

1943 Arch. Neurol. Psychiat.

Kessler & Gellhorn set up C.R. to bell, then extinguished by not reinforcing. ECS then restored the C.R. as did metrazol convulsions. [It wiped out the more recent habit, but interestingly that the old anteq. habit was still there, after extinction, & reappear.] The reappearance of the C.R. lasts at least from 5-10 days. They call it inhibition of C.R. rather than "extinction". Say hypothalamic lesions interfere w. condit'g (Pavlov called internal inhibition) rate jumped from A to B & back when floor shocked 70-100 trials to estab. C.R. at 80-100%. Then rang bell but no shock - 2 or 3 days, 25 trials/day & C.R. disappeared or was present in only 10-20%. After a week, gave convulsions.

recall that repeated switching, alternating of the habit brings quicker & quicker learning - so there is a hangover from previous training & all integrate into larger whole.

Gellhorn 46 Arch. Neurol. Psychiat. -

convulsions (insulin coma) restore extinguished R's that have died out thru lack of reinforcement, but they do not destroy positive C.R's. If the above C.R. is ^{abolished} reversed by shocking the 2nd chamber into which rat jumps, then it is not affected by insulin coma.

No two inhibited C.R's differ only in strength.

ECS & insulin coma increase excitability of sympathetic centers. Hypothal. then discharges into motor area, sensory & axis areas. Thus cortical excitability is increased.

Gell. has other data showing that the stability of the C.R. makes a differ. as to ~~the~~ influence of coma & convulsions.

Duncan, C. P. 1949 The retroactive effect of electroshock
on learning. J. Comp. Physiol. Psychol. 42:32-44.

single shock ECS tends to knock out more recent maze
habit $\frac{C}{R} \rightarrow \frac{R}{C}$ if delivered w/in 2-3 hrs after training. If
longer time elapses, no effect.

ECS as a retroactive inhibitor
Applied shock after each trial during orig'l learning in
off expt. Attempts thus to measure duration of the retro-
effect of ECS.

Used 2-compartment box w. a shock on floor of 1st
w. the 2nd comp (safe one) ^{intensity} lighted to keep rats out - had a
15% fatality rate from the ECS (presumably used a
bell or some sound to warn of grid shock. + no just see
to run to opp. side) got a full tonic-clonic convulsion - rat appeared dazed for sev. min.

Found no retroactive effect when ECS applied
more than 15 min. after the day's trial - no
depression in the 1 hr., 4 hr., & 14 hr groups - these learned
as well as the controls.

The 15 min, 4 min, & 1 min. groups learned, but
not so rapidly as the controls - at least not as clean

The 40 sec. & 20 sec start to learn but then
regress. (who wouldn't if going to ECS when jump?)

ECS has a debilitating effect on organism - effect
accumulates w. repeated shocks if enough time not
allowed between - as was not there w. daily shocks.

The "consolidation" interval before ECS.

Still get some learning 1-15 min.

Rats don't get cond. to ECS, don't attempt to avoid
like a shock thru legs - apparently have amnesia. Rat comes to
lie passively until current applied.

Duncan - 2

Retrospective effect of one activity on another:

When 2nd activity is very diff, gets impaired retention under normal conditions

McGeoch - talks of perseveration prob. not lasting more than a few minutes (same as consolidation)

Duncan suggests a consolidation period off's the completion of each trial - less than 1 hr, not much longer than 15 min. or so.

ECS has a disruptive influence during consolidation the more, the earlier after the trial, [But no disruptive effect after 1/2 hr or so!]

ECS knock out all organiz. achieved within preceding 60 sec & same .. - predg 15 mins

What kind of physical change takes place in the 15-30 mins after a trial? that makes traces impo. to knock out?

same volume:

The Pittsburgh Electroshock Apparatus

CR's can be set up in chick embryos from 15th day on & there survive hatching

Relatively simple habits - single choice maze etc. not affected by electro-shock - whether ^{habits in} immediate or delayed but permanent impairment of more complex maze habits! paper on regularity intensity of shock

Hayes says no histolog. defects in shocked brains

cause multiple sclerosis by injecting some of animals' own brain into his body Sci. News Letter 1947, 51:39

Aspirate - gyrus by gyrus leaving pia intact