

## Implications of Recent Advances in Prediction and Control of Behavior

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THE science of psychology, in spite of its immaturities and its brashness, has advanced mightily in recent decades. From a concern with observation and measurement, it has moved toward becoming an "if-then" science. By this I mean it has become more concerned with the discernment and discovery of lawful relationships such as that if certain conditions exist, then certain behaviors will predictably follow.

I believe that few people are aware of the breadth, depth, and extent of the advances in psychology and the behavioral sciences, and still fewer seem to be aware of the profound social, political, economic, ethical, philosophical, and educational problems posed by these advances. In this discussion I should like to focus on the educational implications of these advances in the science of psychology (which inevitably will involve me in some concern with the philosophical implications as well) and to review a few selected examples of what I mean by the increased ability of psychology to understand and predict or control behavior. Each illustration I will give is supported by reasonably rigorous and adequate research, though like all scientific findings, each is open to modification or correction through more exact or imaginative future studies.

What, then, are some of the behaviors or learnings for which we now know how to supply the antecedent conditions?

*We know how to set up the conditions under which many members of a group will report judgments which are contrary to the evidence of their senses.* They will, for example, report that Figure A covers a larger area than Figure B, when the evidence of their senses plainly indicates that the reverse is true. Experiments by Asch [2],<sup>1</sup> later refined and improved by Crutchfield [7], show that when a person is led to believe that everyone else in the group sees B as larger than A, then he has

a strong tendency to go along with this judgment, and in many instances does so with a real belief in his false report.

*We know a great deal about how to establish conditions which will influence consumer responses and/or public opinion.* I refer you to the advertisements in any magazine, or to the TV program, "The \$64,000 Question," and the sales of the sponsor's lipsticks.

*We know how to influence the buying behavior of individuals by setting up conditions which provide satisfaction for needs of which they are unconscious, but which we have been able to determine.*

It has been shown that some women who do not buy instant coffee because of "a dislike for its flavor" actually dislike it at a subconscious level because it is associated in their minds with laziness, spendthrift qualities, and being a poor housekeeper [12]. This type of study has led to sales campaigns based upon appealing to the unconscious motives of the individual—his unknown sexual, aggressive, or dependent desires.

*We know how to predict which members of an organization will be troublesome and delinquent.* On the basis of a paper and pencil test, Gough [11] has predicted which department store employees will be unreliable and dishonest or otherwise difficult. He freely states that it is quite possible to identify, with a good deal of accuracy, the potential troublemakers of any organized group.

This ability to identify troublemakers is only an extension of the knowledge we have about prediction in other fields—predicting which individual is most likely to become a good salesman, or typesetter, or physician, or student in college.

*We know how to provide conditions in a work group, whether in industry or in*

*education, which will be followed by Increased productivity, originality, and morale.* Conversely we know how to provide the conditions which lead to low productivity and low morale. Studies by Coch and French [5], and by Katz, Maccoby, and Morse [13] show in general that when workers in industry participate in planning and decisions, and when they are not supervised in a suspicious or authoritarian way, production and morale increase. The reverse conditions produce a reverse effect. A study reported by Corey [6] indicates that when the leader of a teacher group acts in a manner which is understanding, and which facilitates participation, the group is more productive in making and carrying through plans.

*We know how to provide the conditions of leadership which will be followed by personality growth in the members of the group, as well as by increased productivity and improved group spirit.* Richard [14], in his experience as manager of an industrial plant, and Gordon [10], in his study of leadership of a workshop, have shown that where the leader or leaders hold the attitudes customarily thought of as therapeutic, the results are good. In other words, if the leader is understanding, acceptant, and permissive toward his group and also acceptant of his own feelings in the situation, then the members of the group show evidence of personality growth and function more effectively and with better spirit.

*We know how to provide the psychological conditions in the classroom which will result not only in the usual learning of academic content, but in improved personal adjustment as well.* Studies by Asch [1] and Faw [8] show that if the attitudes of the teacher are similar to those described above for the leader, and hence responsible participation by the student is permitted and encouraged, then academic learning proceeds about as usual as measured by conventional tests, and personal growth and adjustment improve significantly.

