PSYCHOLOGY

Chairman: GEORGE LOVELL, Wabash College

CHARLES JOSEY, Butler University, was elected chairman for 1959

ABSTRACTS

Multiple Tone-Pattern Discrimination. HARRISON E. MCKAY, Purdue University.—The administration of a new form of auditory ability test, to 76 college students, is described. The task presented requires the subject to determine the direction of movement of seven-note melodies when two or three are presented simultaneously. The ability to do the task is correlated significantly with the Seashore measures of pitch and tonal memory, a nonverbal intelligence test, and musical experience. When these four measures are used as predictors in a multiple regression equation, the resulting correlation with the tone-pattern test reaches 0.79. Little is known about the perceptual operations humans undergo when attempting to hear complex multiple patterns of sounds as they normally occur. This new test, the Tone-Pattern Discrimination Test, appears to be a reliable index of the complex function it measures.

Scaling of Sensory Strength Through Reaction Time. VIDKUNN COUCHERON JARL, Norwegian Armed Forces and Indiana University.—Although Cattell as early as 1902 suggested latency of response as an alternative measure of differences in perceived intensity, this method has not been fully exploited, and the few attempts made have met with limited success. Direct scaling through simple reaction time (RT) presupposes a marked and dependable relationship between speed of response and intensity of stimulus (I). Results of methods based on frequency of response lead us to expect something like an inverse straight line relationship between RT and log I, at least within the middle range of stimulus strength. Yet most of the major studies have obtained a hyperbolic curve which flattens out rather sharply at very low values of I (1-2 log units above threshold), with very small changes in RT above this point. Results will be reported which are at variance with these findings but in agreement with the expectation mentioned, and evidence will be presented in favor of a change in the procedure for investigating sensory strength through speed of response.

The Effect of Induced Muscular Tension on Learning. K. M. MICHELS and RONALD F. JOHNSON, Purdue University.—The permanent effects of induced muscular tension on the learning of lists of paired associates were investigated using 30 male college students between the ages of 18 and 24. Recent neurophysiological evidence assumes that the motor system has no permanent effect on modifications in the central nervous system, but several studies demonstrated that induced muscular tension has some effect on learning. The experiment called

for learning and recall under various combinations of three tension conditions: Relaxed ⅕ and ⅓ maximum grip on a hand dynamometer. A rest period of thirty minutes fell between the learning and the recall. Each subject participated in three of the possible nine combinations of tension conditions. A replicated 3 x 3 Graeco-Latin square design was used, and in the analyses of variance, highly significant F ratios were noted for the tension conditions. This was perhaps due in part to a breakdown in performance under the maximum tension conditions. Subsequent analysis of the means of scores under the various combinations of tensions showed that those subjects who learned under ⅕ tension recalled significantly better than those who learned while relaxed. The results of this experiment suggest that the motor system is involved in the modification which takes place in the central nervous system during learning. This can perhaps be explained by an interaction of simultaneous responses at various cortical levels.

A Comparison of Gastro-Intestinal Tract Activity of Normals and Two Types of Psychotics. LORAZE GARAFOLO and R. C. DAVIS, Indiana University.—The relation between general activity level of the S and activity of the gastro-intestinal tract as recorded by surface electrodes was investigated by comparing the records of hyperactive and hypoactive psychotics and normals during rest and in response to a light stimulus. It was concluded that a relationship between gross motor behaviour and gastro-intestinal activity is demonstrated by latency of the primary response for all trials, and by mean amplitude and stimulus response for naive Ss.

The Interaction of Time and Duration of Infantile Experience Upon Adult Learning. VICTOR H. DENENBERG and GEORGE G. KARAS, Purdue University.—The purpose of this study was to evaluate the interaction of time and duration of infantile experience upon adult avoidance learning in the albino rat. Two experiments were conducted in which infant rats were handled for three minutes per day during the following ages: 1-20 days, 1-10 days, 11-20 days, 11-15 days, 16-20 days, with control groups receiving no experience. The *S*s were tested in an avoidance learning apparatus starting at 62 days. In both experiments significant curvilinears function were obtained between amount of handling and performance, with the *S*s receiving an intermediate amount of handling performing best. *S*s handled on Days 1-10 performed significantly better than those handled on Days 11-20, and the Ss handled on Days 16-20 were significantly better than those handled on Days 11-15.

