sakai, T. (2007). Power spectra analysis of levator veli palatini muscle electromyogram during velopharyngeal closure for swallowing, speech, and blowing. *Dysphagia*, *22*(2), 135–139.

Rommel, N., Davidson, G., Cain, T., Hebbard, G. & Omari, T. (2008). Videomanometric evaluation of pharyngo-oesophageal dysmotility in children with velocardiofacial syndrome. *Journal of Pediatric Gastroenterology and Nutrition*, *46*, 87–91.

Scherer, N. J., D'Antonio, L. L., & Kalbfleisch, J. H. (1999). Early speech and language development in children with velocardiofacial syndrome. *American Journal of Medical Genetics*, *88*, 714–723.

Shprintzen, R. J. (2008). Velo-cardio-facial syndrome: 30 years of study. *Developmental Disabilities Research Reviews, 14*, 3–10.

Solot, C. B., Gerdes, M., Kirschner, R. E., McDonald-McGinn, D., Moss, E., Woodin, M., Aleman, D., Zackai, E. H., & Wang, P. P. (2001). Communication issues in 2q11 deletion syndrome: Children at risk. *Genetics in Medicine*, *3*, 67–71.

Solot, C., Handler, S., Gerdes, M., McDonald-McGinn, D., Moss, E., Wang, P., Cohen, M., Randall, P., LaRossa, D. & Driscoll, D. (2000). Communication disorders in the 22q11.2 microdeletion syndrome. *Journal of Communication Disorders*, *33*, 187–204.

Useful websites

www.maxappeal.org.uk – UK parent support group

www.vcfsef.org.au – Australian parent support group

www.chop.edu/consumer/jsp/division/generic.jsp?id=74654 – 22q and you – Children's Hospital of Philadelphia

www.vcfs.org.nz – New Zealand parent support group

Alex Forsyth, specialist speech and language therapist, works as part of the North Thames Regional Cleft Lip and Palate Team, based at Great Ormond Street Hospital in London, UK. **Maeve Morrison**, specialist speech and language therapist, works as the lead speech and language therapist for the Cleft Lip and Palate Team, Counties Manukau District Health Board based at Middlemore Hospital in Auckland, New Zealand.

Correspondence to:
Alex Forsyth
Specialist Speech and Language Therapist
Cleft Lip and Palate/Dysphagia
The Great Ormond Street Hospital
Great Ormond Street
London, WCIN 3JH UK
email: Akempa@gosh.nhs.uk
Maeve Morrison
Speech-Language Therapist
Cleft Lip and Palate Team
Middlemore Hospital
Private Bag 93311 Otahuhu
Auckland, New Zealand
email: mamorrison@middlemore.co.nz

My Top Ten Resources for Working with Children with Feeding Difficulties in the Community Setting

Kylie Harris

For the past two and a half years I have worked as the senior speech pathologist in the paediatric therapy stream at Logan Hospital. My caseload includes general speech and language delays in children under school age and the paediatric feeding caseload. Our feeding caseload includes the special care nursery, maternity and children's wards and an outpatient caseload. Most children we see for outpatient feeding are referred to us because they are having difficulties transitioning through lumpy solids or because they have difficulty with chewy foods such as red meat. The list of resources I have put together contains those that we use with the outpatient caseload.

1 *List of mealtime rules to establish a positive mealtime environment*

So many feeding difficulties can be improved by putting in place mealtime rules that set up a positive mealtime environment for families. Examples include:

- Having 5 set meals each day – children who graze on food all day are never hungry enough at meal time to try new foods.
- Everyone sits at the table or in a highchair for meals – children tend to eat less when they are distracted by the TV or toys while eating.
- Everyone eats together – children need to be included in normal mealtime activities (talking about their day, etc.) and they are more likely to eat foods that they see their parents and siblings eating.
- Everyone eats the same foods – this stops parents feeling they need to prepare different foods for each child in the family. Some studies suggest that children need to have a food presented to them more than 15 times before they are likely to try the food. Ensuring they are offered the same foods as the rest of the family means they are constantly exposed to a range of foods.
- Everyone over 18 months feeds themselves – children over 18 months should be having all of their food served as finger foods or pieces small enough to stab with a fork. Children at this age should be able to use a spoon independently (although maybe a little messily).
- Children are never in trouble for not eating but they should not be given any other foods if they do not eat what is offered.

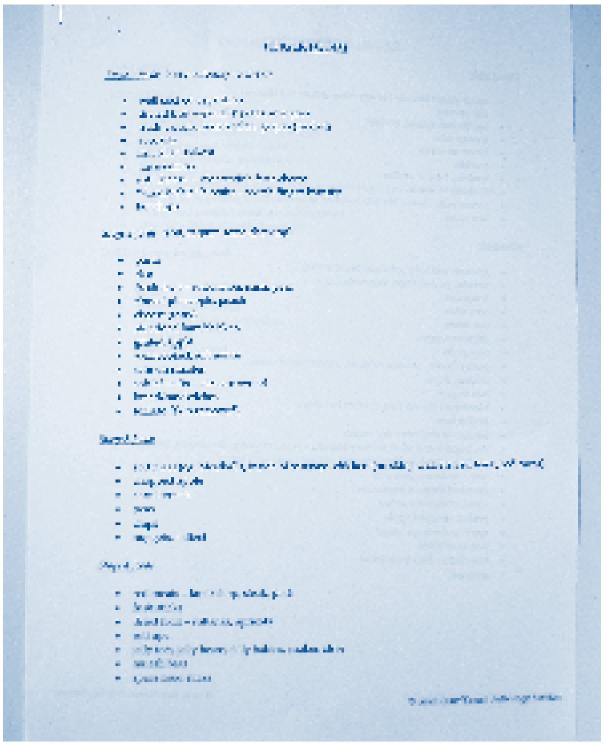
2 Stages of finger foods *by Sarah Starr, Speech Pathology Services*

This is great to give to parents to help them understand that some finger foods are easier to eat than others. The handout grades finger foods as:

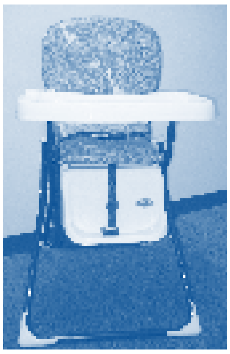
- very soft/easy to chew – e.g., well cooked vegetables.
- soft, requiring some chewing – e.g., pasta.
- more difficult to chew – e.g., red meat, muesli bars.

3 *Triple P (Positive Parenting Program) training*

So much of community-based feeding work involves aspects of behaviour management. Being trained in Triple P allows the clinician to give accurate and consistent advice on how to manage undesirable behaviours. People who are trained also have access to Triple P Tip Sheets like "Toddlers: independent eating" and "Preschoolers: mealtime problems". See the website www.triplep.net or phone 07 3236 1212 for more information.



