

## **SPOTLIGHT INTERVIEW**



### **Eight Questions with Matthias Wieser** ***Professor at Erasmus University of Rotterdam***

#### **1. What drew you to the field of psychophysiology?**

My first encounter with psychophysiology not only on a theoretical level as in textbooks was during my diploma (master) studies back in the days of 1999/2000 or something at the University of Würzburg, Germany. I participated in a research lab course in which we investigated how stress influences the responses to pictures of violent and sexually arousing content. Our supervisor then, Martin Reuter, who is now a professor at the University of Bonn, made this whole first experience with setting up an experiment, collecting data, and even the sometimes boring job of data preparation so exciting that we didn't mind to spend hours in the lab, even late at night. I remember vividly how we manually counted R-waves on the kilometers of EKG recordings on paper (Yes, even in the late 90ies/early 00s there were still analogue psychophys recordings around!). I was intrigued by the possibility to investigate possible links between psychological and bodily processes. From this experiment and experience on, I was hooked and decided to do my diploma (masters') thesis in experimental clinical psychology and psychophysiology. A great chance opened when Paul Pauli and Andreas Mühlberger came to Würzburg and gave me the opportunity to do an ERP study on emotion processing in PD patients. Using the just published affective RSVP paradigm by Harald Schupp, I was able to show that PD patients showed intact early emotion discrimination as measured by ERPs, but showed reduced subjective affective arousal. Since then, I became increasingly interested in looking at brain signals as correlates of basic affective and cognitive processes. Today I am still fascinated by the insights especially EEG methods can provide about psychological processes and their perturbations in mental disorders such as anxiety.

#### **2. What differences did you find between psychophysiology in North America compared to Europe? What could North American and European psychophysiologicalists learn from one another?**

To be honest, the differences I found were almost non-existent. This may be due to the fact that the Lang lab in Florida has always been taking in a lot of European scientists, and also, that the Würzburg lab of Paul Pauli was heavily influenced by the works and ideas of Peter Lang and Niels Birbaumer. So the general scientific approach in both labs was very similar, very much based in experimental empirical psychology and psychophysiology. And there was the same attitude of hard thinking and working. The main differences I guess -and that's probably not a new story- is that the labs in the US are more non-hierarchical, and especially in Gainesville, the door of each lab member was always open so that you could easily just pop in for a question and discussion.

The main differences were and still are structural ones. A huge difference is that the funding situation in terms of grant success rates was and still is much better in Germany than in the US (and also in the Netherlands). Another difference I noticed at that time was that the grad students in the US had to follow a curriculum with a lot of courses. At that time, in Germany, a grad student was basically doing his/her research project, sometimes teaching, but no formal curriculum. Any further formal training or courses were totally up to his/her own. With the rise of more formal graduate schools in Germany, that has changed since, though.

My experience in SPR is also that the ways of thinking and doing research do not differ a lot between North America and Europe; it's much more between labs. So I cannot really tell what North Americans and Europeans can learn from each other.

**3. The Annual Meeting for SPR typically occurs in North America, but every 4<sup>th</sup> year is in an international location. This year, the meeting will take place in Vienna, Austria. What are you most looking forward to about this year's meeting?**

Like for every SPR meeting, I am looking forward the most to meeting a lot of friends which I have luckily been making since attending my first SPR meeting in 2005 in Lisbon. I always have been looking forward to that. And as the SPR blues band notoriously covers artists from the city which hosts the meeting, I am totally looking forward to seeing them perform the works of Falco, Erste Allgemeine Verunsicherung (!), and Bilderbuch! I am counting on you guys! ☺☺☺

**4. In 2015, you were selected as the recipient of the Distinguished Early Career Contributions to Psychophysiology award. What did receiving this award mean to you? How has involvement in SPR helped to further your career?**

That was just the greatest honor! I mean, just take a look at the list of previous award winners! Being on this list with some of your scientific idols was just unbelievable. And especially, since this society was the first international society I ever joined and still is the scientific society where I feel home the most.

The involvement in SPR has helped to further my career mainly in several ways: First and foremost, it gave me the opportunity to get to know a lot of great scientists, who I was able to talk to and ask for feedback about my own research. Then, the SPR research training award helped me to go to the Lang Lab and improve my EEG skills set by training with Andreas Keil. Also, the chance to learn more about newest methods by attending the SPR pre-conference workshops has been very helpful. The involvement in SPR also gave me the great opportunity to review for Psychophysiology from the beginning of my career, which has helped sharpen my thinking about research designs, theoretical models, etc., and in the end, has made me also a better writer, I think. So overall it is fair to say that being a member of this community has helped me a lot!

