PHYSIOLOGICAL PATTERNS: A DIAGNOSTIC TEST PROCEDURE BASED ON THE CONDITIONED REFLEX METHOD

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Since Pavlov's original behavioral observations on animals, there has been considerable growth in the knowledge of the electrophysiological correlates of conditioning. Workers in the field, such as Gastaut, Eccles, Jasper, Magoun, Moruzzi, and others, have greatly enlarged our understanding of the working of the central nervous system. These latter experimenters have increased the original Pavlovian hypothesis and have provided comprehensive data for the setting up of a further operational hypothesis.

The problem of assessment and validation of clinical change in psychiatric patients has been in the forefront of research activity in research centers throughout the world. There is general dissatisfaction with currently available methods of evaluation of clinical change. Psychological tests such as Q-sorts, projective techniques, rating scales and simple observation have not provided sufficient scientifically measurable data for validation of clinical change.

During the last several years, work has been directed at the Allan Memorial Institute towards investigation of other parameters for measurement of these changes in psychiatric patients. Previous publications (1, 2) have dealt with the use of movie analysis, electronic voice analysis and GSR recordings. The purpose of this paper is to describe a diagnostic test based on current knowledge of conditioned reflex theory to provide measurable evidence of change in patients exposed to any treatment regime. In this first report, we are describing part of the total design of a test battery for diagnostic and evaluation purposes.

In this procedure, applying the eyelid closure conditioned reflex technique, eight parameters are investigated as follows:

1. the extinction of the orienting reflex
2. formation of the primary conditioned reflex

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8. the extinction of the primary conditioned reflex
4. conditioned stimulus generalization
5. differentiation of positive and negative conditioned stimuli
6. the formation of retarded conditioned reflex
7. the secondary conditioned reflex formation
8. the mobility of the conditioned reflexes.

The experiment was conducted in the Conditioning Laboratory of the Allan Memorial Institute. The subject was seated comfortably in an armchair separated from the experimenter by a one-way screen. An Offner 8-channel standardized EEG machine was used for simultaneous recording of the unconditional stimulus (a puff of air), conditioned stimuli (tones), and of the subject's response (eye blinks). The subject had two Grass electrodes fixed by bentonite, one immediately above and one immediately below his right eye. An air pipe was placed \( \frac{1}{2}'' \) away from the cornea of the left eye. All controls were regulated from the experimenter's observational chamber on the other side of the one-way screen.

The unconditional stimulus consisted of an air puff, 1.5 litres per square inch pressure. The conditional stimuli were 400 CPS and 1000 CPS tones produced by an audio-oscillator transmitted through earphones fixed to the subject's head. Stimuli were transmitted at random ranging from 20 to 40 seconds. Both conditioned stimuli and unconditional stimulus were presented on five consecutive occasions. On the sixth trial, only the conditioned stimulus was presented. The test trial was occasionally administered on the fifth or seventh occasion to provide variation. Testing was carried out on five consecutive days over periods lasting from 35 to 45 minutes. The programming was as follows:

First day: Measurement of the extinction of the orienting reflex, primary conditioned reflex formation, and extinction of the primary conditioned reflex.
Second day: Generalization of conditional stimuli together with differentiation of positive and negative conditional stimuli.
Third day: The formation of retarded (delayed) conditioned reflex.
Fourth day: Secondary conditioned reflex formation.
Fifth day: Mobility of the conditioned reflexes recorded.

The criterion for the establishment of any of these reflex phenomena was the appearance of the appropriate response on at least three consecutive occasions during the test trial. To avoid exhaustion of the organism, test administrations were restricted to 100 stimulations at each session.

Results are demonstrated in the plates presented here.