4 *Highchair*



A highchair is essential for observing infants and toddlers eating/being fed in an environment that is similar to home. It is often during an observation time that the clinician gains valuable information regarding the interaction between carer and child and the skills of the carer and child.

5 *Queensland Health Child & Youth fact sheets – introducing solids*

These fact sheets have easy-to-understand information for parents regarding feeding. There are separate fact sheets for 6-, 8-, 9-, 12-month-old children and these are available online: http://www.health.qld.gov.au/child&youth/factsheets/

6 *Reinforcement games for chewing practice*

When working on biting and chewing skills, standard reinforcement games that involve turn-taking are a must. Games such as "Pop Up Pirate", "Honey Bee Tree" or "Animal Buddies" are all great.

7 *Australian Breastfeeding Association website*

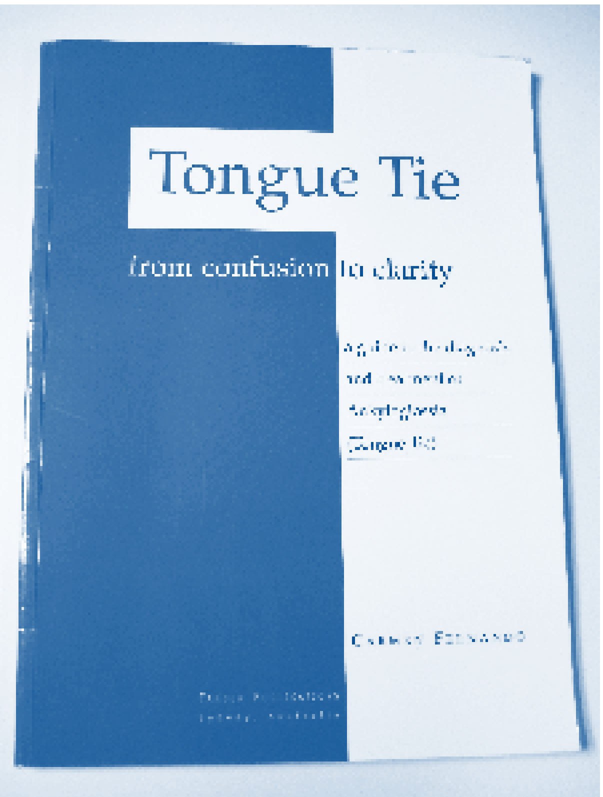
When working with breastfeeding mums and their babies, the ABA website has a lot of information on all areas related to breastfeeding: http://www.breastfeeding.asn.au/

8 *Range of foods*

While we ask parents to bring foods into the clinic, a store of foods on hand is always helpful. Jars of different textured foods, biscuits, fruit bars, etc., are a good place to start.

9 *Tongue tie*

My experience is that tongue tie can have a significant effect not only on breast and bottle feeding success but also on chewing and, in severe cases, initiating the swallow with lumpy foods. For young babies I use the *Assessment of Lingual Frenulum* and for older children I use the *Tongue Tie Assessment Protocol* by Carmen Fernando. Both assessments, when combined with clinical reasoning, help to give an objective measure of whether a tongue tie release is warranted.



10 *Access to a paediatric dietitian*

Hard to come by in many settings but invaluable! When working with children with compromised oral intake or with food intolerances or allergies, you can't beat having access to a paediatric dietitian.

References

Fernando, Carmen. (1998). *Tongue tie: From confusion to clarity*. Concord, NSW: Tandem Publications.

Hazelbaker, A.K. (1993). *The assessment tool for lingual frenulum function (ATLFF): Use in A lactation consultant private practice*. Pasadena, CA: Pacific Oaks College.

MY TOP 10 RESOURCES FOR DYSPHAGIA

Asher Peet

I am a senior speech pathologist at Sir Charles Gairdner Hospital in Western Australia graduated from Curtin University of Technology in 2005, and have worked in an acute adult setting since that time. My major fields of interest are dysphagia, tracheostomy and FEES.

As a speech pathologist in an acute tertiary hospital, I work predominantly with acquired swallowing disorders in an adult population. I find this area of work to be both challenging and rewarding, and the resources below to be invaluable in offering my clients a better service. I hope that other clinicians will also find them useful, either as a way to support their own skills or to share our knowledge with patients, caregivers and other health professionals.

1 Equipment: Pen-light, tongue depressors and mouth swabs

I find these items essential to perform any bedside or outpatient swallow assessment. Thorough examination of oral musculature and anatomy are greatly assisted by these items, and I would never leave my office without them!

2 Gloves, eye goggles, hand wash

I consider universal precautions for infection control to be indispensable in working with dysphagia. During bedside swallow examination, you frequently come into contact with the oral mucosa and saliva. It is also possible that coughing may increase your risk of exposure to transmissible infections. Simple barrier protection (gloves and eye goggles) and hand washing with good technique before and after contact significantly reduce the risk to both yourself and your patient.

3 My multidisciplinary team

Management of dysphagia is an area of specialty for speech pathology. However, working in a team of health professionals can really increase the options you have available for your patient.

- Input from medical staff is often essential to establish a diagnosis for the underlying condition related to dysphagia. Medical referral (and joint performance) is also often necessary for instrumental examinations such as videofluoroscopy and fibreoptic endoscopic evaluation of swallowing (FEES).
- Our allied health colleagues – our job would be much more difficult without physiotherapists to advise on respiratory support and positioning, occupational therapists to assist with seating and modified cutlery, dietetics to work towards the most appropriate nutrition and hydration options, and social workers to help our patients source assistance in the community.
- Nurses frequently carry out and monitor our recommendations, and may be the first to identify the need for a speech pathology referral.

4 The Passy-Muir tracheostomy observation model

This model is a coloured plastic 3D representation of the head and neck in mid saggital cross-section. It is extremely useful in pointing out the anatomical structures involved in swallowing to patients, families and other health professionals. In particular, I find it helps laypersons to visualise the location of the trachea and oesophagus, and understand the mechanisms of aspiration. It also has a "stoma" available for the placement of a tracheostomy tube – you can place and demonstrate the type of tube relevant to your patient. A wonderful way to practise inflating and deflating cuffs, and placing and removing valves and inner cannulas.

5 Recipes for "thinning down" thickened fluids at bedside

Patients with dysphagia often need to have their swallowing function assessed with various fluid consistencies. These consistencies may not be available in pre-mixed form at all sites. It is therefore important to ensure that the viscosity of the fluid you assess the patient with will be the same as the viscosity you order for them to have day to day. Studies have shown that "eye testing" or "spoon testing" is not a reliable way of measuring viscosity. At Sir Charles Gairdner Hospital in Western Australia, we have developed recipes to dictate how much fluid will be required to add to a L900 thickened fluid, to make a L400 or L150, according to our guidelines based on the line spread test. This strategy aims to provide a cost-effective and reliable way of having consistent viscosities for bedside assessment.

