

Biofeedback, bouncing & flexible
radio, EEG, OBI, 1969–75

Notes for Experiments (and general thoughts)

Symmetry:

* Investigate the dependence of sensory recognition (patterns) on their symmetrical characteristics.

* Tendencies away from symmetry (spatial-temporal); the emphasis of information from the right eye in right-handed people, (the left eye is only brought in, at cortical level, for necessary 3D functions).

Look for complementarity (quantum) processes in psychology and perception. A duality of parameters, the increased precision in definition of one depending on decreased precision in definition of the other.

Zen term, "mugen" - non thought, intellectual action without thinking; relation to high Alpha.

✓ Study conscious or unconscious change or adaptation of sensory systems away from psychophysical constants, (ie. Stevens).

✓ Study adaptation of delayed feedback of motor actions, (tracking)(drawing)(etc.). - Compensation for information delay. (Retention to prediction)

✓ Group ^{contingent} feedback studies on all levels;

1. Motor action phase synchrony (EMG, designed tasks, music performance, etc.)
2. Delayed feedback motor action (Riley)
3. EEG parameters
4. Evoked response latency synchrony

An alternative approach to spectrum analysis and feedback of electroencephalographic parameters utilizing N-path filter transfer functions.

A study of auditory "ghost" potentials and their relation to auditory information processing.

An attempt to condition autoregulation of the ERG with biofeedback and note changes in visual information processing.

Phase synchronicity in EEG, what does it mean for neurological models?

Condition AER latency and check relation to reflex speed.

* What is the place of nonverbal communication in the scientific method. (Course for Scientists)

{ Would a study of apparent regularity perceived by S in a stimulus chain which contains a calculated order-disorder relation be of use in an investigation of temporal pattern perception.

Record eye movements of subjects looking at paintings

✓ Feedback paradigm (EEG):

Two tones are presented, one stable low frequency sine (T_1) and one being both pitch and timbre modulated (ex. $\pi\pi$ with FM and LPF mod.) (T_2).

The pitch "height" of T_2 is inversely related to the amplitude variance of the EEG waveform, approaching unison with T_1 as variance approaches zero. The timbre of T_2 , (cutoff freq. of LPF) approaches that of a sine wave as the entropy of the EEG waveform approaches zero, (a sine wave). An EEG

waveform of a stationary sine wave, (imaginary case), would result in a feedback signal of two unison sine waves of low, (ex. 120 Hz), frequency.

* If S is listening to a random stimulus (ex. white noise, max. neg. entropy), his EEG should reflect patterns, according to auditory images this "hallucinates" or "resonates"; as if the hallucinations were "real" stimuli with the same concomitant modifications from conditioning for the particular S. (See: Roy John, SCIENCE, Vol. 177, No. 4052, 8 Sept. 1972)

Also the AER to the stimulus imagined should correlate positively to the AER of the "real" stimulus. This should offer one explanation for "ghost potentials" (^{emitted potentials} we have seen in auditory sequences. This should apply to the late components (output releasing - exogenous) of the ABR. Study relationship of early (endogenous-affluent) components

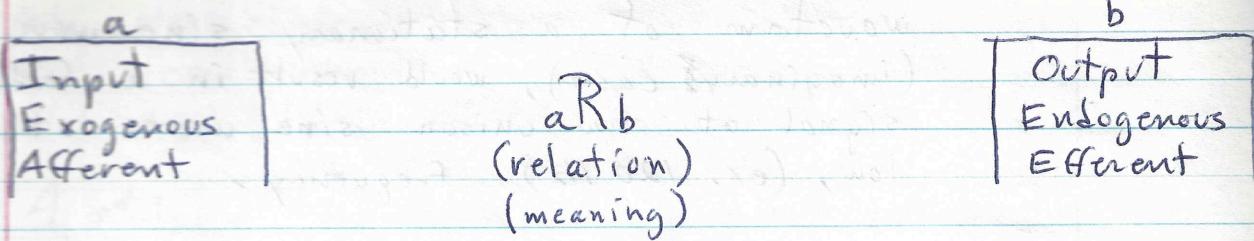
In a sequence of equally stressed auditory signals, AERs should differ according to chunking or grouping S performs on the sequence.

Present sequence of equally stressed rhythmic sounds and ask populations of S to select a time signature they believe applies to the sequence (ie. $\frac{4}{4}$, $\frac{3}{4}$, etc.) (both musicians and nonmusicians).

* "Meaning" is a system; ie. relation between inputs and outputs.

* Use a modification of signal detection theory, calculate a "subjective d' " in relation to "ghost potentials" or signals "resonated" in noise stimulus.

* After onset, the potentials seen during random stimuli must all be related to output (endogenous) ~~potent~~ products.



* Is alpha (EEG) presence the production of a large continuous (resonant) evoked potential (deviation in orderly manner from randomness) with minimal exogenous effect (not awareness) and (not or) affect, a constant aRb , input-output relation.

* As an exercise two people should sit quietly and meditate while staring deep into each other's eyes, face to face, for about one hour, never diverting their gaze, as if maintaining a drone a stasis.

Exercises in biofeedback must not support an illusion of division of outer and inner worlds, a fantasy split. The inner world must gain substance and the outer must gain meaning in order to synthesize unity.

AEP as deviation from randomness

This started in 1969, but
the last part starts to
blend into the early 1970s.