

April 2005

Interview With Peter Lang

How did you get started in psychophysiology?

In my first "big" grant application to NIMH (submitted while at the University of Pittsburgh) I proposed to evaluate a then new and highly controversial method for treating phobia, "Systematic Desensitization". In that era, psychodynamic therapies dominated in both psychiatry and psychology. Moreover, the idea of a treatment based on learning principles (i.e., conditioning) was considered to be radical and suspect by the clinical community. If such a treatment were to be implemented, many believed, it would actually be counter-therapeutic. Thus, one of the primary questions raised at initial review of our application was-- "How are you going to assess fear change?" The question's underlying agenda was the Freudian theory of "symptom substitution". In this view, a phobia isn't just a phobia, but an outward expression of some deeper problem, hidden in the unconscious (see S. Freud, "Little Hans"). Furthermore, it was believed that, although a phobia might be reduced in severity by superficial treatments, the unconscious problem would remain, and inevitably some new external symptom, equally or even more distressing, would emerge.

The review committee's question had, of course, even wider implications. We were being asked to propose a substantive, operational definition of "fear" that could be used in the functional assessment of human beings. Part of our answer to the committee was that the data base of "fear" (perhaps, of any emotion) includes three response

domains: 1) language behavior, expressive and evaluative; 2) behavioral acts, as escape, avoidance or deficits in performance in the context of a "fear" object; 3) physiological reactions, as changes in heart rate, skin conductance, muscle tension, etc. We said that we would sample responses in all domains, and that successful treatment would be shown if there were significant and persistent changes in all three systems.

At the time, I felt reasonably confident that we could develop reliable measures of fear-relevant verbal report and of overt behavior. Assessing the physiology of "fear" was, however, a promissory note to the committee. I had no background at all in physiological measurement. In point of fact, the field of psychophysiology was only then being born. That same year, a few interested scientists had their first formal meeting as the Society for Psychophysiological Research. There was not yet a journal called "Psychophysiology", and there was no formal graduate school training in psychophysiology to be had anywhere. (The only possible exception that I can think of was Indiana University, where R.C. Davis and his students were measuring heart rate (R-R intervals) with a millimeter ruler, and producing research that's still worth looking at).

Who was influential in your development as a psychophysicologist?

As things turned out NIMH accepted our promissory note along with the rest of the proposal. The funds were awarded, and we had to come through on our wager. I was wholly naive and assumed (hoped?) that somebody else had worked out all the details of measuring emotion

physiologically. A little reading, however, soon persuaded me otherwise. I was aghast. Emotion's physiology was immensely complicated and furthermore, many foundational experiments, manipulating simpler stimuli, that should precede a direct attack on emotion, had yet to be done, e.g., assessing the effects of stimulus modality, intensity, repetition over trials, and other basic variables. Rather than measuring emotion in therapy, I soon found myself measuring heart rate in response to simple tones, using Davis's ruler method. I also continued reading and a name kept coming up in my lucubrations, John Lacey, whose laboratory at the Fels institute in Ohio was a relatively short drive away. I wrote to John, visited with him and his wife and colleague, Bea Lacey, and had an opportunity to see how a productive laboratory could be run. John became a good friend, and an advisor and supporter in my psychophysiological research efforts (I have always suspected-- but never confirmed-- that before we met, he had been active on the review committee that gave me that first "big" grant award). Unfortunately, as an assistant professor, my commitments at Pittsburgh were heavy and I was never able to do more than briefly visit John's laboratory. Thus, in the early work, I spent a lot of time pulling on my own bootstraps.

What was the most valuable thing you learned from him?

I would recommend that all psychophysiology students read John's book chapter, "Psychophysiological approaches to the evaluation of psychotherapeutic process and outcome" In "Research in Psychotherapy" [Eds. Rubinstein and Parloff]. National Publishing Co: Washington, D.C, 1959. There is almost nothing in it directly relevant to the

title, but much of value on the psychological relevance— opportunities and pitfalls-- of physiological measurement. It was for me an important guide, a distillation of problems, concepts and principles of psychophysiological research that is still an enormously useful read for young investigators.

It seems worth mentioning that you mentored a number of prominent psychophysiologicals, many who are active members of SPR. This list includes, as graduate students, Ed Cook, Bruce Cuthbert, James Geer, Linda Gannon, Bob Gatchel, Raphael Klorman, Michale Kozak, Barbara Melamed, Greg Miller, Alan Shroufe, Bob Simons, and Scott Vrana, and as post-docs, e.g. Margaret Bradley, Arne Öhman, and Chris Patrick. What is your approach to mentoring? How do you view this process?

I have always agreed with an answer, said to have been given by "Bear" Bryant when a similar question was posed to him: The "Bear" was asked how he had coached Alabama to so many football victories. He said, simply, "It's all in the recruiting." I had (and continue to have) the enormous good fortune to work with students of unusually high intellect and competence. I cherish many close, sustained friendships with former students who are now my colleagues (and who honor the mentor's training by exceeding his competence).

What was your psychophysiological experience at Wisconsin like? How does that compare to your current experience at the Center for the Study of Emotion and Attention?

Francis Graham and I arrived at Wisconsin at almost

the same time. As a tag-team, we taught what was one of the first courses in psychophysiology ever offered at a major University, and together we formed a mini area group training graduate students in psychophysiological research. I greatly enjoyed working with the students there. If asked then what was my primary aim as a professor, I answered that I proposed to train cadre that would instruct the next generation of scientists.

Since moving to Florida I have been less involved in formal teaching and spend much more time in the laboratory. The ratio of post-docs to graduate students has shifted-- generally more of the former; fewer of the latter-- although this can fluctuate. Because our Center has professorial faculty, much of the research is now collaborative and multi-disciplinary. We work as a group, with different investigators taking the lead on different projects, guided by a programmatic theme. I think this model will be increasingly seen in our field. Faced with increasing technological complexity and diversity, larger data bases, and considering that one must stay the course in science (and not flit from one unrelated experiment to another), we profit from advancing as a group. For example, there is often more than one promising approach to a research problem, and a laboratory group can take multiple paths and then coalesce on the one that's paying off. The important thing is, of course, to encourage independent talent, and at the same time meld diverse ideas and methods around a common goal. In this way, achievements are possible that are well beyond the resources of individual, isolated scientists.

An important teaching initiative at the Center is our

post-bac program, in which students with the B.S. join us for two years as full-time research assistants. Graduates in this program gain valuable experience in the different areas of psychophysiological research and data analysis (e.g., fMRI, EEG, autonomic and somatic reflex monitoring). They attend meetings and seminars of the Center, develop significant technical skills and laboratory competencies, and thereby greatly improving their competitive position in applying to graduate school.

Was there a specific highlight of your academic career?

So far, it's been a great ride! I like the motto of my high school, to which I trudged through many a Buffalo winter-- "The best is yet to be."

If you weren't an academic psychologist, what else would you be doing?

What I'm doing continues to be more fun than anything else I can think of.