Relationships between Odor Quality, Low Raman Spectra and Biological Utility. ROBERT H. WRIGHT, Purdue University.—Using relationships between odor quality and low Raman spectra which have previously been developed, the utility of these relationships in the survival of organisms is pointed out. It is noted that a number of highly poisonous chemicals possess strong vibrations in a region slightly beyond the region in which chemicals with disagreeable odors have been found to possess strong vibrations. Chemicals with pleasant odors are

often associated with biological utility, and these chemicals are found to have their strongest vibrations in a region well removed from the major vibrations of the poisonous chemicals.

Secondary and Generalized Reinforcement in Human Learning. FREDERICK H. KANFER, Purdue University.—Skinner suggests that generalized reinforcement is more effective because it is less dependent on momentary deprivation of the organism than secondary reinforcement. The present study investigated the relative effectiveness of a conditioned or secondary reinforcer and a generalized reinforcer in facilitating human learning.

Procedure: 54 Ss were assigned to Control (NR) Secondary reinforcement (SR) and generalized reinforcement (GR) groups. All groups first learned a list of paired adjectives to a criterion of 20 correct anticipations. All Ss were given a poker chip for each correct response. The SR group exchanged two chips for one of the following items as randomly predetermined: cigarettes, candy or hand lotion. The items were of equal commercial value. The GR group could select any combination of the rewards. The NR group received no reward. All Ss then learned a list of paired nonsense syllables.

Results: On the first task the groups did not differ significantly (by F test) in mean trials to criterion, despite differing instructions about the value of the chips. On the second task, after chips had been exchanged, the mean trials were 70.89, 58.4, and 52.5 for groups NR, SR and GR, respectively. These differences are significant, by F test, at the 5% level. An F test on the differences between individual scores on the first and second list indicated the lowest difference scores for GR, next for SR and largest differences for NR, significant at the 1% level. In group SR there was no significant difference in trials on either task between Ss who received only candy, only cigarettes and only hand lotion. The results indicate that pairing a conditioned reinforcer with different rewards (hence a "generalized" reinforcer) enhances its effectiveness. Implications and limitations of the study are discussed.

The Effect of Pretraining in the Presence of a Social Stimulus on Verbal Conditioning. FREDERICK H. KANFER and SHIRLEY KARAS, Purdue University.—Verbal conditioning phenomena have been thought by some to be less stable than those obtained with other laboratory procedures as shown by occasional failure to manipulate some verbal response classes. This instability may be due in part to a variety of "concurrent controlling stimuli" which reduce the direct relationship between the reinforcer and a specific response class. Various studies have indicated that Ss respond differentially to different experimenters. This study uses one E and attempts to investigate the effect of a success or failure experience with the same E who subsequently acts as a source of reinforcement in verbal conditioning. Thirty-six undergraduate male subjects were assigned randomly to a control and two experimental groups. One experimental group (ES) received a "success" experience before conditioning, the other group (EF) a "failure" experience. The control group had no prior experience with E. Apparatus consisted of 7 sets of

3 x 5 cards, 20 cards in each set. Each showed a stimulus verb and six randomly ordered pronouns. The verbs were taken from an earlier study by Binder. The verbal conditioning task consisted of the construction of sentences made up from the verb and one pronoun on each card. Each card was exposed no longer than 15 seconds, and a 5-second intertrial interval was given. Ss were given 160 stimuli. No reinforcement was given for the first 20 trials. On all succeeding trials each S was reinforced for the use of "I" or "we" by E's saying "good." Results show a significant difference between groups on the last 20 trials and no significant difference during the first 20 trials. The present exploratory results indicate that pretraining significantly affects responsiveness to a social reinforcer under the present conditions of the experiment.

Comparison of Rote Learning in Experimentally Regulated and Subject Controlled Speed of Presentation of Materials. RICHARD J. HORNICK, Purdue University.—The object of this study was to illustrate that the bow-shaped serial position curve results from learning in a regulated speed of presentation, whereas it was felt that when subjects control their own speed of presentation the traditional bowed curve would not occur. It was thought that this would be explained by the way subjects distribute their time over the lists of syllables, so a time measure was incorporated at every position in the serial lists. Learning in subject controlled presentation speed was predicted to be a more efficient learning than learning in experimentally regulated presentation speed.

Forty subjects learned in the two conditions of presentation. Lists of nine nonsense syllables were used (association value = 20%). Subjects learned to a criterion of one perfect recitation with the anticipation method.

The main conclusions were:

1) The bow-shaped curve resulted in experimentally regulated speed; a sloping, slightly irregular, straight line resulted from subject controlled presentation speed.
2) The time values showed that subjects spend more time in anticipation of centermost syllables, with less time at either end of the list when working at their own speed.
3) Several measures of efficiency indicated that learning was most efficient in the condition of subject controlled speed of presentation.