

Audiology Newsletter



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Christmas 2007
Issue 12



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CHRISTMAS CLOSURE

DATES:

21st Dec—14th Jan

2007—2008 Clinic

closed TUESDAYS

Australian College of Audiology (ACAud) Conference

At this year's ACAud conference there were some terrific papers presented. The dominant focus was on verifying the vastly improving technology that is driving the hearing aid industry. The efficacy of *open-fit* hearing aids (that is, those hearing aids that sit behind the ear and use discrete, disposable tubing) has certainly been proven and this style of hearing aid is justifiably becoming the most commonly fitted hearing aid. Indeed, this statistic is reflected in my clinic so the results are reassuring!

Beyond technology, other areas of development involve the assessment procedure. Whilst assessment now focuses on the audiogram (*the hearing test results*) and the client's lifestyle / communication needs, in the future it is very likely the assessment will give equal weighting to cognitive assessments. The main difficulty for people with hearing impairment is hearing in background noise. Whilst new hearing aid technology is driven by the need for better background noise reduction solutions, there is growing recognition that there are human limits to hearing in noise. Research is proving that as we age our ability to hear in background noise deteriorates, regardless of our hearing ability. Therefore we need to establish what each individual's cognitive *and* hearing abilities are to better tailor a hearing rehabilitation program to their specific needs. We need to go beyond the audiogram and do a functional communication assessment. In the future hearing aids may not be the major focus of rehab and instead communication training may be. Modern hearing aids can provide audibility but they unfortunately cannot rectify degradation of cognitive skills such as declining auditory memory and slower speed of processing that are associated with aging. Research is now focusing on developing auditory training programs to enhance communication, provide listening strategies and to build confidence. Many programs will be home-based using interactive adaptive computer therapy and will focus on developing cognitive skills to hear more easily in background noise.

Right & Left Hemispheres

Language is processed in the left side of the brain, and due to the crossing over of auditory pathways in the cerebral cortex, this is deemed a *right ear advantage*. That is, there is a tendency in most individuals for right-ear performance on speech-perception measures to be better than left-ear performance. What happens if there is a disconnect between the brain's right and left hemispheres? We know we can multiskill but can we multihear? Can we listen to a phone message in one ear while a friend is talking in the other—and comprehend both? Auditory processing is done by the brain, not the ears, and a study published in *Human Genetics* has shown how well we can process auditory information is genetically determined.

Loud Television Advertisements

We all believe that advertisements on television are often much louder than the program we are watching, and indeed can be annoyingly loud. How do television producers create this effect whilst successfully arguing that in terms of volume their advertisements are no louder than the program they are inter-dispersed with? Two things are at play. First, the human ear is more sensitive to high frequency sounds than low frequency sounds. If a low pitch and high pitch sound is doubled, the human ear will perceive the low pitch sound to have doubled in volume but will perceive the high pitch sound has *tripled* in volume. Thus advertisers will favour high pitch sounds over low pitch sounds to get our attention. Second, *fast compression* makes speech louder. That is, parts of the sound-wave cycle that are being transmitted are compacted and the more quickly this is done the louder the sound will become. Thus advertisers will alter sound waves using fast compression to again grab our attention.



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Hear the World Foundation

Deaf and hearing impaired children can learn to read, write, speak and sing and successfully participate in normal school lessons. An active language environment is the basic precondition. The Hear the World Foundation has set itself the task of improving the education of hearing impaired children worldwide. With this aim in mind it has organised the Teach for Better Hearing teacher training scheme. The program has two objectives; firstly, the 100% inclusion of hearing impaired children into normal lessons worldwide. Secondly, the international establishment of the *Natural Aural Approach* as the means of teaching. The most important precondition of the Natural Aural Approach is that children are constantly in a speaking environment where they rely on the listening skills and speaking in conjunction with their hearing aids and / or cochlear implants and special interference reduction technology. Thanks to modern technologies, even children with profound hearing loss can be taught effectively in normal classes. The important thing now is for teachers to acquire the necessary skills to support these children with the help of the appropriate equipment. The results of this approach are truly amazing and this approach also dominates the teaching of hearing impaired children in Australia.

Auditory Disorders & Phenomenon

USHER SYNDROME: Usher syndrome is the most common condition that involves both hearing and vision problems. A syndrome is a disease or disorder that has more than one feature or symptom. The major symptoms of Usher syndrome are hearing impairment and retinitis pigmentosa, an eye condition that causes a person's vision to worsen over time. Some people with Usher syndrome also have balance problems. The cause of Usher syndrome is genetic.

AUDITORY NEUROPATHY: Auditory neuropathy is a hearing disorder in which sound enters the inner ear normally but the transmission of signals from the inner ear to the brain is impaired. People with auditory neuropathy can have normal hearing or hearing loss ranging from mild to severe. They always have poor speech perception abilities, meaning they have trouble understanding speech clearly. The causes of auditory neuropathy are not yet fully understood.

TULLIO PHENOMENON: This occurs when very high intensity (*loud*) sounds cause transient vertigo (*severe dizziness*) and nystagmus (*a particular pattern of eye movement*).

The Sound of Drinking Peter Ploog, Hear the World Foundation

"Via della Srofa (or Sow's Road) in Rome is the ideal place to see the day out. The nice side to institutions such as this is that even today there is no music to disturb the clinking of glasses, the sound of plates being gathered up, the soft voices and the occasional laughter. Relaxation, wine and good company tend to generate a fine blend of gossip and philosophical speculation. Two tables down the discussion hinges on theories of wine. One gentleman is expounding his theory of how to perfect the enjoyment of wine and enquires quite rhetorically: "Why do you think it is so important to clink glasses?" And since he is the only person who knows the answer he immediately offers it: "We clink glasses so that our ears can enjoy the wine too".