6 A dysphagia "show bag"

When patients are placed on a modified diet and fluids, they need adequate education and support to be able to understand the need for the changes and to produce them in the home environment. At Sir Charles Gairdner Hospital, patients and families are provided with a "show bag" upon discharge that includes education brochures, thickening powder samples and brochures, catalogues for commercially pre-mixed fluids, an instructional leaflet regarding their type of diet, and additional items as required (for example, Biotene products for oral care).

7 A neuroanatomy and physiology "cheat sheet"

Another item I wouldn't leave my office without! The neurological control of swallowing is complex, and it is reassuring to have a quick reference sheet to know that you are correctly identifying the likely underlying neurological process related to the bedside symptoms you observe. In times of increasing medico-legal accountability, this type of revision is valuable and helps to reinforce your knowledge.

8 *The whole brain atlas*

At: http://www.med.harvard.edu/AANLIB/home.html

Produced by Keith Johnson, MD, and J. Alex Becker, PhD, of Harvard, this is a great resource of neuroimaging. It contains examples from normal brain images, and from those with cerebrovascular disease, neoplastic disease and degenerative disease. The atlas can be used to gain familiarity with normal brain structures and how these are affected in various etiologies.

9 *Animation for facial muscle innervations*

At: http://library.med.utah.edu/kw/animations/hyperbrain/facial_muscles/facial_muscles.html

Never be confused about upper motor neuron versus lower motor neuron facial muscle innervations again! Need I say more?

10 *www.dysphagia.com*

An incredibly extensive website including latest news from the world of dysphagia research, tutorials and articles, blogs with other professionals, case studies, reference materials, links to organisations and foundations, the list goes on.

AROUND THE JOURNALS

Jane Watts

Variant thyroid cartilage anatomy

Lin, D., Fischbein, N., & Eisele, D., 2005. Odynophagia secondary to variant thyroid cartilage anatomy. *Dysphagia*, 20: 232–234.

This article describes a case of displaced cornu of thyroid cartilage. A review of possible developmental and acquired etiologies is presented and also a review of treatment options.

Neck trauma and traumatic endotracheal intubation have been associated with painful swallowing (odynophagia) and a globus sensation. It is suggested that patients with no history of these may have a displaced superior cornu of thyroid as a congenital condition, but it is unclear why this becomes symptomatic with age. The superior cornu or horn of the thyroid cartilage is one of the pair of upward projections of the thyroid cartilage to which the lateral hyothyroid ligament attaches.

Ways in which abnormal thyroid cartilage anatomy can comprise normal swallowing are outlined and the article highlights that endoscopic laser resection can assist in resolving symptoms.

A case is discussed to assist in differential diagnosis of pain on swallowing or globus sensation, when no abnormality, or a non-specific bulging of the pharyngeal wall, is seen on physical examination or radiographic imaging.

Strength training exercises in dysphagia rehabilitation

Burkhead, L., Sapienza, C., & Rosenbek, J., 2007. Strength training exercises in dysphagia rehabilitation: Principles, procedures and directions for future research. *Dysphagia*, 22: 251–265.

An overview of muscle structure and function, including the difference between type I, type II, type IIa and IIb fibres is given, and the unique fibre types of muscles involved in swallowing are highlighted.

Adaptations of muscle strength training and de-training are discussed and the effects of training and de-training of muscles in ageing are also presented as well as possible implications on maintenance programs for prolonging training effects with older individuals with dysphagia. The authors suggest there is a need for more research in this area.

The principles of strength training including: intensity, specificity and transference are explained and their relevance to dysphagia treatment presented. Repetition and volume of practice are also considered important factors impacting on treatment. These important principles dictate what kind of changes will take place in muscle training and, therefore, research to help develop structured dysphagia exercise programs based on these principles will help enhance treatment effectiveness.

There is an argument for more research to explore the way in which normal systems respond to specific exercises and levels of intensity.

Management of oropharyngeal dysphagia in acute care settings

Schindler, A., Vincon, E., Grosso, E., Miletto, A.,Di Rosa, R., & Schindler, O., 2008. Rehabilitative management of oropharyngeal dysphagia in acute care settings: Data from a large Italian teaching hospital. *Dysphagia 23*: 230–236.

This study reported on the management of oropharyngeal dysphagia by collecting information from inpatients admitted to San Giovanni Battista Hospital during 2004. Of the 35,590 patients admitted, 222 were referred for swallowing assessment and management. Almost half of these 222 patients also had a communication disorder. This article looked at the rehabilitative management of these patients by collection of data prospectively. The hospital is a large teaching institution with over 30 different inpatient departments including: neurology, neurosurgery, intensive care, general medicine, head and neck surgery and geriatrics. The inpatients with dysphagia mainly had neurologic disease, though only 36% had suffered a stroke. The need for acute hospitals to assess, manage and rehabilitate dysphagia of different origins was emphasised and it was argued that early identification and management of dysphagia needs to occur across the full spectrum of etiologies related to dysphagia. The data collected did support swallowing rehabilitation in the acute care phase as a means of helping patients achieve independent feeding and preventing respiratory and nutritional complications.

WEBWORDS 33

Dysphagia

Caroline Bowen

> Difficulty eating because of swallowing problems is a symptom that affects 15% of hospital inpatients, older people, people with neurological disease, cancers of the head and neck and people with severe reflux. This symptom affects a person's ability to remain well nourished and hydrated and increases the risks of ill health. Effective dysphagia management requires an interdisciplinary approach and can make a huge difference to the quality of life experienced by the person with dysphagia. (Nazarko, 2008, p. 258)

Infants, children and adults with dysphagia who can swallow experience difficulty with swallowing liquids, food or saliva. Some endure pain (odynophagia) while swallowing, and have increased vulnerability to lung infection, aspiration pneumonia, and airway obstruction, drooling and choking. Others may be quite unable to swallow or find it so distressing that consuming healthy caloric and fluid intakes orally is out of the question.

Dysphagia is symptomatic of a number of neurological disorders, and its most common cause is stroke. Other aetiologies include traumatic brain injury, cerebral palsy, head and neck cancer, and degenerative neurological disorders such as Parkinson disease, amyotrophic lateral sclerosis (ALS or Lou Gehrig's disease), multiple sclerosis, progressive supranuclear palsy, Huntington disease, and myasthenia gravis. Dysphagia is also characteristic of muscular dystrophy, myotonic dystrophy and oculopharyngeal muscular dystrophy.