*We know how to provide an interpersonal relationship with qualities such that it enables the individual to meet stress with more serenity, less anxiety.* Thetford [19], in

an experiment with group therapy, and Faw [9], in a recent study of teacher-pupil relationships in the classroom, came to similar conclusions, though using very different methods and instruments. When individuals—clients or students—have experienced for a time a relationship of warmth, understanding, and acceptance, they are able to meet stress situations with less physiological upset and quicker recovery of physiological balance [Thetford] and are less upset psychologically by the stress [Faw].

*We know the attitudes which, if provided by a counselor or a therapist, will be predictably followed by certain constructive personality and behavior changes in the client.* Studies which in recent years have been completed in the field of psychotherapy justify this statement. [17, 15, 16] The findings from these studies may be very briefly summarized in the following terms:

If the therapist provides a relationship in which he is (a) genuine, internally consistent; (b) acceptant, prizing the client as a person of worth; (c) empathically understanding of the client's private world; then the client becomes (a) more realistic in his self-perceptions; (b) more confident and self-directing; (c) more positively valued by himself; (d) less likely to repress elements of his experience; (e) more mature, socialized, and adaptive in his behavior; (f) more like the healthy, integrated, well-functioning person in his personality structure.

It is obvious that the essence of these findings in the field of therapy is closely related to the three previous illustrations.

*We now know how, I believe, to disintegrate a man's personality structure, dissolving his self-confidence, destroying the concept he has of himself, and making him completely dependent upon another.* This example has not been, so far as I know, verified by objective research. I make this statement after having studied, as far as one is able, the methods used in preparing prisoners for confession in various purge trials in Russia, and the brainwashing procedures applied in Communist China. It seems rather evident that these methods use many of the principles of psychotherapy, but use them in

reverse fashion to bring about the disintegration of the autonomous personality, rather than integration. In a curious and abhorrent way this tends to validate the principles of psychotherapy mentioned above, because it indicates that the lawfulness of the process of therapy may be used to build or destroy personality.

*We know how to provide psychological conditions which will produce vivid hallucinations and other abnormal reactions in the thoroughly normal individual in the waking state.* This knowledge came about as the unexpected by-product of research at McGill University [4]. It was discovered that if all channels of sensory stimulation are cut off or muffled, abnormal reactions follow. If healthy subjects lie relatively motionless, to reduce kinaesthetic stimuli, with eyes shielded by translucent goggles which do not permit perception, with hearing largely stifled by foam-rubber pillows as well as by being in a quiet cubicle, and with tactile sensations reduced by cuffs over the hands, then hallucinations and ideation bearing some resemblance to that of the psychotic occur within forty-eight hours in many of these subjects. What the results would be if the sensory stifling were continued longer is not known.

*We know how to influence psychological moods, attitudes, and behaviors through drugs.* For this illustration we have stepped over into the rapidly developing borderline area between chemistry and psychology. From "truth serum," to the chemotherapy now practiced in psychiatric wards, to drugs for the normal citizen there are many ways of changing psychological states. We may take a drug to mobilize our energy to cram for an exam, or a drug to allay our anxiety about the exam. Drugs have reportedly been given to soldiers before a battle to eliminate fear. While much is still unknown in this field, Dr. Skinner of Harvard states that "In the not-too-distant future, the motivational and emotional conditions of normal life will probably be maintained in any desired state through the use of drugs." [18]

*We know the psychological conditions of family life which, if established in a home, will tend to produce emotionally secure children with many socially valuable*

*characteristics.* Here we go to a very different field, that of personality development in children, for our example. We can measure the attitudes and emotional climate which parents are creating for their children, and from these measurements we can predict that Home A will in all probability produce children who will grow somewhat brighter over the years, will be emotionally secure, original, relatively unexcitable; who will be liked by their peers, likely to be leaders, and well-adjusted to adults. On the other hand we can predict that Home B will be likely to produce emotional, excitable children, with little emotional control, and with less of originality than the children from Home A. The studies done by Baldwin and others [3] at the Fels Research Institute are the basis for these statements. Home A is the home in which the parents' attitudes and behaviors cluster in what the investigators have termed the "democratic" category, and parental attitudes and behaviors in Home B cluster in what they term the "actively rejectant" group.

