

Academia: We are talking in your summer house in Zalesie. This place reveals your other passions: working with wood and stone. Are they a distraction from your work, or is this your real love?

Jan Strelau: *It's active relaxation - my favorite way of spending free time. But once upon a time, it was more of a necessity. Back in the 1970s, when we were building our house, money was short. We only really managed because I co-wrote "Podstawy psychologii dla nauczycieli" ["Basics of Psychology for Teachers"] with two other authors, and it sold 160,000 copies. Philip Zimbardo's acclaimed "Psychology and Life" was not written until later, which I think explains the popularity of my own textbook.*

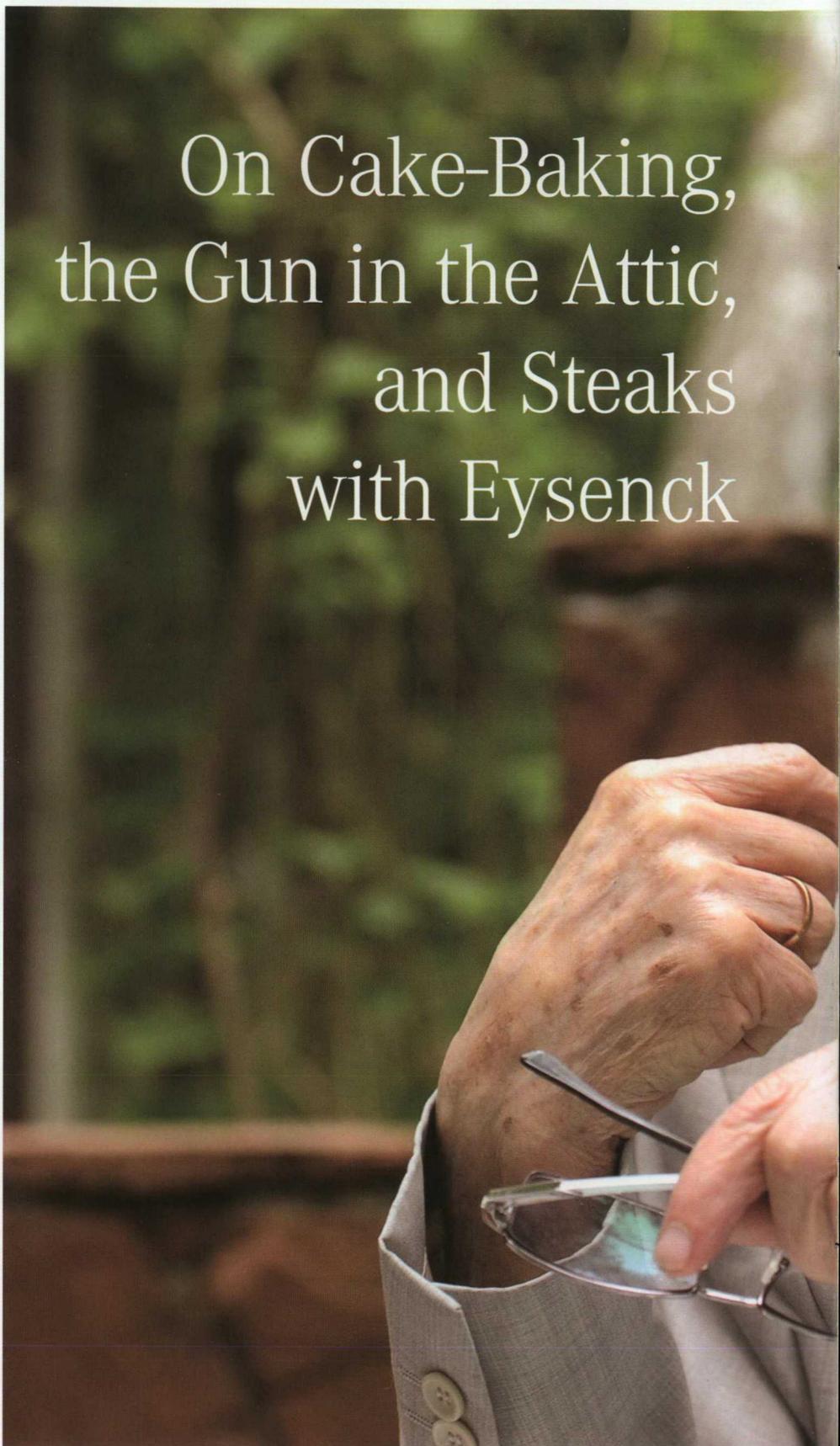
Monika Adamiec (Prof. Strelau's daughter): Don't you want cake while you talk?