Speech-language pathologists have a crucial role in the interdisciplinary assessment and management of swallowing disorders, fulfilling clinical, consultancy, managerial, team leadership, educative and research roles.

Web resources

The Internet offers many resources for professionals interested in the serious topic of dysphagia and a good place to start is the Tutorials and Articles section of Phyllis M. Palmer's **Dysphagia and Swallowing Resource Center**[1]. It holds copious information on all age-groups of people affected by dysphagia, and the site itself has links to a wide range of important and up-to-date research findings. Dr Palmer is owner of a vibrant dysphagia discussion forum. Intending subscribers can enter their email addresses in an online form and the list's archives can be viewed on a dedicated page. Subscribers can elect to receive individual messages, or batches of posts in a daily digest.

The Mayo Foundation for Medical Education and Research provides excellent Plain English information on **swallowing problems**[2], while **FreeMD**[3] proudly presents a swallowing symptom check-up using amazing multi-media magic! Self-proclaimed and award-winning "virtual doctor" Stephen J. Schueler, MD, interviews site visitors helping them decide if they need to see a doctor and why. He takes a medical and swallowing difficulties history, and at the end of the session tells the interviewee what might be causing their dysphagia and when to see a medical practitioner. **Swallowing trouble**[4] from the American Academy of Otolaryngology – Head and Neck Surgery comprises a comprehensive overview with related pages on hoarseness and sore throats. In its "My child has..." series, the Children's Hospital Boston has a page on **dysphagia**[5] and so does **ASHA**[6]. Reliable as ever, the Hardin MD Meta-directory shepherds browsers to **links pages and pictures**[7].

Member benefits

On the Speech Pathology Australia website, members can access position papers on dysphagia and modified barium swallows, and a useful summary of terminology for modified foods and fluids and a related PowerPoint show. Similarly, the ASHA site has a members-only area containing **paediatric dysphagia resources**[8] among other resources. Speech pathologists outside the US can become **international affiliates**[9] for a reasonable annual fee and enjoy many benefits including online access to all the ASHA publications, web forums and position papers, and eligibility to join special interest divisions, including Division 13. The mission of Division 13 is to provide leadership and advocacy for issues in swallowing and swallowing disorders and to serve ASHA members and affiliates who evaluate and manage individuals with swallowing and feeding disorders across the lifespan by supporting professional development, research, education, and communication necessary for delivery of the highest quality services. Moving further north, the CASLPA site has an **action learning experience**[10] for SLP students on the experience of having dysphagia for a day. There are more CASLPA goodies on its **featured articles page**[11], and on the RCSLT site is an interesting news item entitled **Stroke strategy is hard to swallow**[12].

Swallowing

The verb to *swallow* connotes immediate images that can range from the exquisite pleasure of savouring one's very first home-grown tomato, or sipping cool water after a long, hot hike, to the slight discomfort of forcing down bad-tasting medicine or the ghastly but not-too-earth-shattering realisation that although you probably *won't* die, you *did* swallow a fly! In everyday conversation it is a verb often figuratively associated with the distasteful and unpalatable. When we put up with unpleasant remarks we swallow insults; when our dignity is bruised we swallow our pride; when we hide our hurt we swallow our feelings; when our environment is flooded or burnt it is swallowed by water or flames; when we are gullible we swallow tall stories; when we retract an embarrassing remark we swallow our words; and when we mumble and fumble inarticulately we swallow our lines.

But there is no pleasant imagery, no funny side and nothing figurative about difficulty with swallowing. Dysphagia whatever the cause, demands courage and patience of people who have to adapt to it and consummate skill and dedication of family members, friends and professionals who support them.

Reference

Nazarko, L. (2008). The clinical management of dysphagia in primary care. *British Journal of Community Nursing*, *13*(6), 258–264.

Links

1. http://dysphagia.com
2. http://www.mayoclinic.org/swallowing-problems
3. http://www.freemd.com/difficulty-swallowing/visit-virtual-doctor.htm
4. http://www.entnet.org/HealthInformation/swallowingTrouble.cfm
5. http://www.childrenshospital.org/az/Site815/mainpageS815P0.html
6. http://www.asha.org/public/speech/swallowing/FeedSwallowChildren.htm
7. http://www.lib.uiowa.edu/hardin/md/dysphagia.html
8. http://www.asha.org/members/slp/clinical/dysphagia/pediatric_dysphagia.htm
9. http://www.asha.org/about/membership-certification/international/affiliate.htm
10. http://www.caslpa.ca/PDF/monthly_featured_articles/CJSLPA_Fall_2007.pdf
11. http://www.caslpa.ca/english/resources/monthly_featured_articles.asp
12. http://www.rcslt.org/news/press_releases/strokestrategyishardtoswallow

Webwords 33 is at http://speech-language-therapy.com/webwords33.htm with live links to featured and additional resources.

BOOK REVIEWS

Daniels, S. K., & Huckabee M., (2008). *Dysphagia following stroke*. San Diego, CA: Plural Publishing. ISBN10 1 59756 196 7 (pbk); 200pp.; A$140.

Toni Dalzell

The small size of this textbook belies the extent of the information covered. The authors provide a thorough account of dysphagia assessment and management and, although the focus is on stroke, many of the principles and discussions are pertinent to dysphagia across the board.

Historic and recent research findings are extensively reported without bias and are discussed in terms of both merit and shortfall, with emphasis on how the findings have clinical application. Case examples are also included throughout for practical application and the reader is referred to other scientific literature for information beyond the scope of the book.

The information is presented in a structured and logical format using both scientific terminology and layman terms. Much of the material has been summarised into table format for quick reference and an abbreviation list is provided. (However, it should be noted that the hypoglossal nerve has been incorrectly labelled as cranial nerve X in table 1.1.)

The focus throughout the book is on pathophysiology, which should direct assessment and management of dysphagia in stroke. The authors provide a detailed anatomical and functional description of the central and peripheral neural control of swallowing that manages to simplify the highly complex process. This section of the book is particularly useful for students or clinicians who are normally daunted by neuroanatomy and function pertaining to swallowing.

Clinical and instrumental examinations are discussed with an emphasis on multi-modal assessment with a holistic and multi-disciplinary approach encouraged. Compensatory strategies and rehabilitation principles are explored and future directions in evaluation and treatment of dysphagia are considered.

The book is a valuable resource for students, new graduates and experienced clinicians alike. It is a practical, detailed guide to assessing and managing dysphagia and it provides extensive, up-to-date information that supports evidence based practice.

Adams, L. (2005). *Group treatment for Asperger syndrome: A social skill curriculum*. San Diego, CA: Plural Publishing. ISBN 1 59756 022 7 (pbk); 182pp.; A$70.

