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AUTHOR McFann, Howard H.
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ABSTRACT

Military psychology has made three major contributions to civilian education. The first is the systems approach which contains two complementary components: the conceptual and the empirical. The purpose of the conceptual approach is to understand nature to determine on what principle the system works; the purpose of the empirical approach is to control nature. The conceptual approach is problem-oriented; the empirical approach is product-oriented. Although the distinctions between these two systems approaches must be carefully delineated, they work best when tied together. This second major contribution of military psychology is integrated research, development, engineering, and utilization activities. Used in close relationship with clients, these activities ensure that continued empirical results develop in clients' faith in the continued need for conceptual research. Finally, the third major contribution of military psychology concerns content and tested programs. Since about 85% of military jobs have commonality with civilian occupations, military programs can be adapted or adopted to meet civilian education and training needs. (Author/JR)

WHAT DOES MILITARY PSYCHOLOGY HAVE TO OFFER CIVILIAN EDUCATION?

Howard H. McFann

Summary of Presidential Address

Division 19, Military Psychology

American Psychological Association Convention, September 1974,

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This paper of the Presidential Address examines military psychology to determine what, if any, implications there are for civilian education and training, especially from the R&D perspective.

The impetus for the examination arose from two sources: first, my relatively recent involvement, as a member of HumRRO, in research in the civilian sector, as well as in the military; and second, a growing recognition by educators that military psychology or social science R&D in the military has been effective.

A major reason for this contribution is that military R&D has been problem-oriented and task-oriented; the results have applied to "real-life."

Military psychology has made three major contributions. The first is the systems approach, which was developed and applied first in the military and which potentially has much to offer in the civilian sector. Following John Finan's writing in Gagne, Psychological Principles in System Development, a distinction was made between two types of systems research which have become confused, especially in the civilian sector, with a resulting disenchantment for the approach. Finan states that the term "system" refers to a set of components organized in a way that tends to constrain action toward a specified end. The purpose is what gives integrity to the system, and the purpose dictates to a great extent methodology and expectations.

Two systems approaches can be contrasted: the conceptual and empirical. The purpose of the conceptual approach is to understand nature to determine on what principle the system works; the purpose of the empirical approach is to control nature. The conceptual approach is problem-oriented; the empirical approach is product-oriented. The outcome of the conceptual approach is an abstract prediction which results in implications; the empirical approach involves forecasts and results in recommendations. Conceptual systems are concerned with such matters as laws of learning, theories of motivation and principles of attitude change; the empirical approach results in recommendations for improving man-machine interactions, intelligence and aptitude testing, clinical diagnosis and therapy, control of attitudes and beliefs, and improvement of educational programs.

The conceptual system involves the researcher's developing explanatory models, which have their validity checked against the real world via hypothesis testing. In contrast, the empirical system is judged on the basis of fidelity--how closely does the schema represent the system in question? It involves forecasting to a criterion. It is in this area that much confusion exists. It is absurd to ask the question, "what is your hypothesis?" about an empirical system. The appropriate question is, "how well have you represented the real system?" It is from attention to fidelity that criterion testing and simualation have arisen. Further, attention to criterion and fidelity is what guarantees relevance and gives assurance that findings will have utility.

In conceptual systems, evaluation is on how valid is the principle in explaining reality and what is the generality of the principle. In contrast, empirical systems are evaluated on the basis of efficiency and effectiveness and the inferences that can be made to the population under study.

As might be expected, there are reciprocal relationships between the two systems. The immediate goal of each is the longer term goal for the other. The abstract laws of the theoretical result in implications and find eventual application to particular situations of practical consequence. Also, the specific products of empirical engineering at length contribute to the structure of theoretical knowledge. Further, the theoretical is to a considerable extent dependent upon methods and techniques developed in the empirical research e.g., simulation and equipment.

Gagne, in his Presidential Address in 1961, recognized this distinction when he stated, "If I were faced with the problem of improving training I should not look for much help from the well-known learning principles . . . I should look instead at the technique of task analysis, the principles of component task achievement, intratask transfer, and the sequencing of subtask learning to find those ideas of greatest usefulness in the design of effective training." Some eight years later, in a talk to educators, he reiterated this point by saying, "It may be noted that learning theory does not, in and of itself, say exactly how these (learning principles) are to be put together in the great variety of specific instances to which they are applicable. What learning theory tells us is that when certain of these conditions are present, learning will occur, and when certain ones are not present learning is improbable. Beyond such theory there must be, of course, both technology and artistry."

George A. Miller, in his 1963 APA Presidential Address, further elaborated these distinctions when he stated, "Many psychologists trained in an empiricist, experiment tradition, have tried to solve practical problems and simutaneously to collect data of scientific value on the effects of their interventions. Other fields, however, maintain a more equitable division of labor between scientist and engineer. Scientists are responsible for the validity of the principles; engineers accept them and try to use them to solve practical problems. . . . We are in serious need of many more psychological technologists who can apply our science to the personal and social problems of the general public, for it is through them that the public will eventually discover the new paradigm that psychologists are developing." Examples were

kind of how learning principles, especially Gagne's, have resulted in implications for engineering of training and how from the engineering of military training, principles have been inferred for theoretical psychology.

Although the distinctions between these two systems approaches must be carefully delineated, they work best when tied together. This is the second major contribution military psychology has to offer integrated research, development, engineering and utilization activities. Such integration is critical to achieve sustained support and permit the greatest contribution. By solving, via empirical research, the problems of the client, the client will then develop faith in the R&D effort; he will support research of a more conceptual nature and allow the R&D community to assist in the solution of major client problems.

There is a need for the R&D organization to stay in close contact with the client. As the client's problems change (e.g. population--such as the volunteer force, and cutbacks in numbers), the organization's empirical research would stay in tune with client needs. Too often we as researchers become so enamored with the conceptual systems approach that we do ourselves in on the empirical side. We lose the support of the major agency we are trying to serve and end up severely limiting the opportunity for doing conceptual systems research. HumRRO's experience supports the necessity and value of integrated research, development, engineering, and utilization programs.

In the civilian sector, the establishment of the Laboratory Centers developed with specific areas such as learning or higher education, the Title III (implementation centers); and Title IV regional centers provide an illustration of where there has been a lack of integration of R&D and engineering. The recent separation by the Department of Health, Education, and Welfare of research into the National Institute of Education and development into the Office of Education indicates an awareness of the two types of systems. There does remain the question of how they are to be integrated to permit a major impact. Conceivably, this would be through the Regional Labs if they are in close enough contact with clients.

Finally, the third major contribution military psychology has to offer is in the area of content and tested programs. Since about 85% of military jobs have commonality with civilian occupations, there exists a large area of overlap. Northwestern Regional Laboratory is an excellent example where military programs have been adapted and/or adopted to meet civilian education and training needs. It is an organization that has developed an integrated research, development, engineering and utilization program in close contact with its clients and the schools.

In summary, there are three major R&D contributions in military psychology: (a) the two systems approaches, (b) the integrated research and development organization in close relationship with the client, and (c) content and programs for adaptation or adoption.