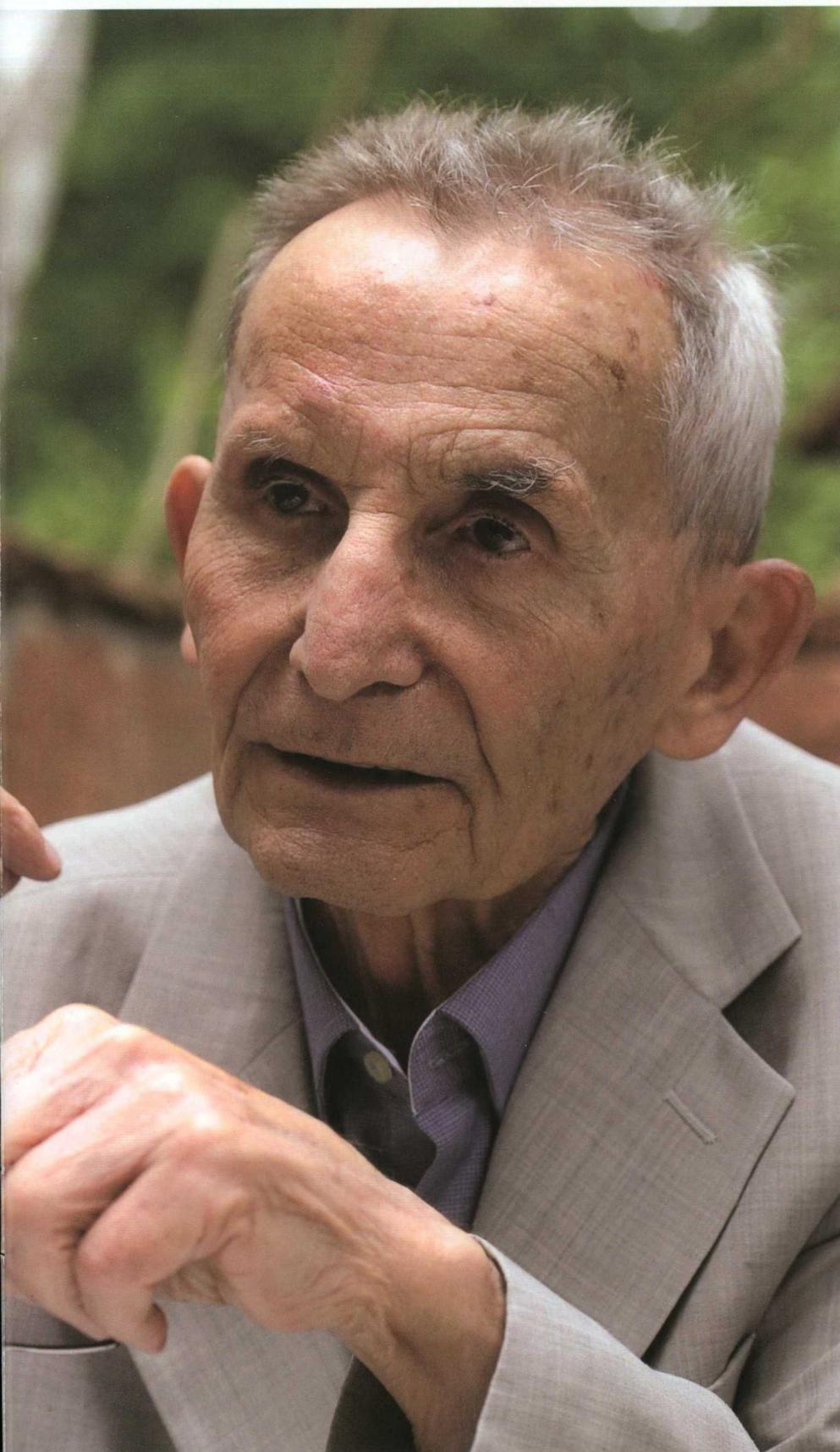
By the by - our favorite is a yeast-dough cake, traditional in the Pomeranian region. My mother was tremendous at baking it, and she conveyed her talent to my wife and daughters.