Chyrisse Heine

This soft-bound book spans 182 pages and contains an accompanying DVD that outlines and illustrates the principles of group intervention that are described in the text. The author is a professor and clinical supervisor, who wrote this book based on her clinical work with children with Asperger syndrome.

Chapter 1 consists of a short introduction (from the author's perspective) of Asperger syndrome and includes a definition, the characteristics and challenges faced by children with Asperger syndrome as well as a description of group intervention principles. A short reference list is also supplied at the back of the book.

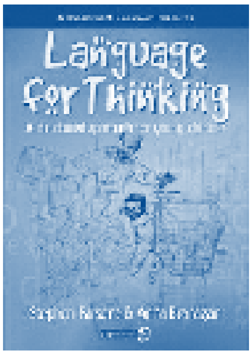
The ensuing chapters (chapters 2 to 4) describe activities to be used in intervention. Chapter 2 is devoted to children aged 3 to 5 years, chapter 3 covers children aged 6 to 9 years while chapter 4 contains activities for children aged 10 to 12 years. Each chapter covering intervention identifies specific goals and describes activities that can be used to achieve the goal. The goals of chapter 2 are aimed at developing cooperative skills, eye contact, turn-taking and pretend play. Goals of chapter 3 include development of cooperative skills, eye contact, facial expressions, turn-taking, and role play, whereas the goals of chapter 4 are cooperative skills, eye contact, expressing emotions, turn-taking and topic maintenance. There are various activities provided for each goal. For example, "Guess that sound" is an activity suggested to achieve the cooperative skills goal in chapter 3.

An example of an activity and procedure suitable for 3- to 5-year-olds is "Obstacle course" (see chapter 2, p. 51). The objective of this group activity is to promote the use of turn-taking. The procedure requires the instructor to create an obstacle course using carpet squares, a small slide, indoor gym set, rocking chair, objects hanging from the ceiling and other furniture. The children are required "to label the action to build verb vocabulary as they move through the course". The instructor reminds the other children to wait for their turn.

Overall, this book is simply written and easy to follow. Most activities require common materials, such as butcher's paper, cotton, a sticker chart, stickers, or noisemakers. Hence, only a short planning time is required prior to the session. An added bonus is the list of frequently utilised materials which is set out in appendix A, and a list of activities that do not require materials (e.g., "read my face" or "how do I move?"), is included in appendix B. The procedure required to carry out each activity is short, well-described and straightforward to follow. This book is therefore a useful resource for the busy clinician working with children with Asperger syndrome.

Parsons, S., & Branagan, A. (2005). *Language for thinking: A structured approach for young children*. Milton Keynes, UK: Speechmark Publishing. ISBN 978 086388 575 4 (spiral bound); pp. 204; AU$107.00.

Suze Leitão



This resource, originally published in 2005, outlines a detailed program to develop children's language and thinking skills along a continuum from the more concrete to the abstract. The content is based on the model devised by Marion Blank with her colleagues Susan Rose and Laura Berlin in their seminal work published in 1978. They analysed language use in the classroom along a dimension of complexity – the "perceptual – language distance" and developed a framework consisting of four levels: matching perception, selective analysis of perception, re-ordering perception and reasoning about perception. These four levels are assessed in their test: the Pre-school Language Assessment Instrument. This program focuses on three language levels, termed A, B and C, which correspond to the Blank levels II, III and IV.

Language for Thinking: A Structured Approach for Young Children consists of three parallel assessments that can be used to establish baseline levels and determine where to begin the program for an individual child, and to monitor progress. Clear guidelines are given for administering and scoring the assessments, and allocating a starting point in the program.

The program aims to develop oral language thinking skills as a foundation for reading comprehension. The program can be delivered at three levels – called "modules": picture and talk (oral only), picture and text, and text (child reads). In all cases, the adult discusses the picture or text orally with the child.

The manual describes the program, outlines the procedure clearly and provides guidelines on assessment, monitoring progress and moving between the modules. It also outlines procedures (based on the original Blank "simplification strategies") for helping a child succeed.

This resource builds on a solid theoretical foundation based on the role of verbal reasoning in developing language. The detailed manual and procedures allow users to collect data and demonstrate the effectiveness of their therapy to others. A strength of the program is its clarity and simplicity, allowing it to be used by speech pathologists with teachers, teaching assistants, therapy aides and parents. It provides guidelines for using the resource with individuals as well as small groups and whole classes.

One concern about the program is the potential to use it solely as a "question-and-answer" approach, with an emphasis on testing rather than teaching. While there is a section on helping children succeed, it would be useful to have such suggestions on the scenario and question (S&Q) sheets as users may not refer to the tips on a regular basis. This could involve some guidelines (e.g., *If the child does not respond, you could simplify the question, model the answer or ask a "prompt" question*). Examples could include:

S&Q Sheet 1: Crossing the road.

Level A	Level B	Level C
Where are Lisa and Philip?	Why have Lisa and Philip stopped at the crossing?	Why are Lisa & Philip crossing here and not down the street?
(I think Lisa and Philip are at the main road near their house)	*(Lisa and Philip have stopped at the crossing. Why do you think they stopped?*	*(I think it might be safer here as this is where the crossing man is!)*
What are the children carrying?	What could be inside their bags?	What two things could Philip do, if he has forgotten his lunch?
(In the picture, I can see the children carrying some school books)	*(I think they are school bags. What do you have in your bag when you come to school?)*	*(If I forgot my lunch, I would go to the canteen!)*

One weakness of the resource is the black-and-white line drawings which are not very attractive or appealing.

Overall this resource would be most useful for speech pathologists who work collaboratively or at a distance with others such as teaching assistants, therapy aides and parents.

References

Blank, M., Rose, S. A., & Berlin, L. J. (1978). *The language of learning: The preschool years*. New York: Grune & Stratton, Inc.

Blank, M., Rose, S. A., & Berlin, L. J. (2003). *Pre-school language assessment instrument*, 2nd ed. Pro-Ed

---

Williams, A. Lynn (2006). *Sound contrasts in phonology (SCIP)*. Greenville, SC: Super Duper Inc., A$410 (including GST). http://www.superduperinc.com; available in Australia from Super Duper Publications suppliers.

Jemma Skeat

Sound Contrasts in Phonology (SCIP) is a software program designed to facilitate clinical intervention for children with speech sound disorders (SSDs). The program was developed to provide clinicians with a large array of pictures to use in contrastive phonological therapy – for example, minimal pairs or maximal opposition. SCIP supports an evidence based framework to treatment of SSDs, providing clinicians with useful information about the theory and research behind common treatment approaches for SSDs.

