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THE MEANING OF AN APTITUDE  
- APTITUDE TESTING

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### The Meaning of an Aptitude

The word aptitude has been defined in different ways by psychologists. The term is used loosely both by laymen and psychologists and counsellors, its meaning varying from one user to the other.

Aptitude is defined in Warren's Dictionary as -

... a condition or set of characteristics regarded as symptomatic of an individual's ability to acquire with training some (usually specified) knowledge, skill or set of responses such as the ability to speak a language, to produce music, etc."<sup>1</sup>

In referring to a person's aptitude for mathematics or science or art, we are looking to the future. His aptitude is, however, a present condition, a pattern of traits deemed to be indicative of his potentialities. We want the facts about a person's aptitudes as they are at present, Characteristics now indicative of his future potentialities. When appraising his aptitude, whether for leadership, for selling, for research or for artistic design, we must take him as he is, not as he might have been.

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Howard C. Warren, Dictionary of Psychology, 1933, p.18.  
(New York: Houghton Mifflin Company).

Aptitude, moreover, connotes more than potential ability in performance, it implies fitness, suitability for the activities in question. When appraising aptitude, we are on the alert for symptoms of 'ability to acquire' a genuine absorption in the work as well as a satisfactory level of competence. Indeed, a person who cannot develop a liking for an occupation along with proficiency in it cannot properly be said to have an aptitude for it because he lacks the necessary drive.

Aptitude is a condition symptomatic of a person's relative fitness of which one essential aspect is his readiness to acquire proficiency, his potential ability and another in his readiness to develop an interest in exercising that ability. Ability means power to perform responsive acts. These acts may be complex coordinated movements, solutions of intellectual problems, discriminating judgments of appreciation or other sorts of behaviour as for instance the maintenance of coolness and self-restraint under conditions of provocation or emergency. The amount of a person's ability in a given direction is ordinarily expressed in terms of the difficulty, a complexity of the tasks he can perform, the number he can perform at specified levels of difficulty or the speed and precision of his performance.<sup>1</sup>

The term ability is used here in its broadest sense as meaning power to perform designated responsive acts without implication as to whether the power is potential, actual, native or acquired. There is a temptation to think of a person's aptitude as though it were a substance, a

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<sup>1</sup>Bingham, Walter Van Dyke, Aptitudes and Aptitude Testing (New York: Harper and Brothers, 1936), p.16.

possession, a thing which belongs to him. Aptitude is of course not the name of an object. It is an abstract noun. It points to a quality or characteristic of a person.

The concept of aptitude carries with it certain basic assumptions -

- (i) An individual's potentialities are not all equally strong.
- (ii) Individuals differ one from another in their potentialities.
- (iii) Many of their differences are relatively stable.

Bingham draws a distinction between ability, proficiency, capability and capacity - Proficiency is referred to as the degree of ability already acquired, while the capacity as the potential ability. The capacity is the upper limit of the power he may eventually develop under the most favourable conditions.

Special abilities peculiar to certain types of performance are distinguished from general ability construed by some writers as the sum of one's specific abilities and by others as a common factor operative in all or many types of performance and manifest in different degrees in different individuals.

Aptitude, thus seem to be indicative of a person's power to acquire specified behavioural pattern of interest, knowledge and skill.

An aptitude is also defined as a person's capacity or hypothetical potential for acquisition of a more or less well defined pattern of behaviour involved in the performance of a task with respect to which the individual has had little or no previous training.<sup>1</sup>

On the other hand, an ability may be viewed as the current performance of an individual on a task near his maximum level of motivation, a task with respect to which he has had a limited amount of more or less loosely structured experience. The aptitude measure serves primarily to indicate what an individual will be able to learn and the ability measure presents evidence of what the individual is able to do now (or in the future without additional training) if he applies himself. Actually most tasks that are referred to as aptitude scales are ability measures. Measures of ability will reflect to an indeterminate extent the presence of aptitudes.