**5. As a Clinical Psychologist, your research program encompasses both basic and applied research questions. How has your work in basic science informed your research on clinical applications in fear, pain, and anxiety? How does using psychophysiological methods help you to answer your research questions?**

First let me start with some clarification: I am not a "real" clinical psychologist in the sense that I received clinical training and see and treat patients. I consider myself rather an experimental clinical psychologist who uses experimental psychology and psychophysiology to better understand normal and abnormal affective and cognitive processes, especially with regards to anxiety and pain. I am convinced that experimental studies elucidating the emotional and cognitive differences between healthy persons and anxious persons or persons with chronic pain will ultimately lead to a translation from basic science to clinical practice: A better understanding of neurocognitive mechanisms in anxiety and pain may result in better personalized treatments of anxiety disorders and chronic pain. So a lot of our research is very basic in nature: How does fear learning and extinction learning change the visual processing of threat- or safety-related stimuli? Is there a difference in visuocortical processes underlying attention to predictable versus unpredictable threat? How does anticipation of different kinds of threat (social, bodily, etc.) influence our attention and perception? In a next step, we aim at using the findings from these basic studies to understand the potential abnormal processes in anxiety disorders. So for example, understanding the neurocognitive signature of attentional biases to threat in social anxiety may help us in developing individualized ABM trainings. Understanding of the neuroplasticity underlying fear learning and extinction learning may inform us about refined exposure-based therapies. In this line of research, we mainly use EEG as our psychophysiological measure of choice in order to unfold the temporal dynamics of emotional and cognitive processes. We use peripheral measures mostly to get a full picture of the emotional or fear response. Another important research line is how cognitive and affective processes alter pain. For example, we investigate how expectations and cognitive manipulations (e.g., cognitive control strategies such as re-appraisal) alter pain perception. Using affective psychophysiology, we try to make sure that our manipulations are not only successful due to response biases. I hope that our work will contribute at some stage to the specification of treatment, but I am fully aware that this basic research work of trying to understand the mechanisms underlying normal and abnormal cognitive and emotional processes takes a lot of time already. I think that especially the study of the brain will help us to understand better what ultimately does or does not change cognition, emotions, and behavior, and for whom.

## **6. What are your research and career goals in the next five years? What are your long-term professional goals, dreams, and hopes?**

Since I just started in Rotterdam 9 months ago, my main and foremost goals in the next years are of course the establishment and extension of my research lines on pain and anxiety here. This includes of course also getting funding grants. Long-term career goals, dreams, hm ... The most important thing is actually to be able to continue doing what I am very lucky to do right now: Working with smart colleagues and students, being curious and addressing the most interesting research questions in creative ways, advising students and do teaching, which makes the students being excited about psychophysiology. As mentioned above, my long-term research goal is to better understand people and their brains, and finally being able to inform the treatments of anxiety and pain. My more general dreams and hopes especially in the current political environment across the world are that science will be appreciated and great again in the end, with decent funding opportunities, with the power to actually inform and guide policy making, and thus the potential to actually keep on improving the world we live in. In short, I dream of a society which thinks of science rather as an asset than as a nuisance or alternative fact. I know, but hey, you asked about my dreams...

## **7. How important has mentorship been in helping you be successful in your career? As a mentor, how do you train your students for success in psychophysiology?**

Mentorship has been incredibly important for my career. It starts with my advisors Paul Pauli and Andreas Mühlberger, who gave me guidance in how to write a paper, a grant proposal, etc., early on. They also encouraged me from the beginning to apply for scholarships for prestigious research schools and to present at scientific meetings (In fact, they made me present in a symposium at my first SPR meeting already, which was intimidating and exciting at the same time). Also, they gave me the freedom to do what I wanted to do, which was extremely helpful in finding my own path. Then, my mentor in the Lang lab during my post-doc, Andreas Keil, was extremely helpful in advancing my understanding of EEG methods and extending my EEG methods repertoire. All of them gave a lot of invaluable feedback on my plans, ideas, and research. So a big thank you to all of you, guys! In my own role as being a mentor, I always try to set an example by being passionate about science, work hard, and also prepare students to deal with the usual setbacks you have to deal with in academia (such as getting rejected). Furthermore, I try to have an open-door policy as much as I can so that I am approachable with questions etc. And I try to encourage my students to go and present their work at conferences. But to be honest, that's what I think I am doing, to get the full picture here, you'll need to ask my students!

## **8. What advice do you have for young psychophysiologicalists (e.g., regarding training, job preparation, publication, etc.)?**

The most important one, I guess, is: *Be passionate about your research!* Don't do any research project because it's just there, it is the hottest thing around the block right now, or it is easily funded (if there is any of this kind). Do the research because you really care about the research question and are genuinely interested in! You will work you're a\*\* off for it, most likely make sacrifices, you will spend hours in the lab or in the office when your friends are having fun elsewhere. So be sure that you really care about your research! This will also help you to persevere, as working in academia is a road paved with setbacks and almost no immediate rewards. Second: *Get exposed!* As soon as you have your first results, data, but sometimes even just plans, try to get as much feedback as you can get. Go to conferences, present your stuff! Initiate a research colloquium if there is none at your department! Nothing beats the feedback of peers and experts outside of your own group. Third: *Get involved!* Try to attend meetings, ask for external mentoring programs, meet your peers and try to build your own scientific network. Try to be able to write papers early on and to be part of the review process. Many journals desperately look for reviewers, so why not offer your service. And last but not least: *Get skilled!* Improve your programming skills, improve your data analysis skills. The field of psychophysiology has always been quickly evolving, so the approach of today may be outdated tomorrow. That's easier said than done, but believe me, you will not really have the time for this after your post-doc. That's probably what I miss the most nowadays being faculty.