

A Study of Individual Differences in Educational Situations

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Abstract: *This Paper explores the concept of individual differences particularly educational Settings. This paper explained in a concise way regarding the meaning, types, determinants, etc of Individual differences among the people. This paper also discussed the measurement and importance of individual difference for benefit of the masses particularly the students community.*

Keywords: Individual differences, Heredity, Environment, Differential Aptitude Test (DAT), the General Aptitude Test battery (GATB), and the Armed Services Vocational Aptitude Battery (ASVAB)

1. Introduction

It is often said that no two individuals are exact duplicates; they differ from each other in some way or the other. Hence the job of the psychologist is to identify and understand this uniqueness in individuals. Such a similarity or difference between persons reveals individual differences. It happens in our day-to-day life when we see people around us. A question comes to mind; how and why people appear similar or different to each other? For example when we think about their physical appearance, we often ask ourselves why some people have dark or fair complexion, why some people are tall and some are short, why some are thin and why some are very fat. When we think about their psychological characteristics we often come across people who are very talkative or less talkative, some laugh too much whereas others take much time even to smile, some are very friendly whereas some prefer to be alone. The present lesson tries to answer all such queries which can bother us in our everyday life. In psychology, these are called individual differences referring to the extent and kind of variations or similarities among people on some of the important psychological aspects such as intelligence, personality, interest, and aptitude. This lesson will also help us understand how to assess such similarities or variations among individuals.

In the Western psychology approach to individual differences, it is generally assumed that :

People vary on a range of psychological attributes It is possible to measure and study these individual differences individual differences are useful for explaining and predicting behavior and performance We can classify people psychologically, according to their intelligence and personality characteristics, for example, with moderates success, however people are complex and much is still left unexplained. There are multiple and often conflicting theories and evidence about individual difference psychology. Human beings have been aware of individual differences throughout history, e.g. Gender differences – hunters=men, gatherers=women Intelligence differences – caste, class, education, etc. Personality differences ob specializations Early study of individual differences We have come a long way since Franz Gall invented phrenology in the early 1800s. The science of psychology studies people at three levels of focus captured by the well known quote: “Every man is in certain respects (a) like all other men, (b)

like some other men, (c) like no other man” (Murray, H.A. & C. Kluckhohn, 1953). Individual differences psychology focuses on this second level of study. It is also sometimes called Differential Psychology because researchers in this area study the ways in which individual people differ in their behavior.

2. Provisions for Individual Differences in Schools

To provide adequate schooling or learning experience for every learner according to his individuality is not an easy task. However following suggestions can be helpful for any teacher. The first step is to know the abilities, capacities, interests, aptitudes and other personality traits of individual pupils. For this purpose, request assessment in the form of intelligence tests, cumulative record card, interest inventories, attitude scales, aptitude tests and measures for assessing personality traits shall be carried out. In the light of results derived from various tests of knowing individual differences in various potentials, the students in a class can be divided into homogeneous groups. The curriculum should be as flexible as possible. It should have the provision for a number of diversified course. Considering the varying individual differences adjustment with regard to the adaptation of methods of teaching is very effective.

3. Importance of Individual Differences

The study of individual differences is essential because important variation between individuals can be masked by averaging. For example, a researcher is interested in resting metabolic rate in humans. The researcher gathers a sample of men, women, and children, measures their metabolic rate and gets a single average. The researcher then tells the whole population that they should be eating 1,900 calories a day. What’s wrong with this study? The researcher has neglected individual differences in activity level, body size, sex, age, and other factors that influence metabolic rate. The average reported based on the results in masking multiple dimensions that should be used to determine daily caloric intake. Therefore, his or her conclusions are misleading if not outright false. This is an extreme example to make a point, but it illustrates the problems that can arise by averaging across groups. Areas of study Individual

differences research typically includes personality, motivation, intelligence, ability, and IQ, interests, values, Self concept, self-efficacy, and self-esteem (to name just a few). There are few remaining “differential psychology” programs in the United States, although research in this area is very active. Current researchers are found in a variety of applied and experimental programs, including educational psychology industrial psychology, personality psychology and social psychology programs. Psychology often makes generalizations about people. Depending upon your point of view this can be seen as a great strength of psychology or a weakness or probably both. It is important that we recognize that there are as many differences between people as there are similarities. There has been a tendency in psychology to ignore the experiences of people from different cultures. Two of the studies in this section attempt to explore the experiences of Black People within the Western world. The first study by Gould (1982) is a review of the use of IQ testing. Gould demonstrates how psychological arguments have been used to support racist arguments of White superiority. The study by Habra and Grant (1970) investigates the identity of American Black children. Their study demonstrates that there has been a change in consciousness of Black children from 20 years previously. A further issue that is often included in the section of individual differences is what psychologists refer to as abnormality. However the concept of abnormality is also a highly controversial issue. The judgment that somebody is abnormal is relative and is based on factors such as culture, class, religion, sexuality and so on.

