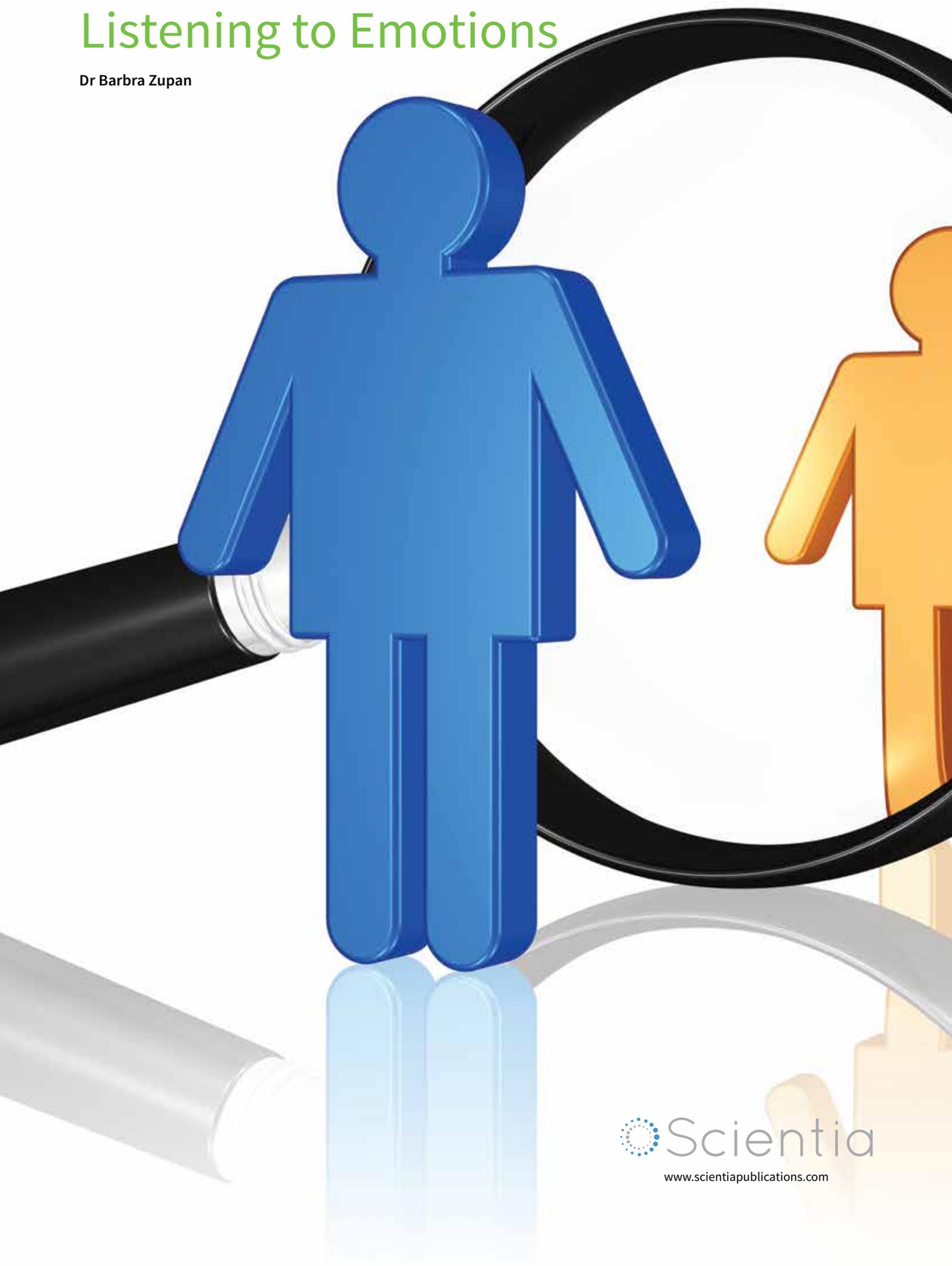


Listening to Emotions

Dr Barbra Zupan



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Dr Barbra Zupan uses her background in linguistics to understand how traumatic brain injuries (TBI) affect people's ability to process the facial expressions and auditory cues of emotion. She and her collaborators developed a new training program for therapists working with TBI patients.



