

Career Pathways: Karen Chenausky, PhD, CCC-SLP

Sometimes a career path looks more like Chutes and Ladders than a straight run down the racecourse. That may be especially true for people whose interests are broad-ranging and untraditional. Dr. Karen Chenausky's career exemplifies this.



It started with Appendix E of *The Lord of the Rings*. Tolkien's description of the consonants and vowels of the languages of Middle Earth was Dr. Chenausky's introduction to the idea that something as informal as talking could be regular, rule-governed, and the subject of scientific investigation – and it was eye-opening. Naturally, she declared Linguistics and Philosophy as her major during her freshman year at MIT without having taken any courses in the area.

Coursework in theoretical models of syntax, phonology, and semantics taught Dr. Chenausky how to analyze language in a rigorous way. After earning her bachelor's at MIT in 1989, Dr. Chenausky entered the doctoral program in linguistics at the University of Connecticut. That's also where she encountered the first "chute" in her career path. In the 1990s, you could count the number of faculty positions for theoretical linguists on the fingers of one hand, even if you were already holding something else. The prospects of spending a lifetime arguing about whether sentence generation involves an adverbial phrase moved past a verb phrase or the reverse didn't inspire passion. Also, of course, there wasn't much demand for theoretical linguists in the job market. Dr. Chenausky left the program with a master's degree in 1993 and spent the next several years working in whatever job opportunities she could find, including as a secretary at a nonprofit group.

When she learned about a new PhD program at MIT and Harvard called Speech and Hearing Sciences (now Speech and Hearing Bioscience and Technology at Harvard University), it seemed like a ladder that could lead somewhere much more exciting and practical. The program trained students in the anatomy and physiology of the speech and auditory systems, engineering modeling, and biomedical signal processing. Those were powerful skills she could use to create a speech recognition system that could help dysarthric speakers dictate to a computer, even if their speech was unclear to human listeners because of dysarthria's effect of slowed or slurred speech due to weakness in the muscles used for speech. After three years in the program, though, she was faced with another chute: Not everyone is cut out to be an electrical engineer. Leaving the Speech and Hearing Sciences Program raised a tough question: Was it worth continuing as a speech scientist even if others thought you'd never make it in that field?

Luckily, this time the chute ended in a position at a small business in the Boston area, Speech Technology and Applied Research (STAR) Corp. STAR hired Dr. Chenausky in 1997 to help

analyze the acoustics of disordered, developing, and accented speech for projects funded by the National Institutes of Health's small business research program. Dr. Chenausky worked at STAR for over a decade, becoming PI of two small-business grants of her own that concerned automatic analysis and recognition of dysarthric speech in adults with neurogenic disorders like stroke or Parkinson's disease. All that she learned in the Speech and Hearing Sciences Program, even if she hadn't demonstrated the engineering chops the program expected, was instrumental in her success at STAR. STAR already had the coders and engineers; what they needed was someone who understood speech production and development and who could communicate that information in a way that made sense to them. Together, they devised efficient and sensible algorithms for automatically processing the acoustic information in speech.

Importantly, working at STAR taught Dr. Chenausky about small-business grants. They are different from research grants in that their purpose is ultimately to generate a prototype that can be shopped around to angel investors or venture capitalists, then developed into a product. To be successful with the business part, you then need to sell that product, support its users, and improve the product over time. All of these are worthwhile endeavors, and none require a PhD. But doing research in speech science was still an itch Dr. Chenausky hadn't scratched. So, just before the turn of the century, she applied to the doctoral program in speech pathology at Boston University (BU). The program required a master's in speech pathology, which at the time Dr. Chenausky considered a useful backup in case a PhD-level job studying adult neurogenic speech disorders wasn't immediately forthcoming.