4. How Individual Differences Originate?

At the time of conception and in early embryonic stages, all fetus look more or less identical. As growth continues, differences become increasingly apparent. Even new born babies show significant differences in their behavior. Some cry more, some are more active and some have better appetite. As they grow by the individual differences become enormous that it is difficult to classify them. Heredity and environment are two major sources to cause individual differences. Their constant interplay manifests in differences, even in members of the same family.

1) Heredity

Biological inheritance is determined by the chromosomes and genes. You all have studies that females have twenty three pairs of chromosomes. Males have twenty two pairs plus two singles represented as xy, the x and y are called sex chromosomes because our sex depends upon xx or xy combinations. Sets of chromosomes from different persons, of the same sex look very much alike but actually they differ a lot internally. These differences are most pronounced in unrelated individuals. The heredity factors hidden within the chromosomes are called genes. They are assumed to be “packets of chemicals” strung along the chromosome like small beads on a thread. Action of the genes on cytoplasm changes the shape and other characteristics of cells. The heredity basis of individual differences lies in almost unlimited variety of possible gene combinations which may occur. No two siblings get an identical heredity, as they do not get same genes from parents. Fraternal twins or dizygotic, born to the same parents, at the same time, are different from each other because of different pairs of germ

cells. On the other hand, identical or monozygotic twins develop from same sperms ovum, have exactly the same set of genes, hence they resemble with each other in characteristics discussed above.

2) Environment

The environmental influences are those which act upon the organism, at the earlier stages development within mother’s womb and later external environment which operates from the time birth. The nucleus, chromosomes and genes are surrounded by a jelly like substance known cytoplasm. The cytoplasm, is an intracellular environment, because the genes surrounded by it influenced by and in turn influence its characteristics. The outcome of the organism is determined cytoplasm as well as its heredity. A new internal environment comes into existence, after the interaction of genes and cytoplasm has produced several cells. The actual structure of a cell depends upon relation to other cells. Development in specific location determines the part of the body. Many congenital deformity are the result of overactive or underactive endocrine functioning. The growing organism is surround by amniotic fluid and attached to the mother by umbilical cord. Hereby the growth of the embryonic depends on nourishment provided by the mother. The social psychological environment in which, child is born provides social heritage. The customs, socio-economic status, family environment interaction amongst the family members and later peers and school environment cause variety conditions to determine individual differences.

3) Self

Individual differences are also due to the particular constitution of self the individual himself. Though all siblings are common heredity and environment, yet no two siblings in a same family are alike. This difference is due to the different genes inherited by the individual as well as differences environment. Though environment in any home may outwardly look alike but it has different impact on each individual based on interaction patterns, personality and emotional responses of the individual. The social environment is extremely variable and unrelated to the sort of genes which the individual has. No two human beings even belonging to the same family, having similar schooling, will have same environment. It is rightly said that no two individuals have the same environment – as the fire that melts the butter, hardens the egg. The psychological environment is determined interpersonal relationship amongst parent child and other members of the family.

5. Measurement of Individual Differences

Besides knowing the ways in which a single person differs from others, it is also important that should be able to measuring these individual differences. After knowing the capability, aptitudes interest, the person can make suitable goals in learning and vocation, which in turn would help him adjust better in the society. One of the methods used in educational psychology to measure individual differences is psychological tests. A psychological test is an objective and standardized measure of a sample behavior to compare the behavior of two or more persons. Observations are made on a small carefully, chosen sample of an individual’s behavior, just like any other scientist would test a patient blood by analyzing one or more samples of it. Psychological tests

cover the behaviour under consideration, for example leadership qualities Personality.

6. Nature of Individual Differences

It has been observed that if we collect information about people's characteristics from a large sample and examine the pattern of distribution .we find that a large majority of the people fall in the middle range while a small proportion lies in extreme categories. For example, most of the people fall in the category of average height and very few are very tall or very short. This holds true for many more characteristics including intelligence and other psychological attributes.

