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An Interview: Insights from James F. Jerger, PhD

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Tabitha Parent-Buck (TPB): Looking back on your history, what drew you toward your life-long passion for research in diagnostic audiology? Also, what do you relish as your research achievement with the greatest impact on the profession of audiology?

James Jerger (JJ): In the late 1940s, in Switzerland, E. Lüscher and J. Zwislocki published a series of papers showing that patients with sensorineural hearing loss could detect smaller changes in the intensity of pure tones than either individuals with normal hearing or with conductive loss. Their measure was the minimal audible detection of periodic amplitude modulation of the test tone. Shortly thereafter the Amplivox company, in Great Britain, produced a commercial device - a sinusoidal modulation unit - that could be appended to an audiometer to deliver the test stimuli. At Northwestern, in the early 1950s, my mentor, Raymond Carhart, acquired one of the Amplivox units and challenged his small group of audiology students: Would someone like to take the device and develop norms for its use in the clinic. I volunteered, tested 39 young adults at each of four test frequencies, and then tested clinic patients for several months. This led ultimately to the short increment sensitivity index (SISI) test and a lifelong interest in audiological data.

I think that the work having the greatest impact on the profession was the research on tympanograms and the family of acoustic reflex patterns that led to what is now called “immittance audiometry.” My 1970 paper on the topic is still quoted in the literature after almost 45 years. It spearheaded, I think, a major turning point in diagnostic evaluations. Throughout the 1960s specific diagnostic middle ear measures were thought to be relevant only if a conductive loss was suspected. But our demonstration that immittance measures, especially the acoustic reflex measures, were impacted by a wide variety of auditory disorders, opened new vistas for broader audiological applications.

TPB: How would you describe your experience developing and implementing the first Doctor of Audiology (AuD) program at Baylor College of Medicine in the 1990s?

JJ: Starting up the first AuD training program at the Baylor College of Medicine was, indeed,

challenging. We managed to convince the college of the merit of the pioneering effort, but not the merit of funding it. Whatever we were able to create in the way of teaching faculty, clinical supervision, and student support had to be carved out of our existing resources. Fortunately, we were able to draw on the collaboration of our affiliated programs in the Texas Medical Center - at the Texas Children's Hospital, the VA Hospital, the Ben Taub General Hospital, The Methodist Hospital, and the Texas Institute for Rehabilitation and Research (TIRR). They provided much of the totally volunteer faculty and the sites and supervision for a variety of clinical material, ranging from newborn babies to senescent seniors. I think that we succeeded precisely because of the support of this wide spectrum of community audiological resources.

TPB: What advice would you provide to those in Canada who are interested in the development of AuD degree programs?

JJ: The most important advice I can offer to my Canadian colleagues is this: find a way to limit AuD training programs to a number that can be sustained at a high level of quality by the availability of community resources (see above). In the USA there are too many AuD programs for the available resources and the number seems to be growing daily. The more established health-care professions, like medicine, dentistry, and optometry ? apparently convinced that training resources are an important variable affecting the quality of their product ? have limited their professional schools to a number that can be sustained by the available community support structure,

My advice to Canadian audiologists is to study the experience of other health care professions in Canada, learn from them, and set a maximum number of permitted programs accordingly. For example, you might simply count the number of medical schools in Canada (17), and compare that to the number of members of the Canadian Medical Association (> 80,000). Now compute the ratio of number of community physicians to number of schools ($>80,000/17 = >4706$). In other words, on average, there are more than 4700 practicing physicians as potential resources for each medical school in Canada. Or compute the ratio of dentistry schools in Canada (10) to the membership of the Canadian Dental Association (18,000). This ratio yields, on average, 1800 practicing dentists as potential resources for every dental school.

A health care-related profession like optometry is perhaps most analogous to audiology. In Canada there are just two (2) Schools of Optometry, supported by 4250 members of the Canadian Association of Optometrists. Here the ratio is 2125 practicing optometrists as potential resources for every school.

In the USA the comparable figure for AuD degree programs is roughly $12,000/75 = 160$ or, on average, just 160 practicing audiologists as potential resources for every AuD training program.

TPB: What do you see as the most critical skills for practicing audiologists?

JJ: Without a doubt the most critical skill is adaptability to change. Technology is advancing at an ever-accelerating pace and auditory science is pushing the boundaries of our knowledge to a level scarcely imagined when I entered the profession. The net result is a playing field changing so rapidly that those who cannot keep up with change will be quickly left behind. Adaptability, in turn, demands a solid education in the sciences underlying the profession. Although clinical skills, empathy with the client, and a head for business are all important, without a firm understanding of the scientific

platforms from which research findings, technological advances, and the creation of new ideas are launched, audiology will remain frozen in time. Attitudes embodied in statements like... “we are still comfortable with live-voice speech audiometry” will fail the test of survivability.

TPB: Please share with us some pearls of wisdom you would like to pass along to students entering the profession of audiology and to recent graduates as they enter this rewarding and challenging profession.

JJ: Ignore the prophets of doom and disaster. For the past half century I have heard many predictions that the end is near for audiology. It has taken several forms over the years.

“We are going to be taken over by the otolaryngologists.”

“They will hire nurses to replace us.”

“We will become servants of the hearing aid industry.”

“There will be no more PhDs; the AuDs will take over.”

“We will lose our scientific base.”

“There are not enough audiologists to meet the need.”

“There are too many audiologists competing for the available clients.”

“We will die a slow death as cheap ‘not-a-hearing-aid’ listening devices take over the market.”

“We cannot survive without a second tier of audiometric assistants.”

“Otolaryngologists will replace us with audiometric assistants”.

Certainly, we must continue to guard against each of these concerns but What these doomsayers fail to comprehend; however, is the underlying strength of our profession. We have weathered many storms in the past, and their surely will be more in the future: in my view, however, audiology will continue to be a robust and growing profession reaching even greater heights over the coming years.

TPB: What do you view as the most significant opportunity for the future of the profession of audiology?

JJ: It is always a bit risky to predict what will succeed in the future. How many of us still remember “Television will revolutionize education?” I do see, however, two intertwined opportunities that audiologists should exploit to their advantage. One is to broaden the scope of evaluation of auditory disorders to encompass the cognitive dimensions that interact with the perceptual dimensions of auditory processing. Factoring in the cognitive dimensions of memory, attention, semantic processing and decision making, and their interactions with aging, for example, may give us a much better grasp of the clinical problems we face in the evaluation and subsequent rehabilitation of auditory disorders. A good deal of the pioneering work in this area has already been carried out here in Canada by Kathy Pichora-Fuller, Bruce Schneider, and they’re many colleagues at the University of Toronto. The second, and closely related area of opportunity is the study of the electrophysiological correlates of the cognitive and perceptual processes involved in auditory processing; here auditory event-related potentials (ERPs) may be particularly fruitful avenues of study. Again, a Canadian investigator has already led the way in ERP research; namely Terry Picton, of Toronto’s Rotman Research Institute, who has recently published the authoritative volume in this area, *Human Auditory Evoked Potentials* (2011, Plural Publishing). Parenthetically, my co-authors, Jeffrey Martin, Katharine Fitzharris, and I have recently contributed the book *Auditory Event-Related Potentials to Words: Implications for*

Audiologists (2014, Amazon.com) to the ERP literature.

TPB: Is there anything else you would like to share with the readers of *Canadian Audiologist*?

JJ: Good luck, my friends! Bonne chance, mes amis!