1899


1910


1913


1922


1923


1924


Cohen, L.H. (1932). The effect of refractory phase upon negative adaptation of

1933


1934


1935


1936


1937


1938


1939


Humphreys, L.G. (1939). The effect of random alternation of reinforcement on the acquisition and extinction of conditioned eyelid reactions. *Journal of Experimental Psychology, 25*, 141-158.


1940


1941


1942


1943


1944


1945


1946


1947


1948


1949


1950


1951


1952


1953


1954


Franks, C.M. (1955). The establishment of a conditioning laboratory for the
Journal of Mental Science, 101, 654-663.
Warren, A.B., & Grant, D.A. The relation of conditioned discrimination to the MMPI
Vooks, V.W. (1955). Gradual strengthening of S-R connections or increasing number

Psychology, 52, 143-150.
objective test of hearing. Journal of Speech and Hearing Disorders, 21, 47-55.

Franks, C.M. (1957). Effect of food, drink and tobacco deprivation on the
conditioning of the eyeblink response. Journal of Experimental Psychology, 53,
117-120.
conditioning following interpolated presentations of the UCS. Journal of
Cynther, M.D. (1957). Differential eyelid conditioning as a function of stimulus
similarity and strength of response to the CS. Journal of Experimental
Psychology, 53, 408-416.
King, D.C., & Michels, K.M. Muscular tension and the human blink rate. Journal of
1958


1959


Braun, H.W., & Geiselhart, R. (1959). Age difference in the acquisition and
extinction of the conditioned eyelid response. *Journal of Experimental Psychology, 57*, 386-388.


1960


1961


function of reinforcement schedules and changes in them. *Proceedings of the National Academy of Science, 47*, 1860-1868.

1962


1963


---

**1964**


1965


Meiselman, H.L., & Moore, J.W. The effects of percentage reinforcement, UCS duration, and experience with procedure on the conditioned eyelid response.


1966


1967


1968


differential human eyelid conditioning. Psychonomic Science, 12, 58.
Suboski, M.D., & Greenner, R.T. (1968). Ready signal and definition of a CR in
classical eyelid conditioning. Psychological Reports, 23, 995-1001.
White, B.L., & Clark, K.R. (1968). Apparatus for eliciting and recording the eyeblink

1969

conditioning and probability learning as a function of puff intensity. Journal of
Cerekwicki, L.E., Kantowitz, B.H., & Grant, D.A. (1969). Replicability of and
optimal delay of reinforcement result in instrumental eyelid conditioning. Journal
of Experimental Psychology, 79, 189-190.
Fishbein, H.D., & Rees, J.F. (1969). The interaction effects of CS intensity and CS-
UCS interval in human eyelid conditioning. British Journal of Psychology, 60(3),
357-361.
stimuli varying in formal similarity. Journal of Experimental Psychology, 80, 9-
13.
Transfer of eyelid conditioning from instrumental to classical reinforcement and
relationship to neuroticism and extraversion. Behavioral Research Therapy, 3,
233-244.
variables and college achievement. Australian Journal of Psychology, 21 (1), 85-
89.
opposing instrumental contingencies. Journal of Experimental Psychology, 79,
547-551.
1970


1971


1972


1973


1974


1975


1977


1978


1979

1980


1981


1982


1983


1984


1985


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