To begin, how did your background lead you to study communication disorders?

When I started my undergraduate program, I enrolled in Child Studies and Teacher's Education. My goal was to work as a teacher of children with special needs. By the end of my first year in my undergraduate program, I realized the teaching program wasn't really for me. At the time, I was working with a number of children with special needs, and had the opportunity to work alongside the speech language pathologist for one session, for one child. That's all it took. At the end of my first year, I changed my major to Applied Linguistics, and never looked back. After completing my Masters degree in Speech Language Pathology, I worked for five years with children 0-5 years of age with various speech and language disorders, including children with hearing loss. I recognized a lack of research in therapy for children with hearing loss, and decided to pursue my PhD so I could investigate the topic further. I did this to some degree, but ultimately focused my work on how we perceive auditory and visual cues of emotion, generally in people with traumatic brain injury.

You stated that your interest moving forward lies in establishing better norms for how emotional cues are processed. Do you have any specific plans to research this as of now?

I submitted a grant to the Social Sciences and Humanities Research Council in the fall 2014 outlining a very detailed plan to establish these norms. Unfortunately, I found out this month that my scores were just outside the funding range so while I was placed in the funding category, the grant was not actually funded. I plan to re-submit next fall but am also looking at other options for pursuing this work.

These norms are integral to moving the field of emotion recognition forward. The importance of emotion recognition to one's overall emotional well-being, self-esteem, mental health, and academic and employment success has been increasingly gaining a lot of attention, so much so, that education ministries across Canada are beginning to prioritize emotional competency in their curriculums. However, since we don't yet fully understand how emotion perception develops and changes across the lifespan, I have difficulty grasping how these skills can be adequately nurtured and targeted in our youth, and how we expect teachers (and various other professionals) to identify when there is a problem, or implement appropriate strategies to assist children (or adults) at improving their emotion recognition skills.

You worked with international collaborators to find and screen a large number of people with TBI. Did this present any significant challenge?

Overall, we worked very well as a team. Scheduling conference calls could be a challenge due to the significant time difference between us, but we did meet regularly via conference calls. We even completed some video taping of mock sessions that we then each scored to ensure we were all scoring responses the same way. However, I would say that the times we managed to meet in person (generally once per year over the course of the grant), we were far more productive. Having open discussion versus sticking to a very scripted, tight agenda via phone, resulted in much more fruitful analysis of our progress and allowed us to better evaluate next steps and discuss the project and data in more detail. Now that the funding has ended, we are unable to arrange meetings such as these,

which I think has contributed to us not pushing further development and use of the program. Discussing how to move this forward will require extensive discussion and planning, which we've found challenging to do via conference call (due to the time difference, and the fact our research time is mostly committed with other projects).

Were there any other roadblocks in testing or developing this system?

Initially, we struggled with how best to train the various therapists, doctoral students, and research assistants who would be carrying out the therapy at each site. Training was extensive and we wanted to be sure that each individual involved would be competent in the therapy and delivering all aspects of it as similarly as possible. Since it was impossible for Dr Neumann, Dr Babbage, and I to all train all members of the team, we created consistency through videos and follow-up sessions. Dr Neumann and I held a two-day training workshop for the therapists who would be carrying out the program here in Ontario and we recorded those sessions. We then sent copies of those sessions to Dr Babbage in New Zealand and his doctoral student (who was carrying the program out there) used those for training. I then flew out to New Zealand to observe her first few sessions with participants and provide extensive feedback. I also observed the first few sessions of each of my therapists here in Ontario. Dr Neumann trained her research assistants herself following the same format that we had used on the videos, and also observed their initial sessions.

