Consequential Science
Psychophysical Technologies and Their Implementations

Eugene Galanter & Patricia Hannan

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An experimental science like psychophysics is often justified, and justifies itself, by the application of its methods to practical affairs. So Fechner's early technological innovations, his "psychophysical methods," that are now adumbrated in elementary textbooks of psychology, were adopted by ophthalmologists, audiologists, and others interested in prescribing emollients for human sensory limitations. They also helped the design and implementation of prosthetic devices based on the psychophysics of these perceptual functions. Advantage—psychosensory methods—they improved the perceptual experience of these folks.

During World War II, psychophysics on the response side, played a major role in training, serving to enhance and extend psychomotor skills of those entrusted with high- (and often low-) speed motor controls on ships and planes, as well as judgmental requirements of high cost decisions. Training techniques in riflery, air-to-air combat, radar judgments, and other complex human performance, demonstrated once again the importance of psychophysical demands on human judgment and competent performance.

These applications of psychophysical methods and knowledge clearly extend themselves to human development, where psychosensory and psychomotor skills are acquired, adjusted, and made part of both quantitative and linguistic mentation. The extension of intrinsic skills by appropriate psychophysical events suggests the application of various forms of remediation, often termed instruction, learning, interacting, and socializing.

We now demonstrate several ways that our discipline can extend itself with practical consequences to the nurturing, education, and socialization of our children. These implementations of our technologies can once again place the science of our field at the forefront of psychological applications to improve the human condition.

There follows a series of audio-video demonstrations of psychophysical applications to demonstrate how psychophysical techniques and procedures can enhance, improve, and ameliorate early limitations of various phases of human development that are bounded by post-natal constraints. You may also see them at: www.PlayWisely.com/research.htm.

The birth and post-natal development of an infant, and the furnishing of an infant's mind requires that the child confronts two profound external demands: First the existence and acknowledgement of other minds within the mind of that child, and then understanding the nature, structure, and the intrinsically limiting character of the physical world.

How did all this start? The early 19th century accepted *confidence in science* to create the right climate. Although often painted as a prim Victorian century, this century is better seen as a time of closing on the truth. Look at the first quarter, not politically, that is well known; Napoleon on St. Helena was dying, Brazil, Argentina, and Peru became independent, Mexico was proclaimed a republic. The Monroe doctrine was to be announced, Liberia was founded, Greece began a struggle for independence, George IV got his cabinet to institute divorce proceedings against Caroline of Brunswick, leading to wilding in the streets of London.

But look beneath the surface at ideas and techniques: In Copenhagen, Ørsted discovered that an electric current twisted a magnetic pole around its conductor. In England, Faraday showed that such a wire would rotate around the pole of a magnet. Wow, the electric motor was born.

But there was more of consequence. Robert Fulton's *North River Steam Boat,* popularly known as the "Clermont" went up the Hudson to Albany in 1807. Laënnec invented the stethoscope, Schleiden formulated the cell theory of physiology, Champollion deciphered hieroglyphics, and Lyell established modern geology and the recovery of fossils and fuel. In 25 more years came the central organizing principles of physics and biology; e.g., Helmholtz's conservation of energy, evolutionary statistics by Darwin, modern chemistry that made colored clothing, and Edison who installed the generators and power lines that would brighten New York and London.

So where are *we* in this consequential march from science to life? Psychotherapy and mental health, counseling and stronger marriage, learning theory and teaching, even glasses and hearing aids that fail to move beyond the first two derivatives. Not a day passes that in many newspapers we read of new solutions to educational failure. Try single genders, single students, better assessments for management. Do we need a war to meet the psychological issues that our science can elucidate; hopefully no. Research applications as in physics and biology are only a step away; but our "psychological engineering," are kilometers apart. Without demonstrable instantiations of our psychological understanding, we must stand aside and permit unfounded and often foolish assertions to represent our discipline.

If you believe this view is mistaken, let's have a drink at 6:00, and talk it over.