Neal E. Miller (1909–2002): His Life and Work

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Professional Issues
The present issue opens with an article by Mark Schwartz, past-president of the Biofeedback Society of America (now the Association for Applied Psychophysiology and Biofeedback [AAPB]), on the new official definition of biofeedback, developed by a Task Force appointed by the AAPB, the International Society for Neurofeedback and Research, and the Biofeedback Certification International Alliance.

In addition, Aubrey Ewing, a past-president of AAPB, contributes an article on the AAPB “Foundation for Education and Research in Biofeedback and Related Sciences” and its current work, including student research awards given in 2010. The Foundation also provides support for professional and public education about biofeedback, awards to professionals contributing to the field, and funding for research studies documenting the efficacy of biofeedback in health care.

Special Issue Articles: Neal E. Miller, His Life and Work
Both the Fall and Winter 2010 issues of Biofeedback will be special issues dedicated to Neal E. Miller. Miller is regarded as a founding father of the field of biofeedback. He published 17 articles including the term biofeedback, and eventually served as the president of the Biofeedback Society of America. His article “Biofeedback and Visceral Learning” (1978) serves as one of the most widely read introductions to the field of biofeedback. He also was an inspirational scientist who left behind a vision of science captured in one of his aphorisms: “Be bold in what you try, cautious in what you claim.”

In the 1960s and 1970s Miller reported that physiological processes mediated by the autonomic nervous system could be instrumentally conditioned in experiments with animals. Prior to this research, physiologists generally assumed that organisms have control over bodily functions governed by the central nervous system (or “voluntary nervous system”). The internal physiological processes controlled by the autonomic (or “involuntary”) nervous system were regarded as operating beyond conscious awareness and control.

Miller and co-workers (e.g., Miller & DiCara, 1967) used animals paralyzed by curare so that the animals could not produce the desired visceral changes through voluntary activity mediated by the central nervous system. In this paralyzed state their animal subjects were still able to change their visceral functions. A group of thirsty dogs were trained to salivate more (or to salivate less) to obtain water. Curarized rats were even able to change their EEG.

Miller’s experiment on operant control of heart rate in curarized animals has not been successfully replicated, yet his animal studies spurred further investigations extending the same operant model of visceral learning to human subjects (Miller & Dworkin, 1974). His research encouraged a stream of research studies on reducing blood pressure and addressing other illnesses mediated by the autonomic nervous system (e.g., Engel, 1973). More broadly, Miller’s research inspired the hope that biofeedback can enable human beings to take a more active role in recovering and maintaining health.

Edgar Coons and Edward Taub have served as guest editors for this Fall issue. They have gathered a number of articles by leading figures in the fields of psychophysiology and biofeedback, each of whom studied personally with Neal Miller. The authors share their memories of Neal as a person, but also thoroughly examine the importance of Neal Miller’s contributions to psychology, psychotherapy, psychophysiology, and biofeedback. My special thanks to Drs. Coons and Taub because they have also personally contributed landmark articles on the life and career of Neal Miller.

References

Proposal and Abstracts

Authors are invited to submit manuscripts on any topic in applied psychophysiology and biofeedback. Articles are welcome presently for three special issues: a Neal Miller Memorial Issue for Fall 2010, Optimal Performance in Sports and the Arts for Winter 2010, and The Psychophysiology of Yoga, Meditation, and Spiritual Practices for Spring 2011. Proposals and abstracts are also invited for additional topics for future special issues of Biofeedback.