You have worked with some of the world's most eminent psychologists.

I actually became friends with Hans Eysenck. We used to grill steaks at his house. But it's bitter-sweet to think that the first time I had the opportunity to travel to the West, I was over 40 years old. That's ancient for a scientist in today's terms (laughs)! I more than made up for it later, though. What's the best way to tell you about it? After the war, it was relatively easy to travel to the East. In 1966, I took part in the International Congress of Psychology in Moscow. There was a symposium dedicated to the great psychologist Boris Teplov who had passed away the previous year; he was a leading scholar of psychophysiology. That was where I met Eysenck and his most talented student, Jeffrey Gray from the UK. I didn't speak English back then, so Eysenck and I used German, and Gray and I spoke Russian. They were both a great support to me for many years - mainly through scientific publications, but also by inviting me to conferences.

On Cake-Baking, the Gun in the Attic, and Steaks with Eysenck





You had to overcome many difficulties during your life, not least because of where and when you were born.

That's true. When I was 17, I was captain of the Scout Fire Brigade and a leader of the altar boys in Bytów. Affiliating with such circles meant that I was often harassed by officers of the security service. I'd be on my way to school when one would grab me by the shoulder, shout "You! With me!" and take me to the cemetery. He'd then put a gun to my head and say, "Write down, here and now, who you talk to and what about..." I'll be honest: I did write things down a few times. It would be about conversations with the parish priest and our religion tutor. Nothing important, just to get them off my back. But eventually I decided that I won't do anything that contradicted my conscience, and I managed to avoid them for a while. But I got caught once again, and taken to the local police station. I was interrogated, threatened. I was issued with a document restricting my movement and banning me from attending public schools in Poland. I had no idea what to do. The priest came to my rescue: he got me into a small junior seminary in Słupsk. And it was there that I discovered that I was more intellectually capable than I realized. When I finished studying there, I had to decide what to do next. Continue at the seminary? No, of course not - I didn't have the calling, and anyway I was already head over heels for this girl... (indicates his wife, Dr. Krystyna Strelau).

Krystyna Strelau: All the girls were stunning!

M.A.: But only one could win!
So that was the end of that.

M.A.: That was the beginning!

In any case, I passed my exams and decided to enroll at the Catholic University of Lublin. I got a conditional place.

You are a fighter, and a tactician. How do you become such a person?

I think I developed a resistance to obstacles, and I try to see good in everything, even when things appear awful. I was