My purpose in the above examples has been to point up the wide-ranging power, the very diverse potentialities for control and prediction, which psychological knowledge is giving us. When we project ourselves into the future, and try to imagine the further developments which will inevitably come, the prospect arouses uneasiness. Small wonder that Dr. Robert Oppenheimer, in speaking of the points of similarity between his own profession, physics, and the profession of psychology, says that one of these points "is the extent to which our progress will create profound problems of decision in the public domain. The physicists have been quite noisy about their contributions in the last decade. The time may well come—as psychology acquires a sound objective corpus of knowledge about human behavior and feeling—when the powers of control thus made available will pose far graver problems than any the physicists have posed."<sup>2</sup>

Inherent in this development of the psychological or behavioral sciences are, I believe, two profound questions for educators. They are: How do educators propose to use these rapidly increasing potentialities for influencing and altering

human learning and human behavior? How shall we prepare students to live in a world where the possibilities for such control of human behavior exist?

I shall not attempt to answer either of these questions, but shall only comment on each one. As to how educators propose to use this accumulating knowledge, I believe it is clear that it will depend entirely on their philosophy of education, as that philosophy is operationally defined in action. We are rapidly acquiring the knowledge and the skills which will enable us to turn out passive followers or independent citizens. Many teachers and educators, if we take account of their actions rather than their words, have the former as their goal. They will be able to implement this purpose much more adequately in the future. On the other hand, if the aim is to turn out self-directing, inquiring minds which will form their own judgments as to the truth, then knowledge exists which can facilitate this purpose also. It will be up to the educators, and even more broadly, up to the community, to choose the direction in which we shall go.

With regard to how we shall prepare students to live in this fearsome future world, I believe some of the research I have cited suggests possible answers.

In the investigation by Crutchfield [7], it was found that about one-third of the responses made by a group of individuals were strongly influenced by the majority opinion, even when that majority opinion was clearly false. However, not all individuals were equally influenced. Some persons were swayed on almost every item by what they thought to be a solid group opinion, but others were influenced scarcely at all. They "called the shots as they saw them," regardless of what others might think.

When Crutchfield analyzed the personality characteristics of these two groups on the basis of extensive personality assessment, the differences were sharp. The conforming group, who were swayed by the majority opinion, tended to be individuals who had little understanding of themselves, were defensive, had to put up a good "front." They were rigid, moralistic, and had great respect for authority. They were somewhat anxious,

guilty, suggestible, and unable to tolerate ambiguity. They lacked self-confidence, were vacillating, and tended to become confused under stress.

The independent group, on the other hand, were active, effective, persuasive leaders. They were individuals in whom others felt confidence, and they had confidence in themselves. They were natural, unaffected, non-defensive, and expressive. They were unconventional and adventurous.

To generalize somewhat speculatively from Crutchfield's study to some of the others, I believe it may be tentatively said that the individuals who may be most easily "managed" through the psychological know-how I have tried to sketch in this paper are those who are passive, rigid, insecure, and authoritarian. On the other hand, those who resist being "managed," who are able to deal intelligently with these possible influences, are confident, open, secure, independent, and spontaneous.

But here again we face an exciting fact. The individuals who were not overwhelmed by the majority opinion in Crutchfield's experiment bear a very strong resemblance to individuals produced in a democratic home atmosphere, to workers who have developed in a group-centered industrial situation, to students who have been exposed to an acceptant teacher-pupil relationship, to clients who have experienced a warm and empathic relationship in therapy. In other words, we already know to a considerable degree how to provide the conditions in which such individuals develop. And though the reverse evidence is not quite so clear, I believe it may be said that in large measure we also know how to provide the conditions in which the passive, insecure followers develop.

What I have been trying to say is that the growing body of knowledge in the behavioral sciences gives to our modern culture an astonishing power of choice. We know how to influence and mold behavior and personality in a great many significant ways. We also have available the choice of whether to set the conditions which develop a suggestible, submissive, unsure individual who can be easily influenced to behave in

any way that "we" think wise, or the conditions which will develop an open, adaptive, independent, free-thinking, self-respecting individual. It is this latter person who will perhaps be able to use with intelligence and sensitivity to human values the enormous powers which the physical and behavioral sciences are putting at his disposal. The issue of what choice to make in this regard constitutes, I believe, the challenge of tomorrow both for education and for our whole culture.

It might well be pointed out that with few exceptions the psychological know-how which I have sketched has not been widely used or exploited by society. Hence it might seem that the challenge as I have described it is greatly exaggerated.