SCIP comes as a two CD package, with a detailed user manual. The program can be used in several ways. First, it provides a bank of pictures illustrating over 2000 real words and around 6000 nonsense words for use in therapy.

Clinicians can simply choose the pictures required for a treatment session, and print them in colour or black and white. Second, it provides an option of carrying out therapy on the computer. This allows clinicians to choose a therapy approach (e.g., minimal pairs) and sounds to contrast (based on the target error pattern). The program provides a list of word pairs using these sounds, and the clinician can show these to the client on screen, one pair at a time. Using this approach allows for very simple scoring, recording and graphing of results.

SCIP was easy to install and fairly easy to navigate once oriented to the different features. It may take a while for new users to become familiar with all of the features, and some features and navigation buttons are not obvious to find or use. However, the CD also contains video tutorials as well as useful help features and a detailed manual.

The range of pictures provided is excellent and includes all consonant sounds in word initial and final position, and vowel sounds. Words that are proper names (e.g., Faye) and nonsense words have a number of illustrations to choose from. Another advantage of the program is that pictures can be printed in black and white or colour. Both options provide great looking pictures, although they may work out to be fairly costly in terms of printer ink because of the level of detail and shading.

For clinicians who would like to use SCIP for computer-based treatment, the cost and the (fairly minimal) time investment in learning the software is likely to be counterbalanced by the ease and efficiency of choosing appropriate pictures for the target error pattern and treatment approach, scoring attempts, and keeping track of client progress.

National Tour 2009

Speech Pathology Australia

Speech Pathology Australia is very pleased that Dr Jacqueline Roberts has accepted the Association's invitation to be the National Tour speaker for 2009.

Jacqueline Roberts, BA (Hons), Dip. Teach, B Applied Science (Speech Pathology), Ph.D, is an Associate Professor at the University of Canberra, Faculty of Education, and the team leader of the National Education and Training Team for the Australian Autism Education and Training Consortium (AAETC). The Consortium is providing professional development for teachers and school leaders and for parents and carers of children with autism across Australia as part of the Federal Government Helping Children with Autism package.

Dr Roberts will be presenting a two-day workshop across Australia on Autism of day one being to deepen understanding of autism with particular focus on the characteristics of autism which impact on learning and participation in home, school and community, and the focus of day two being on intervention, treatment and management of autism.

Dr Roberts will be running a series of workshops nationally for Speech Pathology Australia in 2009. The planned itinerary is as follows (but may be subject to change):

The first leg of the Tour confirmed as:

- 17/18 April in Mackay
- 20/21 April 2009 in Canberra
- 11/12 June in Hobart
- 26/27 June in Brisbane
- 13/14 August in Darwin
- 7/8 September in Griffith
- 10/11 September in Melbourne
- 19 September in Sydney
- 2/3 November in Adelaide
- 5/6 November 2009 in Perth

We look forward to seeing you at the National Tour workshops. Please refer to the National Tour webpage under Cont Professional Development on the Speech Pathology Australia website for further information. www.speechpathologyaustralia.org.au

RESEARCH UPDATES

The early language in Victoria study

Laura Conway

How do language and literacy skills develop, what makes language and reading more difficult for some children, and what might lead to earlier help for children with language and/or reading problems? These are some of the questions that the Early Language in Victoria Study (ELVS) hopes to answer.

Led by Professor Sheena Reilly, ELVS involves a number of institutions[1] and a large team[2] including speech pathologists, psychologists, epidemiologists, biostatisticians and a paediatrician. The National Health and Medical Research Council (NHMRC) has funded two studies. The first followed over 1900 children from 8 months through to 4 years of age. The second is continuing the study to 7 years of age with an expanded remit to address the development of both language and literacy.

All parents who attended the 8-month check-up or hearing screen at maternal and child health centres in six local government areas in Melbourne were invited to participate[3]. Parents have completed questionnaires about child development, family circumstances and environmental factors of interest at 8, 12, 24, 36, 48 and 60 months of age. Measures of communication were also included. For example, at 8, 12 and 24 months, parents completed the Communication and Symbolic Behavior Scales (CSBS) Infant–Toddler Checklist (Wetherby & Prizant, 2002). At 12 months of age, half the children were administered the CSBS Behaviour Sample by speech pathologists.

At age four years, over 1600 face-to-face assessments were completed. These included the *Clinical Evaluation of Language Fundamentals Preschool* – Second edition (CELF P2) (Wiig, Secord & Semel, 2006), *Goldman Fristoe Test of Articulation* – Second edition (Goldman & Fristoe, 2000), and the *Kaufman Brief Intelligence Test* – Second edition (KBIT 2) (Kaufman & Kaufman, 2004). All the families received feedback about their child's performance and these results were shared with speech pathologists in the community.

Families have been kept up-to-date with ELVS' progress through newsletters and a website. Children receive an "elf" birthday card each year which they love! Many families have been invited to participate in sub-studies such as one investigating bilingualism led by Ruth Nicholls (see page 63).

The follow-up stage of ELVS involves a parent questionnaire around the child's 5th, 6th and 7th birthdays, as well as a face-to-face assessment at 5 and 7. This assessment includes the *Clinical Evaluation of Language Fundamentals* – Fourth edition – Australian Standardised Edition (CELF-4 Australian) (Semel, Wiig & Secord, 2006), *Children's Test of Non-word Repetition* (CNRep) (Gathercole & Baddeley, 1996), *The Comprehensive Test of Phonological Processing* (CTOPP) (Wagner, Torgesen & Rashotte, 1999), and letter name and sound awareness. As with the 4-year-old assessment, parents will receive feedback on their child's performance, this time in comparison to how they performed at age four.

Early findings from ELVS have been published in a number of journals (see below). Furthermore, ELVS has attracted both national and international interest, with results being presented at numerous conferences, including most recently at the joint conference between the New Zealand Speech-Language Therapists Association and Speech Pathology Australia in Auckland (2008), the 12th Congress of the International Clinical Phonetics and Linguistics Association (ICPLA) in Istanbul (2008) and at the XI International Congress for the Study of Child Language (IASCL) in Scotland (2008). The research team is currently analysing data for future publications.

For more information, please contact the ELVS office on 03 9345 5484, email: elvs@rch.org.au, or look online at www.rch.org.au/speech

ELVS publications

Bavin, E., Prior, M., Reilly, S., Bretherton, L., Williams, J., Eadie, P., Barrett, Y., & Ukoumunne, O. (2008). The early language in Victoria study: Predicting vocabulary at 1 and 2 years from gesture and object use. *Journal of Child Language*, *35*, 687–701.

