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# I LOVE CHALLENGES!

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A PhD in chemistry by education, a translator of scientific literature by passion. A good knowledge of three languages. Agata Jurkiewicz, who has an inborn profound hearing disorder, needed a long time to decide to use an implant. Today, she says "I'm addicted to sounds" and is happy that thanks to the implant it takes her less effort to learn languages. She thinks that learning languages should be an important element of rehabilitation of people with hearing disorder.

She prefers talking about English, German or Italian to talking about chemistry in which she has a PhD. She wrote a thesis in English with a complicated title - "Molecular modelling of thymidylate synthase and rational designing of its inhibitors as new generation antineoplastic drugs" and defended it in 2014 at the Faculty of Chemistry of the University of Warsaw. But her greatest passion is foreign languages. Asked what her main profession is - a chemist or linguist - Agata answers: a translator and scientist.

## Knack for languages

She started learning English when she was a child. - I owe it to my mum, who thought that it would benefit me, would be an additional hearing rehabilitation exercise. The beginnings were not easy due to my hearing disorder, but it quickly turned out that I had a knack for languages - recalls Agata. What helped her in learning the foreign language was not only her inborn talent but also her perfectly mastered lip-reading skill. In the hearing aid, which she wore since she was eight months, Agata was unable - due to a profound hearing loss - to hear all speech sounds precisely. - I only guessed how they sounded by looking at the positioning of the lips, tongue, teeth - she recalls. In order to make it easier for their daughter to learn the language, her parents very early showed her letters. Fascinated by them, she quickly learned how to read. Ewa Jurkiewicz, Agata's mother, recalls that her daughter loved reading already as a child. At the age of 4, she read a book with 127 pages! To this day, reading is one of her favourite - apart from travelling - ways of spending free time.

At school Agata learned another language - Russian. Her year had Russian as a compulsory subject. Today she regrets that she didn't have the determination to continue learning Russian on her own and knows this language only at the basic level.

Goethe's language was next. - I chose German at school because it seemed easier than French - she says laughing. She mastered the written language without problems, but German sounds proved more difficult. - When I went to Heidelberg, I struggled with communication. I noticed that I understood German best when it was spoken with Polish accent by Poles - jokes Agata.

Next was Italian. She learned this language when at the beginning of her doctoral studies she went to Italy on a ten-month scholarship as part of the Marie Curie Fellowship programme. She found a tutor with whom she had conversation classes. For Agata, direct contacts with foreigners are the most pleasant and effective way of learning foreign languages. For a few years, she has been aided in this process by a cochlea implant.

## Sound as dizziness

Agata can't understand how she, so technically-oriented and open to novelties - as she describes herself - waited over 12 years before she decided to undergo an implantation operation. Although she followed the progress of the implantation programme in Poland since the first operation conducted by Prof. Skarżyński in 1992, she was discouraged by the results reported by patients who received single-channel (with one electrode) implants at that time, which were not as effective as today's multi-channel systems. She was also put off by large, box-like sound processors, which she perceived as very inconvenient in a day-to-day life. - Only when 22-channel implants appeared, did I start to explore the subject more deeply - says Agata. - I searched for information in scientific publications, on Internet forums and talked with people who used these devices. I knew that many of them were satisfied with the hearing quality offered by the implant. But it wasn't until my doctoral studies that I made the decision. I talked with the parents of a small girl who were considering an implant for her. By convincing them that it would make life easier for their child I think I came to believe that myself! Anyway, no box-like speech processors were used any more, so I ran out of excuses - recalls Agata smiling.

She underwent the implantation procedure 8 years ago in the International Centre of Hearing and Speech in Kajetany. The first impressions after she had a speech processor connected were a huge surprise. - I didn't hear anything, and on top of that I started to feel unusual dizziness! - she recalls. - The dizziness appeared and disappeared as if somebody turned it on and off. It wasn't unpleasant, rather a strange sensation. Today I know that I experienced what is called synaesthesia. Instead of hearing sounds through the implant I felt as though somebody was hitting my head with a big sponge - tells Agata.