It is quite true that this knowledge has not been widely used. In this respect the status of the physical sciences is very different from that of the behavioral sciences. The physical sciences have become so greatly respected that if scientists from these fields report that they can create a satellite in space, the only question in the public mind is, How soon will it be done? There is no tendency to scoff at the possibility, as the public in 1906 scoffed at the Wright brothers' "ridiculous" predictions that a machine could fly. As of 1955 the behavioral sciences occupy, in the public mind, a status similar to that of the physical sciences in 1906. The community does not as yet believe that the behavioral sciences can achieve results. Yet this attitude is changing with remarkable rapidity. Who would have supposed, a few years ago, that our military forces would invest millions of dollars in research in the behavioral sciences, that industrial leaders would employ consultants whose main task is to provide a therapeutic relationship for the executives, that research in consumer attitudes would be a big business?

So I conclude that knowledge in the science of psychology will in the near future be used and exploited as fully as knowledge in the physical sciences is used today. The challenge for educators is unreal only if we are looking a year or two ahead. From the long view I know of no problem holding greater potentiality of growth and of destruction than the question of how to live

with the increasing power the behavioral sciences will place in our hands and the hands of our children.

## REFERENCES

1. Asch, Morton J., "Nondirective Teaching in Psychology: An Experimental Study." *Psychological Monographs*, 1951, 65, 4, 24 pp.
2. Asch, Solomon E., *Social Psychology*, pp. 450-83. New York, Prentice-Hall, 1952.
3. Baldwin, A. L., Joan Kalhorn, and F. H. Breese, "Patterns of Parent Behavior." *Psychological Monographs*, No. 268, 1945, 58, No. 3, pp. 1-75.
4. Beston, W. H., Woodburn Heron, and T. H. Scott, "Effects of Decreased Variation in the Sensory Environment." *Canadian Journal of Psychology*, 1954, 8, pp. 70-76.
5. Coch, Lester, and J.R.P. French, Jr., "Overcoming Resistance to Change." *Human Relations*, 1948, 1, 512-32.
6. Corey, S. M., *Action Research to Improve School Practices*. New York, Bureau of Publications, Teachers College, 1953, pp. 47-61.
7. Crutchfield, Richard S., "Conformity and Character." *American Psychology*, 1955, 10, 191-98.
8. Faw, Volney E. "A Psychotherapeutic Method of Teaching Psychology." *American Psychology*, 1949, 4, pp. 104-9.
9. Faw, Volney E., *Evaluation of Student-Centered Teaching*. Unpublished manuscript.
10. Gordon, Thomas, *Group-Centered Leadership*, Chapters 6 to 11. Boston, Houghton Mifflin, 1955.
11. Gough, H. E., and D. R. Peterson. "The Identification and Measurement of Pre-dispositional Factors in Crime and Delinquency." *Journal of Consulting Psychology*, 1952, 16, pp. 207-12.

12. Haire, M., "Protective Techniques in Marketing Research." *Journal of Marketing*, April 1950, vol. 14, pp. 649-56.

13. Katz, D., N. Maccoby, and N. C. Morse, *Productivity, Supervision, and Morale in an Office Situation. Part I.* Ann Arbor, Survey Research Center, University of Michigan, 1950.

14. Richard, James, in *Group-Centered Leadership*, by Thomas Gordon, Chapters 12 and 13. Boston, Houghton Mifflin, 1955.

15. Rogers, Carl R., *Client-Centered Therapy*. Boston, Houghton Mifflin, 1951.

16. Rogers, Carl R. and Rosalind F. Dymond (editors), *Psychotherapy and*

*Personality Change*. Chicago, University of Chicago Press, 1954.

17. Seeman, Julius, and Nathaniel J. Raskin. "Research Perspectives in Client-Centered Therapy," in O. H. Mowrer (ed.), *Psychotherapy: Theory and Research*, Chapter 9. New York, Ronald Press, 1953.

18. Skinner, B.F., "The Control of Human Behavior." Paper presented to the New York Academy of Sciences, April 18, 1955, and published in the transactions of that body, pp. 547-51.

19. Thetford, William N., "An Objective Measure of Frustration Tolerance in Evaluating Psychotherapy," in W. Wolff (ed.), *Success in Psychotherapy*, Chapter 2. New York, Grune & Stratton, 1952.

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1 Figures in brackets apply to references on pages 321-22.

2 From a speech to the American Psychological Association, San Francisco, September 5, 1955.