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INTELLIGENCE, IQ AND THE THIRD WORLD

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Intelligence and IQ are among the most important concepts in Psychology, yet these are also the most complex, misunderstood and polemical issues. The traditional concept of IQ is closely bound with academic achievement, and it is a poor predictor of behaviour in areas other than scholastic achievement. The validity of the assumptions underlying the Western concept of intelligence and the present methods of assessment are even more limited for the Third World countries, where the majority of populations do not have any experience of schooling. Instead of translating and adapting the existing tests or attempting to devise culture-fair tests, intelligence should be viewed from the social and cultural context in which it is deemed to exist and is then measured, not through scholastic-type skills but by means of skills considered intelligent in that culture. This paper presents a model of assessment of IQ which takes into account culture-specific skills, their acquisition, comprehension and generalisation of such skills.

Intelligence has been one of the most important concepts of psychology and IQ testing has been the "bread and butter" of Psychologists for the last nearly one hundred years. Indeed, IQ testing can be called the "mother of psychometrics". At the same time, we find that intelligence is one of the most complex, misunderstood, disputed and sometimes abused concepts in psychology. For some, it is the universal ability underlying all human behaviour; for others, it is only a ploy to justify racial, ethnic, and social prejudices. IQ tests are almost revered by some and detested by others.

Critics claim that intelligence and IQ are fuzzy and woolly concepts and are unrelated to success and failure in real life. IQ is said to have a high correlation with academic achievement and nothing else. It is a poor predictor of success or failure in later life or work competence. In my own clinical experience, what is even more intriguing is that we find many highly intelligent individuals who fail to cope adequately and effectively with their lives (some of the

brightest people I have had the pleasure to test were among chronic alcoholics and drug addicts). In Britain, a Home Office study in the late 60's for addicts, indicated that the higher the intelligence, the harder the drug the individual would take. On the one hand, we are often struck by the patients who score highly on IQ tests and are helplessly trapped in the cognitive quicksands of circular thinking, illogical reasoning and irrational thought processes. On the other hand, we are quite familiar with delinquents and criminals who score low on verbal IQ tests but also show clever behaviour and competence in their jobs. Why the IQ has poor correlation with real life assessments is the most complex question. It may be that IQ is divorced from personality and the conceptual approach to intelligence is bound within the academic world with little relevance to practical life. The differences between individuals' performance on IQ tests are often seen as the differences in IQ rather than differences in educational, cultural, sub-cultural, and socio-economic factors. The limitation of IQ to real life becomes even more apparent when intelligence tests are translated and adapted in the Third World countries. In this paper, an attempt will be made to present a critical review of the limitations of intelligence and IQ concepts with special reference to Third World countries and to offer some alternative approaches to the traditional tests that are currently under study in these countries.

Intelligence and IQ

It is generally assumed that measuring human ability gives us an understanding of that attribute, but measuring intelligence is not like measuring temperature. Intelligence cannot be observed, sensed or experienced the same way as heat. The concept of intelligence is unstable and fuzzy. Let us look at the origins of these most popular tests.

Galton (1869) saw intelligence as the underlying mental strength or power and believed it must have a simple physical or sensorio-motor attribute. He went ahead and devised tests of reaction times, discrimination, insight, memory, judgement of length, and so on. In attempting to obtain a more reliable and pure measure of social intelligence he relied on the "reputation" of people. However, there was little relationship between these measures and the independent measures used as social status. Binet's (1905) test was a result of

social rather than scientific motives. He was entrusted with the responsibility for devising the test to sort out "backward children" from "normal ones". He experimented with many tests and retained those which worked, that is, to help him sort out between different levels of intellectual functioning. Actual performance of children was matched with expected performance to determine the level of IQ. The tests had a high correlation with the teacher's evaluation of the child so it was assumed that what Binet measured was intelligence. The circularity of the logic was soon buried under social reasoning. IQ tests in the United States were developed for the same reason so there was no theoretical development of the concept of intelligence. Some experts started to believe that intelligence was what IQ test measured.