Emotion Recognition Can Be Recovered

People who have suffered traumatic brain injuries (TBI) often have difficulty identifying other people's emotions. Dr Barbra Zupan and her colleagues have developed several new tools to help people with TBI recover their ability to recognize emotions in others.

A LINGUISTIC APPROACH PROVIDES NEW INSIGHTS

When people with TBI are released from the hospital and return to normal life, their ability to understand how another person feels does not return with time. This ability, known as affect recognition, must be targeted by specific therapies in order to improve it. Dr Barbra Zupan has studied affect recognition and people with TBI over the course of her career as a communicative disorders scientist. She began her education by earning a bachelor's degree in linguistics; approaching communicative disorders this way gives her the capacity to acoustically analyse both speech and emotion expressions. Since linguistics focuses on how acoustic cues, or tone of voice, and the words used in everyday speech can alter perception, she is able to study how both these signals interact with each other, and whether one is more important to perceiving emotion.

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Over the course of their research, Zupan and her colleagues have found that certain emotions are easier for people with TBI to recognize, and that people with TBI don't recognize emotions equally in the face and voice. Zupan and her colleague, Dr. Neumann, designed a study in which 60 people with TBI and 60 controls were asked to identify emotions from static pictures, sound clips, and film clips. They found that for facial expressions, happiness is more easily identifiable than negative emotions such as sadness or anger. Many scientists studying facial emotion recognition argue that the ability to recognize happiness in the face is preserved in patients with traumatic brain injuries; however, Zupan and Neumann, found that if facial affect

recognition is impaired, it is at least somewhat impaired for all emotions, including happiness. Unlike facial expressions, happiness is one of the most difficult emotions to recognize in the voice; even people who have not suffered TBI find it challenging. However, Zupan and Neumann found that people with TBI find it equally difficult to recognize happiness in the voice as they do negative emotions in the voice. When viewing film clips, people with TBI did not significantly differ from controls, suggesting that the redundancy provided by cues from both the voice and the face makes it much easier to identify the emotion.

NEW STRATEGIES TO HELP PATIENTS

Zupan, who lives and works in Canada, collaborated with an international team located in Buffalo, NY; Charlotte, NC; and Wellington, New Zealand. Together, they created two new training programs that help people with TBI recover affect recognition, and then tested their programs to ensure that they were effective. The international nature of their work allowed them to collect data from a large number of patients. In total, 203 people with TBI participated; 34% of these had facial affect recognition impairment, 22% found it difficult to recognize vocal cues, and 15% were found to struggle with both. Most of the literature on this subject focuses on facial affect recognition, so the team's finding that vocal cues are similarly difficult to identify is a unique contribution of their work. The results indicate that facial affect recognition can be recovered using the training programs developed by the team. Participants' injuries occurred, on average, 10.27 years previously, and the longest time since injury was 42 years. This suggests that facial emotion recognition is recoverable at any time. All of the data the team was able to collect also made it possible to develop an emotional inferencing test; a tool not previously available to therapists. This tool could potentially highlight other areas of difficulty in emotion recognition for people with TBI.

MOVING FORWARD

These training programs are designed for therapists who work with people with TBI. Many therapists have already provided positive feedback to Zupan and her collaborators. However, Zupan would like to develop the program further by adding moving faces to treatment. Coordinating schedules across time zones and securing funding with an international team makes it difficult for these researchers to introduce therapists

to their work. Despite these setbacks, they continue to discuss how to move the project forward. Sympathising with loved ones and responding to their feelings is a skill that vastly improves quality of life, and its importance in rehabilitation should not be overlooked.

Researcher Profile



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Dr Barbra Zupan studied linguistics at Brock University. She has received many academic awards during her time in school, and was awarded the American Congress of Rehabilitation Medicine Early Career Best Poster Award. She currently teaches at Brock University and researches emotion recognition in TBI patients.

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FUNDING

National Institute on Disability and Rehabilitation Research
Internal Funding from Brock University (Humanities Research Institute; Office of Research Services; Department of Applied Linguistics)