inacar crash a long time ago. I skidded on a patch of black ice driving over a bridge, hit the side of a tram and then a lamp-post. It was terrifying and my little car was written off. But the next day I got into another car, because I felt that the important thing was that I wasn't hurt, so I should just carry on. But sometimes what you really need is a stroke of luck. When I was studying at the University of Warsaw, one summer I bumped into an old school friend, and he was trying to talk me into joining an illegal organization to fight communism. I thought about it and wrote him a letter explaining that I thought it to be a pointless pursuit. During the winter break I went back to Bytów. One day there's a knock on the door; it's the security service. They take me back to the police station. I still have no idea what's going on, but I'm really worried they will search the house, because there's a gun in the attic. They take me to Koszalin, where I get quite a serious beating. Next they take me to Warsaw, to the prison on Rakowiecka Street. The interrogations start, and it turns out that they haven't found the gun. They obviously didn't look very hard. If they'd found it, I could have gotten ten years, or just (!) five for withholding information. Five years. And another stroke of luck: the death of Bierut [communist leader] followed by an amnesty. While I was in prison, my fellow students took notes for me at all lectures - they wrote using carbon paper. There were many party members among us, but they never caused me any unpleasantness. I really appreciated it. And after all that, during my fifth year, I got a position as a junior assistant at the Institute of Psychology at the University of Warsaw.

And you went to the USSR. Didn't you feel hostile towards the Soviets?

No. Politics is one thing, people are quite another. I have rarely met such friendly people as that time in Moscow. They didn't invite me to their homes then, but I could understand that. I was doing research and the results were going to be used for my DSc (habilitation) thesis. What was funny was the fact that the

director of the lab decided I was an expert on EEG. I had had no experience with the equipment in Poland, but all the other employees helped me and I was soon trained. For 90 kopecks, students would take part in my studies. Because my thesis largely concerned neuropsychology, one of the reviewers was Prof. Irena Petrusiewicz-Hausmanowa, an outstanding neurologist. I was doing my PhD under Prof. Mieczysław Kreutz, but the subject was related to Ivan Pavlov's research, which the professor was unfamiliar with. He was an introspectionist, while I focused on measuring basic parameters of the nervous system that would form the biological basis of temperament. So I consulted my work with Prof. Tadeusz Tomaszewski, an expert in the field.

You got some invitations to travel to the West before 1971, but it never worked out...

After I finished my PhD, in 1964, the American Psychological Association invited me to an international congress in Washington. I was preparing and I was very excited. But a couple of days before the trip I received a message saying that the Ministry of Higher Education had not agreed to my going. Still, I was able to pull myself together. I told myself, tough luck, I'll carry on focusing on Pavlov. And so it didn't have a negative impact on me. Since I graduated 56 years ago, not a year has gone by when I haven't published something. Not a single year.

But you made it to the States eventually.

I was already working on temperament, so I went there with the aim of studying behavior genetics. This means that determinants of individual differences are defined on the basis of genetic kinship in pairs under consideration. This method is used to determine the genetic pool shared by the two individuals. The closer the genetic relationship, the greater the contribution of genes to individual differences. For example, monozygotic (identical) twins share 100% of their genes, while dizygotic (fraternal, or non-identical) twins share 50% genes, just like ordinary siblings. This fact is used to reveal the degree to which

*individual differences in various aspects of temperament, personality, intelligence and other psychological constructs have a genetic basis, and the extent to which they are environmental ("nature vs. nurture"). While I was in the US, I did research at the laboratory led by Prof. Jerry Hirsch, who studied heliotropism and geotropism in fruit flies using a custom-made maze. I used it in my research by selecting flies that took different lengths of time to reach food at the center of the maze. The speed at which flies move through the maze can be loosely interpreted as a characteristic of their temperament. After ten generations, we had bred two pure lines of fruit flies: those that were slow to move through the maze (lazy), and those that were fast (bright). These results, unique in research on *Drosophila melanogaster*, were intended for publication, although for personal reasons this never happened. This is probably my only professional regret.*

In any case, I returned from the US with the firm belief that the most important thing for me is to keep publishing results in international journals, otherwise I would be a rather provincial scholar. I hung a banner bearing the "Publish or perish!" slogan in my office at the University of Warsaw, and it stayed there until I retired.

Why did you choose to study temperament?