Reilly, S., Eadie, P., Bavin, E., Wake, M., Prior, M., J., W., Bretherton, L., Barrett, Y. & Okoumunne, O. (2006). Growth of infant communication between 8 and 12 months: A population study. *Journal of Paediatrics and Child Health*, *42*, 764–770.

Reilly, S., Wake, M., Bavin, E., Prior, M., Williams, J., Bretherton, L., Eadie, P., Barrett, Y. & Ukoumunne, O. (2007). Predicting language at 2 years: A prospective community study. *Pediatrics*, *120*, e1441–e1449.

Reilly, S., Onslow, M., Packman, A., Bavin, E., Prior, M., Eadie, P., Cini, E., Bolzonello, C., & Ukomunne, O. C. (in press). Predicting stuttering onset by age 3: A prospective, community cohort study. *Pediatrics*.

Prior, M., Bavin, E., Cini, E., Reilly, S., Bretherton, L., Wake, M., & Eadie, P. (2008). Influences on communicative development at 24 months of age: Child temperament, behaviour problems, and maternal factors. *Infant Behaviour and Development*, *31*, 270–279.

References

Goldman, R., & Fristoe, M. (2000). *Goldman Fristoe test of articulation* (2nd ed.). Minneapolis: NCS Pearson Inc.

Kaufman, A. S. & Kaufman, N.L. (2004). *Kaufman brief intelligence test* (2nd ed.). Circle Pines, MN: AGS Publishing.

Gathercole, S. E. & Baddeley, A. D. (1996). *The children's test of non-word repetition*. London: The Psychological Corporation Limited.

Semel, E., Wiig, E., & Secord W. (2006). *Clinical evaluation of language fundamentals* – 4th Ed. Australian. Marickville, NSW: Harcourt Assessment Inc.

---

[1] Participating institutions: Murdoch Childrens Research Institute (lead institution), Royal Children's Hospital, University of Melbourne, La Trobe University, Macquarie University, University of Sydney.

[2] ELVS team: Professor Sheena Reilly, Dr Patricia Eadie, Professor Edith Bavin, Professor Melissa Wake, Professor Margot Prior, Dr Lesley Bretherton, Dr Joanne Williams, Professor Anne Castles, Professor Mark Onslow , Dr Ann Packman, Associate Professor Jenni Oates, Dr Obioha Ukoumunne, Professor John Carlin, Dr Jemma Skeat, Yin Barrett, Catherine Bolzonello, Petrea Cahir, Eileen Cini, Laura Conway, Kyriaki Ttofari Eecen, Cattram Nguyen, Ruth Nicholls, Kirsty MacKenzie, Nadia Petruccelli, Lauren Pigdon, Lisa Quinn, Tina Scalzo, Carly Veness, Amy Watts, Andrea Wong.

[3] Exclusion criteria: developmental delay, cerebral palsy, or other serious intellectual or physical disability, or if the parents did not speak and understand English.

Wagner, R. K., Torgesen, J. K., & Rashotte, C. A. (1999). *The comprehensive test of phonological processing*. Austin, TX: PRO-ED Inc.

Wetherby, A. M., & Prizant, B. (2002). *Communication and symbolic behaviour scales: Developmental profile*. Baltimore, MD: Paul H. Brookes Publishing Co.

Wiig E., Secord W., &. Semel, E. (2006). *Clinical evaluation of language fundamentals preschool*, Australian standardised edition (2nd ed.). Marickville, NSW: Harcourt Assessment Inc.

Correspondence to:
Laura Conway
ELVS Research Coordinator
Murdoch Children's Research Institute
Department of Speech Pathology
Royal Children's Hospital
Flemington Road, Parkville, VIC 3052
phone: 03 9345 5484
email: laura.conway@mcri.edu.au

Language development in Australian bilingual children

Ruth Nicholls

It has been estimated that more than half of the world's population speak more than one language. Over 4 million Australians speak a language other than English, with almost 400 languages spoken around the country. Despite the increasing number of Australian children being raised in multilingual environments, little is known about how these children learn English. How does the language development of children learning English and another language (bilingual) compare with children learning English only (monolingual)? Is their development of English similar or are there differences? If so, what do the pathways and patterns in their development look like?


Ruth Nicholls

In 2005, a study investigating the language development of bilingual children growing up in Australia was embedded within ELVS (described above). The aim of the study was to better understand the natural development of English morphology by children simultaneously learning English and another language during the preschool years. Ruth Nicholls, PhD candidate at The University of Melbourne and Murdoch Childrens Research Institute in Melbourne, is undertaking the study. All participants in ELVS who were hearing and/or speaking another language were invited to join the study. Seventy-four bilingual children, learning a diverse mixture of 34 languages in addition to English, agreed to participate, along with a closely matched group of 74 monolingual children from ELVS.

All of these children were visited in their homes, located around metropolitan Melbourne, for an initial assessment between June and December 2006 when aged 3;4 years. These visits involved an interview with the bilingual children's parents (to find out about the children's exposure and use of their languages) and direct assessment of the children's English morphology using selected components of the *Rice/Wexler Test of Early Grammatical Impairment* (TEGI) (Rice & Wexler, 2001) and the *Wiig Criterion-Referenced Inventory of Language* (CRIL) (Wiig, 1990) – as well as endless turns of a wooden fishing game which the children loved and continually requested!

Those bilingual children who were learning the languages most frequently represented in this study (Cantonese, Croatian, Greek, Macedonian, Mandarin, Turkish and Vietnamese) were then invited to participate in two further assessments (at ages 3;10 and 4;4 respectively), along with their matched controls. In total, three assessments were conducted at 6-month intervals to measure and track each child's development over this 12-month period. These assessments were completed in December 2007, bringing the 19 months of assessments and hundreds of fishing expeditions to a close.

Data analyses have been conducted, with national and international interest in this unique study. Preliminary findings were most recently presented at Reflecting Connections, the joint conference between the New Zealand Speech-Language Therapists Association and Speech Pathology Australia in Auckland, New Zealand in May 2008 and at the 12th Congress of the International Clinical Phonetics and Linguistics Association in Istanbul, Turkey in June 2008.

This study will contribute to a greater understanding of bilingual language development. This will benefit speech pathologists and health and education professionals who work with children and families from diverse multilingual backgrounds, within local, national and international contexts.

References

Rice, M. L., & Wexler, K. (2001). *Rice/Wexler test of early grammatical impairment*. New York: The Psychological Corporation.

Wiig, E. H. (1990). *Wiig criterion-referenced inventory of language*. San Antonio, TX: The Psychological Corporation.

Acknowledgments

Nadia Verrall Memorial Research Grant, Speech Pathology Australia; Melbourne Research Scholarship, The University of Melbourne; Murdoch Childrens Research Institute Scholarship.