The fact that people are different from each other is a very common observation. The differences in psychological characteristics are often consistent and form a stable pattern. By 'consistent', we mean that people tend to show regularity in their behavior and their patterns of behavior do not change very frequently. This consistency and stability in behavior is unique to every person. People develop their unique traits/ characteristics and patterns of behavior due to their genetic make up and the environment in which they are brought up. Once we know these differences systematically we can utilize the capabilities of people efficiently for their healthy development. Knowing about the specific characteristics of a person is necessary in order to extend support and utilize his or her potential to optimal level.

Individual differences occur due to interaction of genetic and environmental factors. We inherit certain characteristics from our parents through genetic codes. The phenotype or the expressed forms of our characteristics depend on contributions of the socio-cultural environment. This is the reason why we are not exactly like our parents and our parents not exactly like our grandparents. We do share similarities with our parents in respect of many physical attributes like height, colour of eyes, shape of nose etc. We also inherit certain cognitive, emotional and other characteristics from our parents like intellectual competence, love for sport, creativity etc. However, our own characteristics develop largely by the support from the environment which we inhabit.

7. Assessing Individual Differences

Psychological assessment refers to the use of specific procedures for evaluating personal qualities, behaviours and abilities of individuals. These procedures describe people by specifying how they are different from or similar to other individuals. Such assessments are frequently done by most of us when we make judgments such as 'nice', 'good', 'bad', 'attractive', 'ugly', 'genius' and 'idiot' etc. Such judgments can be erroneous many times. Scientific psychology tries to systematize these procedures so that assessment can be made with minimum error and maximum accuracy. Psychologists have developed 'tests' to assess these characteristics. A psychological test is a structured technique used to generate a carefully selected sample of behavior.

In order to be useful for the purpose of drawing inferences about the person being tested, it is necessary that the test should be reliable, valid and standardized. A test is reliable if it measures a given characteristic consistently. For

instance, if you assess something the scores on separate occasions should be more or less similar. Thus a person, if found to be of average intelligence on one occasion should also appear of average intelligence if tested after two weeks. If a test tells two different values while assessing the object on two occasions then it will be called unreliable. A test of intelligence can be called reliable only when a person scores high or low consistently on both the occasions. A good test is found to have high reliability.

The validity of a test refers to the degree to which it assesses what it intends to assess. A valid test of personality gives a measure of a person's personality and predicts behavior in situations where that aspect of personality is pertinent.

Finally, in order to be useful, an assessment tool should be standardized. Standardization involves establishing the procedure of administration of a test to all persons in the same way under the same conditions. It also involves establishing group norms so that an individual's score can be compared with those of others in a defined group. It is very important because a test score is only a relative score. It does not provide an absolute value as found in physical measurement. Standardization ensures uniformity and objectivity in administration and makes the results interpretable.

Psychologists have developed tests to measure different human characteristics. In schools, we use achievement tests which measure what people have learnt. Psychologists frequently use tests of ability and personality. The tests of ability tell what an individual can do when he or she is at his/her best. Ability tests measure capacity as potential rather than achievement. Tests of intelligence and aptitude come under this category. Aptitude refers to the ability to learn a particular kind of skill required in a specific situation. Personality tests measure the characteristic ways of thinking, feeling or behaving.

8. Intelligence and its Assessment

You often come across the term intelligence in everyday life. We generally use this term whenever we find somebody doing something very good which goes beyond our expectation. Intelligence is one of the psychological terms used quite frequently in various setting (e.g.) school). Who can be called 'Intelligent'? The one who gets highest marks in exams ? That person who earns many educational degrees ? Is the doctor more intelligent, or the engineer or the lawyer or the artist ? One may answer these questions in different ways depending on the meaning of intelligence. Intelligence is much more than getting degrees. Intelligence refers to "multifaceted abilities of people".It gets expressed in many ways. It comes in many forms. Some people are good in studies, some are good in repairing machines, some are good in acting and some are great in sports. People are very good in one subject and average in some other. The most important thing is that 'intelligence' is 'functional'. It is 'used' to do something and to achieve something.

Though the first attempt to measure intelligence was made by Sir Francis Galton a more systematic approach was developed by Alfred Binet, a French Psychologist. In 1905, Binet gave the concept of Mental Age (MA) which refers to

an individual's level of mental development relative to the environment in which he/she lives. The term Intelligence quotient (IQ) was first devised by William Stern, a German psychologist, in 1912. IQ is defined as mental age divided by chronological age, and multiplied by 100 : $(IQ = MA/CA \times 100)$. For example if the mental of a child is 12 and his/her Chronological age is 8 then the IQ of the child would be 150. The intelligence test developed by Binet was revised subsequently and in 1916 the test was given the name of Stanford – Binet was revised subsequently and in 1916 the test was given the name of Standord –Binet test of intelligence. One of the most popular and widely used tests of intelligence is Wechsler Scales of Intelligence. These scales have been designed for individuals of different age groups such as Wechsler Adult Intelligence Scale (WAIS) for adults and Wechsler Intelligence Scale for Children (WISC) for children between the age of 6 and 16 years.