It was because in the early 1950s, Prof. Kreutz gave me a paper by Boris Teplov to translate for a seminar. I didn't speak Russian back then, but he said, "Oh, come on, Mr. Strelau, that's hardly a problem. You have three months, so you'll learn." I did learn, and the article aroused my interest in temperament and Pavlov's typology.

Does human temperament change?

We first need to define what temperament actually is. It's one of the psychological characteristics present immediately after birth, and it can be measured straight away. The intensity with which babies laugh, yell and cry, how long they do this for, their feeding and sleep pattern - any of these characteristics, if observed



Prof. Strelau's family currently numbers 14, including daughters, sons-in-law, and grandchildren. The most important person in the family home is, of course, his wife Krystyna

to be repeated regularly, can be used as indicators of temperament. Temperament has a strong biological basis. This isn't limited to genetics, of course, since the fetus develops in its mother's womb, which is an environment affecting the development of the neurobiochemical mechanisms underpinning temperament. Temperament is about formally-defined types of behavior. In newborns, it is impossible to determine their attitude to the world or their value system. They haven't yet grown into being extroverts

or introverts. These are characteristics that develop as a result of interactions with our environment, in the particular society we live in. Typical features of temperament are characteristics concerning the energy or intensity of behavior. They are mainly influenced by the level of stimulation specific to each individual. This means that some of us are chronically more stimulated than others, some are more sensitive to external stimuli, and some of us are more susceptible to stress factors than others.

People who are more aroused to begin with experience stressful situations more powerfully than those whose neurophysiological stimulation levels are lower. Conversely, some people have a high need for stimulation – they could be described as sensation-seekers. Their brains are chronically less aroused. To compensate, they seek arousal to bring them to a more optimal level of activation.

So high levels of arousal are bad, but the same can be said for low stimulation?

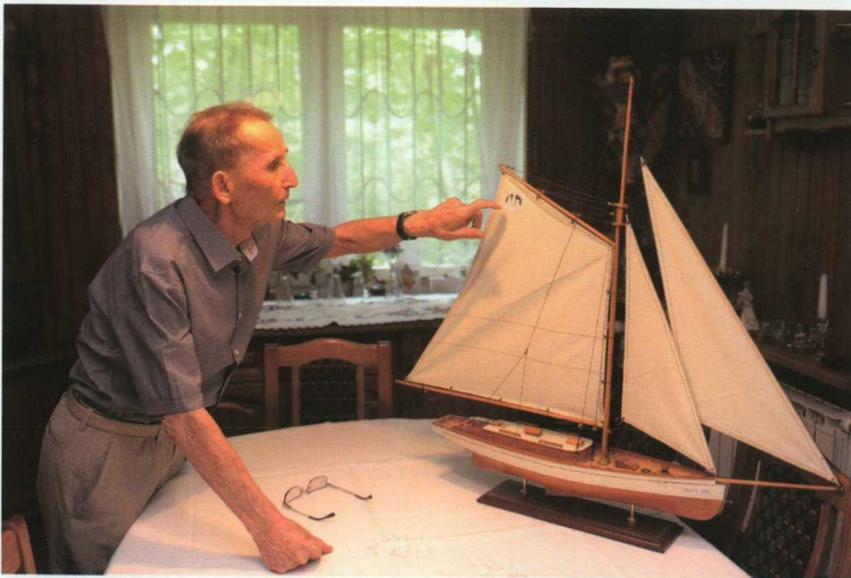
That's right – this is shown by an inverted U-shaped curve. The Yerkes-Dodson law states that performance increases with physiological or mental arousal, but only up to a point. When levels of arousal become too high, performance decreases. Performance is optimal when we are able to operate in the band roughly corresponding to the top of the inverted U. Levels of stimulation are mainly regulated in response to individual needs by a trait known as activity. It means the individual selects situations and behavior that are either optimal or at least approaching that state.

Is it possible to develop a faster reaction speed?