Countless generation of the Riedel family, who have down through the ages developed ever more beautiful and ever more perfect glasses in their workshop in Kufstein, always focused first and foremost on the glass that best presented the colour and the taste of the particular wine, and yet in so doing they always created glasses that provided a perfect sound. And since they have produced a glass (and sometimes even two) for more or less every different type of grape, one could imagine there being a monumental wine orchestra that would then ensure the great sound of wine came into its own. Now that's something worth toasting!"



No Noise, Please—MetroNaps Marcel Krenz, Hear the World Foundation

"Everybody knows New York City is not the most quiet place on earth—extra loud sirens of fire trucks, police cars and ambulances, car stereos thumping with the latest rap track, streets filled with millions of chatty people, subway noises coming from under ground, overall traffic sounds from honking horns of cars and buses and lots of construction sights. But, what do you know, New Yorkers and visitors alike can always manage to find a little peace and calm away from the cacophonous nature of the megalopolis. One of their favourite places for quiet and solitude: MetroNaps. MetroNaps are futuristically designed pods created to provide the opportunity for a mid-day nap away from the hustle and bustle of a big city. You just go to their locations in the Empire State Building or on Nassau Street in the Financial District, check in, pay a fee of about \$14 and make yourself comfortable in one of the pods. The MetroNaps pod will wake you with a gentle combination of light and vibration.

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The Effects of Chronic Noise Exposure

(The Weekend Australian September 1-2, 2007)

The myriad pressures of modern life are often blamed for causing stress-related illnesses, but research from the world's leading health watchdog suggests it's not so much the pace of life, but the accompanying volume that's killing us. New evidence from the World Health Organisation (WHO) reveals that thousands of people around the world maybe dying prematurely, or succumbing to disease, through the effects of chronic noise exposure.

"We live in a far noisier society than previous generations," says associate professor Bob Cowan, CEO of the Hearing Co-operative Research Centre. The cacophony descending on us from all directions—from the constant traffic, to the roar of aircraft overhead, the squeal of car alarms, the endless trill of mobile phones and the staccato barking of the neighbour's dog. This relentless racket has reached such a fever pitch that many of us have forgotten what silence sounds like. Cowan points out that restaurants in the 1970s, for instance, covered their tables with damask cloths, hung heavy drapes at the windows and placed hangings on the walls—all of which acted to absorb unwanted sound: "You wanted quiet so you could have intimate conversations." Times have changed. Restaurants now are "reverberant environments" which create a trendy buzz and the illusion of busyness with bare tables, hard floor, reflective surfaces and vaulted ceilings. This creeping tide of surround sound occurs in countless other settings, and many of us are resigned to it. We dismiss it as an inevitable fact of modern life—but it's making us sick.

"The level of background noise today might not damage your hearing directly, but it can lead to other health problems such as an increase in stress, negative effects on concentration, and others," says Cowan.

Many previous studies have made weak links between noise pollution and ill-health, but the WHO findings provide the clearest and most disturbing connection yet between unwanted noise and health.

As reported in *New Scientist*, WHO's findings, though preliminary, show that long-term exposure to noise may lead to heart disease and disturbed sleep. The researchers calculate that chronic exposure to loud traffic noise causes 3 per cent of all cases of tinnitus, in which sufferers hear constant noise in their ears. They also estimate that damage caused by noise pollution to children's ability to learn, and the damage to hearing caused by "leisure noise", such as listening to loud music on MP3 players or attending pop concerts.

The mechanisms by which noise causes illness are complex, but a 2004 federal government report, *The Health Effects of Environmental Noise—Other than Hearing Loss*, noted that hearing evolved from a basic need to alert, warn and communicate: "As a result, sound—wanted or unwanted—directly evokes reflexes, emotions and actions, which can be a stimulant and a stressor." Subsequent research revealed in *New Scientist* explains that the body's reaction to this sound raises levels of stress hormones such as cortisol, adrenalin and noradrenalin—hormones which, if in constant circulation, can cause long-term physiological changes that could be life-threatening.

The health effects report identified certain groups of people who were more sensitive to the effects of noise pollution, and thus faced greater health risks. These included infants and school children, shift workers, the elderly, the blind and those suffering hearing impairment, sleep disorders and physical and mental health conditions.

Community awareness of noise hazards remains relatively low. In Australia, responsibility for the issue is diluted across a range of national, state and local governments. It's hoped the new WHO estimates will provide governments with stronger justification for controlling nuisance noise and help local authorities determine where, when and how to take action. European nations are introducing some radical solutions to cut the din. By the end of the year, all European cities with populations exceeding 250,000 will be required by law to have produced digitised noise maps showing hotspots where traffic noise and volume are greatest. Coupled with data on health effects, this should allow them to better target anti-noise measures, such as re-routing traffic away from hospitals and schools and erecting noise barriers around music venues. Airline companies are already investing heavily in quieter engines. The new Boeing Dreamliner has clearly identified quieter engines as a primary selling point for airlines and passengers, as well as being a benefit to society. But these and other potential solutions require time, money—and immense political and social will. "It's a more complex problem than just saying. 'Turn it down'," says Cowan. "I wish it were that simple".

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I wish you and your families a happy, safe and festive Christmas. I get such tremendous satisfaction from working with you. I look forward to seeing you all in the New Year.

Warmest Regards,

Bronwen



CHRISTMAS CLOSURE

Please note, during the Christmas period the clinic will be closed from Friday 21st December until Monday 14th January.

2007–2008 Closed Tuesdays

Please note, due to my teaching commitments at The University of Queensland, the clinic is closed every Tuesday.

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