Intelligence tests are of two kinds Individual test and Group test an individual test of intelligence can be administered to a single individual at a given time whereas a group test is administered to more than one individual at a time. On the basis of nature of items, intelligence tests are Verbal, Non-verbal, and Performance Tests. A verbal test requires understanding of written words. Hence it can be administered to literate individuals only. In non-verbal test, pictures or illustrations are used as item of the test. Performance tests are made up of certain concrete tasks. Both non-verbal and performance tests can be administered to literate and illiterate individuals.

9. Aptitudes and Interests, and their Assessment

You may have come across people who are very proficient in one task but not that much in another task. Some of your friends may be very good in mathematics but very poor in social science. Such people possess special abilities or characteristics in a particular field but relatively low in other field. In psychology, this is called aptitude. An aptitude is a combination of characteristics that indicates an individual's capacity to acquire some specific knowledge or skill, after training. These qualities can be harnessed by appropriate training. In other words, if a person does not have the special abilities required to become a musician, such as discrimination between pitch, tone, rhythm, and other aspects of musical sensitivity, he/she would not be a good musician, even after sufficient training. There are salient differences between intelligence, aptitude, and achievement. Intelligence relates to the ability of a person to do certain thing at a given time. Aptitude refers to the potential ability of an individual to perform a task, which generally consists of a combination of abilities. Achievement involves performance at any given point of time in a particular subject (e.g. mathematics) with which you have been made familiar. Aptitude tests are used for predicting success in a vocation such as clerical aptitude, mechanical attitude, musical aptitude, typing aptitude, etc. Each of these tests usually contains a number of sub-tests. Several multiple aptitude test batteries have been developed to assess aptitude, such as Differential Aptitude Test (DAT), the General Aptitude Test battery (GATB), and the Armed Services Vocational Aptitude Battery (ASVAB). Psychologists have constructed a number of tests to measure interest for children and adults.

There are vocational interest tests which help identify the interest of a person in particular vocational areas. There are also general interest inventories. Vocational interest tests are paper-pencil tests that assess a person's interest and match them with success in various occupations.

10. Personality as a Individual Difference

We all use the term 'personality' in day-to-day life. In psychology personality is thought as a person's unique and relatively stable behaviour pattern which remains consistent across situations and over a period of time.

The term personality has been defined in diverse ways. Allport in 1937 gave a very popular definition of personality which is still referred to by scholars. According to him "*personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustment to his environment*". Psychologists have approached personality from different perspectives. Each of these perspectives explains some aspects of personality. Now let us study in brief about some of these perspectives : **The trait perspective** tries to describe personality in terms of various traits. Some times the traits are grouped into clusters. These clusters are called "types". For instance introversion and extraversion are two types of personality traits. **The psychodynamic perspective** calls attention to the unconscious needs and conflicts as well as the influence of earlier stages of development on our lives. Sigmund Freud, a noted psychologist, provided the core concepts for this perspective. **The socio-cultural perspective** highlights the importance of the social and cultural environment. In view of this theory, our personality and behavior patterns are acquired through interaction with others and adoption of social and cultural norms. **The humanistic perspective** emphasizes the enormous potential for freedom and growth present in each one of us. It is a view which is optimistic and emphasizes-on positive aspects of life and potentialities. In the field of personality assessment the major focus is on the study of the nature and intensity of various characteristics, which are generally reflected through the behavior of the individual in a given situation. Personality assessment measures are classified into three categories. 1. Objective or Self report measures of personality. 2. Projective or Indirect measures of personality. 3. Situational measures of personality.

11. Conclusion

Individual differences are a cornerstone subject area in modern psychology. In many ways, it is the "classic" psychology that the general public refers to the psychology of the person – the psychological differences between people and their similarities. Plato stated more than 2000 years ago : "No two persons are born exactly alike; but each differs from the other in natural endowments, one being suited for one occupation and the other for another." Individual difference psychology examines how people are similar and how they differ in their thinking, feeling and behavior. No two people are alike, yet no two people are unlike. So, in the study of individual differences we strive to understand ways in which people are psychologically similar and particularly what psychological characteristics vary between people.

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