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Adams, Joe K. "Laboratory Studies of Behavior Without Awareness" 383-404.

Psychol. Bull, 1957

This review attempts to classify laboratory experiments in behavior without awareness into a system which will "separate those results which can be relatively easily reproduced from those which can be reproduced only with considerable difficulty or not at all" (383). Behavior is here defined as anything S does that is publicly observable. Awareness refers to conscious awareness "which is taken as a primitive (undefined) term" (383). Lack of awareness may be with respect to 1) the behavior itself; 2) the relation between behavior and some contingent event; 3) the sensory experiences that accompany a particular stimulation; 4) the fact that S is discriminating the presence from the absence of a stimulus better than chance; 5) the fact that responses to different stimuli are occurring in a systematic way; 6) contingencies in the environment that produce changes in behavior.

The author states at the onset of his review that "only one form of behavior without awareness has been established on an unquestionable experimental basis." (384) Other results claiming to show the phenomenon of behavior without awareness have one or more of the following limitations: 1) Alternative explanations could have been made. 2) Negative results have been obtained in replicating studies. 3) No replication has been reported. 4) Effects are too slight to be of statistical significance.

The studies to be reviewed are organized into the following outline form, on the basis of certain distinctions the author deems of special importance. These distinctions are: 1) whether stimulus discrimination is involved; 2) whether behavior is learned during the experiment, and 3) whether the S knows what he is supposed to be discriminating.

I. BEHAVIOR INVOLVING STIMULUS DISCRIMINATION.

A. Experiments Where S Knows the Specific Nature of the Cue, But is Not Aware of the Usual Sensory Qualities Nor of the Fact that he is Succeeding in Discriminating.

1. Behavior not learned during the experiment.

Under this section are studies which are easily replicable "even as a class exercise." (388) In general they involve discriminations which S believes are only 'pure guesses' that occur with better than chance frequency. For example, the earliest of such studies by Pierce and Jastrow (1884) is cited in detail. They required Ss to judge the order of changes in weight placed on the finger tip, and to indicate the degree of confidence in each judgment. It was found that Ss discriminated greater than chance in all cases with zero confidence (zero confidence = "absence of any preference of one answer over its opposite, so that is seemed non-sensical to answer" (385)).

2. Response based on learning during the experiment.

The author states that there have been very few laboratory studies dealing directly with learning to respond to the subliminal stimuli when S is aware of the cue. Two studies are cited, both with questionable replication ability. These are Newhall and Sears (1933) and Lazarus and McLeary (1951); both deal with the effects of shock on subliminal conditioning. The Lazarus study presented more conclusive results, by demonstrating that Ss would show conditioned GSR significantly

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more often on tachistoscopically presented subliminal shock syllables than non-shock syllables even when they failed to identify the syllables verbally.

B. Experiments in Which S Believes a Cue is Being Given and Knows the General, But Not the Specific Nature of the Cue.

The criteria in this section is that discrimination occurs when a greater number of instances of a concept occur than can be accounted for by verbalization. For example, in Goodnow and Postman's study (1955) Ss had to decide which of two variations (additive and subtractive) matched a given geometric design. S was led to believe there was a general principle governing correct choices based on the nature of the design, but in reality, the cue was based on a varying proportion of 'additive' presentations. Their responses indicated that they tended to match their choices to the proportions of additive designs designated "right", yet they gave no verbal indication that they perceived the problem as a probability discrimination task.

C. Experiments in Which the Subject Believes that a Cue is Being Given But Does Not Know Even Its General Nature.

An example of this kind of approach is the study by Postman and Jarrett (1952), in which Ss had to give a simple word response to Es word and was told "right" if the response was sequentially connected with Es word and "wrong" if the response was connected denotatively. The results showed a slight trend for learning to occur even when the principle could not be verbalized.

D. Experiments in Which the Subject Does Not Believe a Cue is Being Given.

1. Behavior not learned during the experiment.

Six studies are reported in this section; one of the most interesting is by Miller (1939) who demonstrated that Ss were able to guess as if by 'telepathy' a geometric figure while staring into a mirror on the back of which figures were being projected at very low intensities. Ss did not know of this projection, and were surprised to discover the cue after the experiment had terminated. Ss averaged 45% correct with an expectation of 20%, and one S achieved 91% correct.

2. Response learned or strengthened during the experiment.

Notable among this group of studies is Thorndike's series of experiments reported in Fundamentals of Learning (1932). In one of these S was required to complete mutilated words, each of which could be finished in more than one way. The examiner said "right" whenever the S placed a v after a, and l after b; otherwise, all responses were "wrong". "Thorndike reported that 3 of 8 Ss learned to respond without awareness to the rules." (393)

Cohen, Kalish, Thurston, and Cohen (1954) used 40 male ambulatory patients in an experiment of learning without awareness. They presented each S with 80 cards, containing one verb and 6 pronouns and was told to make up a sentence including one of the pronouns and the verb. The examiner said "good" whenever S began his sentence with "I" or "We". "The authors report that questioning of Ss at the end of the series revealed no awareness of the contingency between their responses and those of E, although their use of "I" and "We" increased from 44% on the first 20 trials to 64% on the last 20, compared with a control groups' change from 43% to 41%." (395) A number of similar verbal experiments are cited in this section.



II. BEHAVIOR NOT INVOLVING STIMULUS DISCRIMINATION.

(Instead of the variable of whether S believes a cue is being given, these experiments have the variable of whether S believes that his task is to discover a method of responding.)

A. Experiments in which S Believes that His Task is to Discover a Method of Responding.

Two experiments are reported here; Sidowsky (1954) instructed Ss to say any words they could think of, while seated before a light bulb. S was told it was his job to make the light blink as often as possible. Each plural word was reinforced. Although only 3 of 13 Ss were able to state the principle of the light, all of them showed an increase in use of plural words, from 23% to 35 % mean.

B. Experiments in Which S does Not Believe that his Task is To Discover a Method of Responding.

An example of this kind of situation is Greenspoon's experiment, in which Ss were instructed to say all the words they could think of individually. "By saying 'mmm-hmm' after each plural response, during the first 25 minutes he more than doubled the percentage of plurals for 14 Ss, compared with a control group which had no contingent response from E." (400)

SUMMARY AND CONCLUSIONS.

"The only type of behavior without awareness that can be easily reproduced on the basis of published reports is the classical type in which S knows what he is supposed to be discriminating, but does not know that he is discriminating because of the absence of the usual sensory experiences to which he is accustomed under the given type of stimulation. Nevertheless, we know...that many other kinds of behavior without awareness do frequently occur..." (402.)