Ruth Nicholls is a speech pathologist and PhD candidate, with clinical and research experience in paediatric language development.

Correspondence to:
Ruth Nicholls
Speech Pathologist
5th Floor Speech Pathology Department
Royal Children's Hospital, Flemington Road, Parkville, VIC 3052
phone: 03 9090 5264
email: r.nicholls@pgrad.unimelb.edu.au

Free water policy quality project

Kate Mills

In early 2008, clinicians at The Royal Melbourne Hospital (RMH) commenced a quality project to formalise a free water policy (FWP) and collect outcome data. Specifically, we aimed to look at pre and post FWP quality of life (QOL) and medical status measures (including hydration and aspiration related adverse events).

The FWP was introduced after obtaining formal clearance from the Ethics Committee at the hospital. Prior to the project, most clinicians at RMH were using the FWP on an ad hoc basis with anecdotally encouraging outcomes. The Free Water Policy is subject to strict criteria at RMH, based on the literature and developed in consultation with respiratory and general medical specialists. They include:

- all solids/medicines are taken with thickened fluids;
- no active pneumonia/chest infection;
- adequate oral hygiene;
- sips of water without excessive/uncomfortable coughing/choking;
- supervision for impulsive patients or those who cough excessively;
- participant with compromising lung condition to be discussed with registrar or consultant; and
- deemed clinically appropriate by the speech pathologist.

The quality project collected data on 50 patients from a range of medical and surgical units (including patients considered to be compromised from a respiratory point of view, such as chronic obstructive pulmonary disease, lung capacity and asthma). While not fully analysed to date, preliminary data have shown:

- no aspiration related adverse events;
- improved QOL/satisfaction scale measures ;
- improved overall fluid intake;
- improved acceptance of thickened fluids when they are not the sole option.

After considering the results more carefully, we plan to write up the results and submit them for publication later in 2009.

Kate Mills has been a speech pathologist at the Royal Melbourne Hospital for the last 6 years, with some experience in rehab but the majority in acute. When she started this project Kate was working primarily in General Medicine, Trauma and Respiratory Care, but has since moved into Head & Neck. She has great interest in dysphagia and particularly maximising the quality of life for patients on modified diets.

Correspondence to:
Kate Mills
Speech Pathologist
Free Water Policy Project Leader
C/o Post Office
The Royal Melbourne Hospital
Grattan Street
Parkville, VIC 3050
email: kate.mills@mh.org.au

ACQ NOTES TO AUTHORS

ACQuiring Knowledge in Speech, Language and Hearing is a major publication of Speech Pathology Australia and provides a professional forum for members of the Association. Material may include articles on research, specific professional topics and issues of value to the practising clinician, comments and reports from the President and others, general information on trends and developments, letters to the Editor and information on resources. Each issue of *ACQ* aims to contain a range of material that appeals to a broad membership base.

ACQ is published three times each year, in March, July and November.

Issue	*Copy deadline (peer review)*	*Copy deadline (non-peer review)*	*Theme**
July 2009	2 January 2009	5 March 2009	Reading Difficulties across the Lifespan – facts, prevention and intervention
November 2009	8 May 2009	10 July 2009	Mental Health
March 2010	20 August 2009	15 October 2009	Motor Speech Disorders

* articles on other topics are also welcome

General

Material submitted must be your original work. Any direct quotations or material used from other sources must be credited in full. If copyright clearance is required to use material included in your article, please supply evidence that this has been obtained.

With rare exceptions, we do not publish material that has already been published.

Articles will be checked by a copy editor to ensure consistent presentation and standard of English.

Length

Articles should not usually exceed 2500 words (including tables and references). This is equivalent to approximately 11 double-spaced pages. Longer articles may be accepted, at the discretion of the editors.

Format

The article should be submitted electronically via email (as an attachment). One hard copy and a copy on disk (preferably in Microsoft Word) is required if the article contains symbols (e.g., phonetic font).

The title page should contain the title of the article, the author's name, profession, employer, contact phone number and correspondence address, as well as a maximum of five key words or phrases for indexing.

The format must be double spaced with 2.5 cm margins, in a serif face (such as Times or Courier), each page numbered sequentially.

CDs must be clearly marked with file name, author's name and program used, including version number and whether PC or Macintosh (e.g., MS Word 2000 IBM). Each table or figure must be in a separate file on the disk. Do not incorporate figures or tables within the text of the article. Formatting must be kept to a minimum. Do not use tabs, bold or other highlighting of the text. References must appear at the end of the article. The first line of each paragraph should be indented. Do not right justify the text. Use one space after punctuation, including full stops. Double quotes should be used.

Peer review

Articles submitted to the *ACQ* may undergo a peer review process if: (a) requested by the author(s), or (b) requested by the editor.

If peer review is requested, the article will be sent to two reviewers. The authors will be provided with information from the review process and will be invited to revise and resubmit their work if this is indicated. The sentence "This article was peer reviewed" will appear after the title for all peer reviewed articles.

Style

Clear and concise writing is best. Use short sentences and paragraphs and plain English.

Reproduce any quotations exactly as they appear in the original and provide the page number(s) for the pages you have quoted from.

References, which should be kept to a minimum, should follow the American Psychological Association (APA) (2001) style.

The title should be kept as short as possible.

Headings should be short. Within the article a maximum of two levels of headings should be used. For first level headings use all capitals, centred with one line space above and one line space below. For second level headings use a capital letter for the first letter of the first word only, centred with one line space above and one line space below.

Tables and figures

If there are to be tables or figures within your article, these should be printed on separate sheets with a clear indication of where they are to appear in the article. All tables and figures should be numbered. Figures should be presented as camera-ready art. Each table or figure must be in a separate file on the disk. Do not incorporate tables or figures within the text of the article. Digital images should be sent as uncompressed TIF or EPS files.

Abstract

Please include an abstract of approximately 100 words describing your article.

Biographical information

Please include approximately 15 words about yourself and a clear photograph of yourself. This can be a casual or formal shot. A good quality print or slide is acceptable. These should be labelled with your name on a sticky label on the back. To avoid impressions damaging the back of the photo, write on the label before it is attached to the photo. Digital photos should be uncompressed TIF or EPS files.

Article submission form

If your article is accepted for publication, it will only be published if the "Article Submission Form" and "Copyright Warranty and Assignment" are completed and signed (please contact National Office for these forms) or go to **http://www.speechpathologyaustralia.org.au/acqnotes.html**

Send articles marked Attention *ACQ* Editor to:
Speech Pathology Australia
Level 2 / 11–19 Bank Place
Melbourne, Victoria 3000

Alternatively, send articles to
Nicole Watts Pappas – nwattspappas@hotmail.com
or Marleen Westerveld – m.westerveld@gmail.com