As part of her initial observation hours prior to her master's studies in speech pathology, Dr. Chenausky had the opportunity to meet several children with autism spectrum disorder. It was love at first sight. These kids were chatty, quirky, creative – and honest. At BU, Dr. Chenausky earned her second master's degree, this time in speech pathology, in 2005. Discovering the deep emotional satisfaction of the clinical side of the field was an unexpected ladder. After graduating with her master's, Dr. Chenausky took a position working with autistic children in public schools while she finished her doctoral program. Despite her love of working with the autistic and behaviorally challenged children who were her clients, work in the local public schools proved to be another chute. Even in a relatively affluent area like suburban Boston, public resources for helping children with disabilities are extremely limited, and insurance companies often don't cover the additional therapy these children require to thrive. Families are stretched while they try to find services for their children, and clinicians can only help so many people at a time. Further, completing a doctoral program while working nearly full time made it difficult to progress academically.

Luckily, at BU Dr. Chenausky had taken a class on autism with Dr. Helen Tager-Flusberg. When Dr. Tager-Flusberg was awarded a P50 Clinical Research Center Grant from the National Institute on Deafness and Other Communication Disorders (NIDCD) to study language development in minimally verbal autistic children in 2014, Dr. Chenausky accepted a position as a research assistant. Working with Dr. Tager-Flusberg, Dr. Chenausky realized that she could unite her scientific interest in speech production with her clinical interest in autism. Her 2015

dissertation showed that even when autistic toddlers had language skills within the average range, their speech was subtly different from that of their non-autistic peers. In subsequent work as a postdoctoral research fellow on Dr. Tager-Flusberg's P50, Dr. Chenausky demonstrated that approximately 25% of minimally verbal autistic children met criteria for a severe motor speech disorder, childhood apraxia of speech, and that this affected their expressive language. This and her work on a treatment study examining the effectiveness of a music-based speech therapy for minimally verbal autistic children culminated in a K99/R00 grant from NIDCD and her first faculty position, assistant professor at MGH Institute of Health Professions in Boston, in 2021.

In addition, Dr. Chenausky has discovered and developed strong communities of colleagues and supporters at BU and through professional societies such as the American Society of Neurorehabilitation (ASNR). Career development resources from ASNR, such as [grant support to attend the Training in Grantsmanship for Rehabilitation Research \(TIGRR\) workshop](#), have been tremendously valuable. Feedback on her ideas during the 2023 TIGRR workshop led to her first R01 submission to NIDCD in February 2024. The project is a collaboration with Dr. Thomas Quatieri, a noted biomedical engineer at MIT's Lincoln Labs, and it aims to use a novel analytic strategy to develop speech-based biomarkers to help identify children at risk for remaining minimally verbal. In addition to TIGRR travel funds, ASNR professional development webinars like "Proactive Strategies for Preventing and Managing Difficult Situations" (December, 2023) have helped Dr. Chenausky establish the Speech in Autism and Neurodevelopmental Disorders (SPAN) Lab and begin carrying out her own independent research program.

With persistence, Dr. Chenausky has become a leading researcher in the field of speech development in children with neurodevelopmental disorders. She was awarded MGH Institute of Health Professions' New Investigator Award in 2022. As a clinical researcher, her work can now potentially help thousands of children at risk for severe communication disorders instead of the tens or hundreds whom she could have helped as a clinician. Toward this end, she has published seminal manuscripts on speech production in autism and in childhood apraxia of speech. She has been invited to speak in Australia, Belgium, Brazil, Canada, and the US on techniques for speech treatment in children who have very little speech and on research relating childhood apraxia of speech to expressive language delay.

What is the key message she would like to impart to early-career scientists? "Find a place where your specific interests and talents are appreciated," she says, "even if it takes a long time. I really came alive as a researcher when Helen [Tager-Flusberg] recruited me to work in her lab. Being presumed competent, having my contributions explicitly valued, and being given an exemplary professional role model to follow was like rain for a cactus – I bloomed. The scientific world is infinite, and there is room for all kinds of intellects. I think every researcher can find a place to thrive scientifically."