The engineer setting up the processor explained her that such sensations are nothing unusual at the initial stage of rehabilitation in the case of adults who have an inborn profound hearing disorder and never heard certain sounds. This is because the auditory cortex that wasn't properly stimulated in the early childhood period took on different functions. So, Agata's rehabilitation was focused on teaching her brain how to receive sounds properly. That's why despite strange sensations she tried to use the speech processor as often as possible.

Gradually, the signals transmitted by the implant became actual sounds for her. First, she began to hear high-pitched sounds, then the low-pitched ones. A spoon pinging, water running from the tap, tapping on the computer keyboard - she had to learn all those sounds that she didn't hear at all or were very unclear in hearing aids. More and more she could hear them instead of feeling, although they continued to make her feel dizzy from time to time. - I still feel slight dizziness in my hear when an ambulance is wailing nearby - she says.

After around two months of using the implant, Agara realised that she was able to talk to people more easily, and understanding speech took much less effort. As the implant helped her to hear better, she also started to speak more clearly. - All of my friends noticed that - she stresses cheerfully.

She thought that her sensations after the implantation procedure were so interesting that she should share them with other people on an Internet blog. She described in detail, week after week, the changes in her hearing. After ten months of using the implant she noted: "I washed my hair and worked on the computer for a while without the device or processor. How strange.

I can't listen to the sounds generated by the fan or the laptop disc, I can't hear the sound of the film somebody sent me, I can't hear what I'm doing... Ultimately, I put on the processor. I am addicted to sounds."

Unfortunately, noise still makes communication very difficult for her. In such conditions, her understanding of speech deteriorates and she relies on lip-reading. She does so too when she talks in English, Italian or German. But she is happy that the sounds that previously she could only guess by observing lip movement are not much clearer. It's easiest for her to talk in Italian. - Italian phonetics is to some extent similar to the Polish phonetics, so it's much easier for me to understand Italian than English, where groups of vowels and consonants merge - explains Agata. Nevertheless, she tries to make the best of the new possibilities offered by the implant. She is honing her pronunciation, although it wasn't easy for her to find a native speaker who would understand the specificity of working with a hard of hearing person. She also practices English listening comprehension in this way, but effort-less communication in this language is still unachievable for her. She needs classes taught in a traditional way. The increasingly popular online learning, e.g. through Skype, is out of question in her case because delays in and low quality of the transmission prevent her from listening and lip-reading at the same time.

From linguistics to quantum chemistry

Agata has always liked challenges. Suffering from serious hearing problems, she acquired proficiency in a few foreign languages. Going into chemistry, she chose one of its most difficult fields - quantum chemistry. How did chemistry appear in her life, anyway? - I owe it to my primary school teacher who made me interested in the world of chemical experiments. I come from a family of scientists, so it was natural that I would explore some field of knowledge. And chemistry was easier for me than mathematics or physics - explains Agata smiling. But why atoms, molecules and complicated calculations rather than colourful test-tubes? - I didn't want to work in a laboratory and conduct experiments mainly due to my insufficient manual skills. Besides, in the secondary school I became fascinated with computers and the Internet, which was still being developed in the 1990s. That's why I decided to study Mathematics and Natural Sciences at the Jagiellonian University in Cracow, choosing theoretical chemistry, which involved a lot of computer calculations.

In linguistics, Agata is constantly searching for new challenges too. One of her latest discoveries is sign language. She wanted to learn it to have a better contact with her deaf friends. - It's a difficult language, because it's based on totally different principles - says Agata. - Although I know a few phonic languages well, when I started learning sign language I felt like a small child who had the whole world to discover - she adds. - It was a fascinating experience for me.

Balancing between chemistry and linguistics, Agata found a way to combine her passions. She started to translate scientific literature. This job is another challenge for her. It requires not only a thorough knowledge of the subject and searching reference literature, but also the knowledge of specialist language. But it gives her huge satisfaction. She translated three chemistry textbooks from English to Polish for Wydawnictwo Naukowe PWN publishing house. Her translation of "Stereochemistry" by David G. Morris and "Aromatic Chemistry" by John A. D.

Hepwortha earned her Jerzy Kuryłowicz award for the best translator of scientific literature in 2009. She received it at the 54th International Book Fairs in Warsaw. •