Moreover from a practical standpoint it would seem almost impossible to obtain an aptitude measure that does not indicate a certain amount of training. Customarily, it is assumed that individuals have been exposed to certain common experiences and that a person who has a greater degree of aptitude will show a higher level of performance in the

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<sup>1</sup>Monroe, Walter Scott. Encyclopedia of Educational Research (American Educational Association, 1952), p.59.

standardized test included to represent the aptitude. The validity of such an assumption rarely can be demonstrated in practice. In general, it seems the ability rather than aptitude is more often the appropriate choice. Nevertheless, many professional people in the testing field employ the term aptitude when prediction of future success is the primary purpose for use in the test.

According to the 'New Dictionary of Psychology' aptitude is defined as 'a capacity in any given skill or field of knowledge, on the basis of which a prediction may be made regarding the amount of improvement which further training might effect.'<sup>1</sup>

A more general definition of aptitude has been proposed by Hahn and Maclean. They point out that 'aptitudes are correctly referred to as latent potentialities, undeveloped capacities to acquire abilities and skills and to demonstrate achievements.'<sup>2</sup>

The definition given by Bingham appears to be more comprehensive and covers the views expressed by others which is repeated below :

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<sup>1</sup>Harriman, Philip Larrence. The New Dictionary of Psychology, (New York : Philosophical Library, Inc., 1947), p.31.

<sup>2</sup>Hahn, M.E. and Maclean, M.S. Counselling Psychology. (New York: McGraw-Hill Book Co., Inc., 1955, 2nd Ed.).

Aptitude is a condition symptomatic of a person's relative fitness of which one essential aspect is his readiness to acquire proficiency, his potential ability - and another is his readiness to develop an interest in exercising that ability.<sup>1</sup>

The readiness on the part of the individual to acquire proficiency and develop his abilities to his capacity and the interest he shows in exercising that ability are all factors that speak of one's relative fitness and his aptitude. Basically the definition includes the abilities already acquired and those that the individual can develop under the most favourable conditions to the limit of his capacity.

Intimately connected with industry and success is the interest in or the liking for a given activity. The definition is in full agreement of the concept of C.L.Hull who recognises the relative importance of capacity and industry as gross determiners of success. The question as to whether a person of superior capacity is likely to display more or less than average industry, is of considerable importance. In Kelley's study<sup>2</sup> the two factors capacity and industry were found positively correlated to the extent of 0.61. Both seem to be important in the successful completion of an activity or a given assignment.

A complete appreciation of this definition eliminates a number of misunderstandings which are prevalent. First

<sup>1</sup>Bingham, Walter Van Dyke, Aptitudes & Aptitude Testing. (New York: Harper and Brothers, 1936), p.16.

<sup>2</sup>Hull, C.L. 'Intelligence and Ability' - Modern Psychology Edited by Stephen Wiseman. (The Basic Constitution of Aptitude) Chapter 6. (World Book Co., 1928), p.95.

there is no assumption here, that aptitudes are hereditary. Aptitude is the result of the interaction of heredity and environment. An individual is born with certain potentialities and begins to learn immediately. Thereafter everything he learns enables him to learn still more.

A second important feature of the definition is that it is extremely broad. It implies that aptitude embraces any characteristic which predisposes to learning - including intelligence, achievement, personality, interests and special skills. The familiar intelligence tests have found favour because they predict the students ability to learn to read, or write composition, etc. In other words, they are aptitude tests which describe the students' potentiality for learning in a number of academic subjects or vocational endeavours. This has been recognized in the healthy tendency to speak of scholastic aptitude tests rather than intelligence tests.

The total concept can perhaps be summarized by regarding aptitude as simply a capacity to learn.<sup>1</sup> Thus stenographic aptitude means the capacity to learn those skills needed by a successful stenographer. This is relatively a specific aptitude. Academic aptitude on the other hand refers to the

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<sup>1</sup>Bennett, George K. Seashore, Harold G. Wesmen, Alexander G. Third Manual for the Differential Aptitude Tests. (New York: The Psychological Corporation, 1959), p. 2.

capacity to complete a comprehensive curriculum successfully. Actually academic aptitude is composed of a combination of aptitudes. It is often measured by so called tests of general mental ability which are used to facilitate prediction of scholastic success.