It isn't easy to change one's temperament, although it is possible to some extent. I'm going to use an example I've used before, of parents taking their young children to the seaside for the first time, although I should note that this is to do with anxiety rather than response speed. One child runs straight into the sea, but the other cries and won't go near it. Sensible parents are able to coax the nervous child into entering the water by organizing play and games to be increasingly nearer the water's edge, perhaps by building sandcastles, moats and so on. But it's important to note that eliminating a child's anxiety of the sea doesn't affect its anxiety in other situations.

Generally speaking, it is widely believed by psychologists that certain traits of temperament can change, especially in particularly stressful conditions; our own research confirms this. However, it would be more accurate to say that it isn't the

Interview with Prof. Jan Strelau



Prof. Strelau enjoys many non-science-related activities, such as working with wood, DIY and model-making

actual traits that change as much as the way they are expressed in individual behavior. When I was a teenager, I used to enjoy swimming across the Vistula near the Baltic coast. Others might not feel up to that kind of thing, even though they would be very comfortable in a swimming pool, which is a rather safer environment. In other words, we are talking about similar behavior with different levels of stimulation.

Our demand for stimulation can be satisfied in different ways, depending on cultural and environmental conditions. People living in the African bush might

get their thrills from hunting game, while people in Europe might participate in motor racing. This means that a trait widely understood as thrill-seeking is expressed in different ways and different behaviors depending on the situation and culture.

Temperament traits can be measured using experiments, indicators and tests. Is it possible to for subjects to deliberately mislead researchers in such studies?

It is, but it's unlikely that an experienced researcher, well-versed in methods they

are using, would be taken in. I had close ties with the Military Institute of Aviation Medicine for many years. It was involved in the recruitment of potential cosmonauts. One day, the commander said to me, "Professor, we have selected some candidates, and one of the tests was for stress resistance. I would like you to sign off on their psychological diagnosis so we can resist external pressure to alter the results of our selection." Two candidates stood out in terms of meeting the criteria for flight safety. One wasn't especially tall - I'd go as far as saying that he was the ideal candidate in terms of physical build. But his anxiety levels were higher and he displayed lower resistance to stress than the other candidate, who was, in turn, physically a much larger man. On the other hand, his anxiety level and stress test results indicated that, mentally, he would be able to cope with spending time in space. So I chose the second candidate: Colonel Mirostlaw Hermaszewski.

So it was you who sent the first Pole into space?

That's quite an exaggeration! But you could say that I was involved in the selection process. ■

Interviewed by **Anna Zawadzka**
and **Katarzyna Czarna**
photos: **Jakub Ostalowski**

Prof. Jan Strelau (b. 30 May 1931 in Gdańsk) is a psychologist specializing in studying temperament. He has been closely involved with the University of Warsaw since 1957. In 2001, he became the first dean of the Faculty of Psychology at the University of Social Sciences and Humanities (SWPS); he was the school's Vice-Rector for Science between 2002 and 2012. He is currently Chairman of the university's Board of Trustees. He created Poland's first Department of Psychology of Individual Differences and the Interdisciplinary Centre for Behavioral Genetics. He was the first Chairman of the European Association for Personality Psychology (EAPP; 1984-1988), as well as leading the International Society for the Study of Individual Differences (1993-1995). He also served as Vice-President of the International Union

of Psychological Science (1996-2000) and Vice-President of the Polish Academy of Sciences (2003-2006). He is a member of the Academia Europaea, full member of the Polish Academy of Sciences, and member of the Finnish Academy of Science and Letters. He has been awarded honorary doctorates by the University of Gdańsk, the A. Mickiewicz University in Poznań, and the Russian State University for the Humanities in Moscow. The University of Warsaw honored him by renewing his doctorate, while the EAPP awarded him the Lifetime Achievement Award. A book summarizing Prof. Strelau's career achievements over 50 years, entitled "*Różnice indywidualne. Historia - determinanty - zastosowania*" ["Individual Differences: History, Determinants and Applications"] was published in 2014 (Scholar, SWPS, PAS).