#### Aptitude Testing

America has the lead in the development of the tests often called as 'aptitude or prognosis tests'. One of the earliest and the best known of these tests is the 'Seashore Test' of 'Musical Talent' which appeared in 1915. Three years later appeared the Stenquist Test of General Mechanical Ability. In 1918 Rogers published a test of mathematical ability which although hardly an aptitude test in the modern sense introduced the idea as it was followed up by aptitude tests in the special branches of mathematics such as algebra and geometry.

A somewhat different type of test on the College level is illustrated by the Iowa Placement Examinations which appeared in 1924. A recent and promising type of test of which there are several examples is that of 'reading readiness' to be used to determine a child's fitness for the work of the first grade. There is evidence that the development of the future is likely to be along the line of test for specific aptitude rather than tests of general intelligence which aim

to cover the whole range of human capacity at one shot. Dunlop argues the more general the intelligence test the less its value. By increasing its specificity we add to its value.

Thurston's attempt to devise tests of what he terms "primary mental abilities" is a move in this direction although these tests have not yet demonstrated marked superiority over other tests in practical class room situation.

The D.A.T. (Differential Aptitude Tests) was published in 1947, primarily for high school counselling. The eight tests, measure aptitudes which previous research had suggested as important in guidance. Among the tests are a modification of the T.M.C. (Test of Mechanical Comprehension) a clerical aptitude test, a spelling test and a verbal reasoning test. The partial test makes it clear that the D.A.T. is quite different from the P.M.A. (Primary Mental Abilities) battery. Here the tests aim to measure complex abilities which have a fairly direct relation to job families and curricula. Measures of proficiency are included of their predictive value.

In marked contrast to the D.A.T. in form and function is G.A.T.B. This battery was produced by the U.S. Employment Service and is used throughout the country for guiding persons seeking work. The contribution of the battery was strongly influenced both by Thurston's factor analytic studies and by

three decades of research on job performance. Several of the tests are descended from the pioneer Minnesota series of vocational aptitude tests which date back to 1920's.

'Super' compiled and reviewed comprehensive information on these batteries of tests in the year 1958. Out of these, mention may be made of 'Flanagan Aptitude Classification Tests' by John C. Flanagan (1953), Guilford-Zimmerman Aptitude Survey by J.P. Guilford and Wayne S. Zimmerman (1947), Multiple Aptitude tests by David Segal and Evelyn Raskin (1955).

Aptitude tests do not directly measure future accomplishment. They make no such pretense. They measure present performance. Then in so far as behaviour, past and present is known to be symptomatic of future potentialities, the test data supply a means of estimating those potentialities. The estimate is necessary in terms of probabilities only.

Ross and Stanley while dealing with the instruments of measurement in education categorise 'aptitude' under the head specific type of intelligence. Intelligence conceived as the capacity or power of the individual to adapt himself to the environment and to new situation appears to be the most meaningful for the purpose of the teacher and fits in with the definition of aptitude given by Bingham.

The justification for calling any test, one of aptitude rather than of achievement is usually that the specific items

are not definitely related to the content of specific high school courses although the claim cannot be safely made that the scores on such tests are unaffected by school training. As a matter of fact many achievement tests are at the same time very good tests of aptitude.

A primary distinguishing characteristic among aptitude, ability or achievement test behaviour might be viewed as one of their relative placement along a continuum that represents the presence of different amounts of specific training or specific types of learning experience required for successful performance on the test.

An aptitude test is one in which previous training would exert minimum influence, an ability test might be expected to reflect the experience of a somewhat greater amount of experience or formalized training in subject matter than the aptitude test but far less than that represented in an achievement test. In any event both aptitude and ability tests yield an indication of what an individual may be expected to attain in the future.

In an achievement test which is intended to show what level of performance an individual has been able to attain with respect to specific objectives in a relatively highly structured learning experience, the influence of formalized

training is at or near a maximum level.

According to Warren's dictionary an aptitude test is meant as a test designed to indicate the intrinsic, constitutional or dispositional fitness of a testee for understanding successfully a specific kind of activity e.g. a test of musical or mechanical or linguistic aptitude.

As mentioned previously work on these lines is yet to be started in our country on systematic lines. That would definitely help to improve the process of selection in the student world clamouring for science, establish better standards and thus enable to raise the quality of science education as a whole to a higher pedestal.

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