Terman's revision of Stanford-Binet (1916) became the standard IQ test in the United States until the 1950's when Wechsler's Scales came on the scene. Wechsler's definition of intelligence as the "aggregate or global capacity of the individual that enables him or her to act purposefully, to think rationally and deal effectively with his or her environment" is very general. But these generalisations do not identify the components properties and the relations that will help reveal what they are measuring. He dealt with the practical problem of identifying intelligence in the same way as Binet had done. Wechsler's tests were based on three assumptions:

i) Each mental activity is related to a specific underlying activity

ii) Each ability is normally distributed in the population

iii) Performance on tests is related to the person's ability and the item difficulty

It was also claimed that these tests were like dip-sticks directly measuring by sampling. However, the fact is that IQ test items are selected to fit prior assumptions and then the findings are said to be confirming the theoretical assumptions. The concept of "underlying ability" is also problematic. We do not know all the underlying processes involved in intelligence. We label a task as an ability, by doing this, we commit what is called the nominal fallacy; that is, we name the same thing both as a characteristic and also an explanation. The assumption that abilities are normally distributed in the population

is also problematic. For example, a survey of four hundred psychometric measures (Micceri, 1989) showed the distribution of such characteristics was not normal in the general population. Such assumptions are not entirely valid. It is quite reasonable to assert that in the distribution of IQ scores in the general population, there will be a higher preponderance of subjects at the lower end of the scale due to genetic, accidental and non-accidental brain damage suffered at or around birth. Yet the IQ test scores are forced to comply with a normal curve which is not even theoretical but purely arbitrary.

Furthermore, it is naive to think that performances in a test could be reduced to only two things and that are the ability of the individual to solve the problem and the difficulty of the test item. It is obvious that a number of other factors like the testing situation, the test-taking skills, socio-economic and cultural factors, motivation to perform, social relationships and social expectancies influence the behaviour of the individual on the test (Kaplan, 1985; Ziglar & Seitz, 1982) and finally it should be said that competence in a task is not the intelligence; therefore, the "direct sampling" claim cannot be substantiated.

Validity of IQ

Because of divergence of theoretical basis of intelligence and intelligence tests, the construct validity is not one of the strengths of IQ tests. Concurrent validity is often assumed to be the construct validity (for example, high correlation between WISC and Standard-Binet is used as evidence of construct validity). It is interesting to note that no external validity is offered for the Stanford-Binet except that test items are said to be similar to Binet's (1905) formulation. Wechsler does not even mention validity in the WISC Manual.

In England, WAIS-R and WISC-R adaptations have not gone beyond anglicising the tests which amounted to changing a few items in some sub-tests and expressions in others. By and large, the American norms are still used to determine the IQ without reservations.

IQ tests do predict school achievement but correlation of IQ with grades vary a great deal from .40 to .60 (Block & Dworkin, 1976; Brody, 1985). However, the way in which items are selected it is

hardly surprising that this test has a high correlation with academic achievement. At the same time, we find that there is a low correlation between IQ and performance on the job. Such correlations range between .20 to .25 (Richardson, 1991). Positive correlation is not a clear evidence of cause, nor school performance is that of validity of the IQ tests. Test results should not be predicted beyond these limitations, yet we find that performance on the IQ test is sometimes given the status of an oracle. The fact is that IQ tests do not reliably predict life outcome for many individuals (McClelland, 1973).

IQ and Schooling

It would be reasonable to suggest that intelligence tests sample behaviour, mainly in the domain of academic achievement. Interruption of schooling has been shown to have a detrimental effect on IQ scores. Harquist (1968) reported a study in which Swedish men who lost schooling during the World War were found to lose two IQ points for each year of schooling they missed. Similarly, Indian children in South Africa were found to lose five IQ points per year of lost schooling compared with those whose schooling was not delayed. Children of American blacks who moved to cities during World War I and World War II were found to have an increase by 5 to 7 IQ points for each year of schooling (Lee, 1951).

Children attending different schools were found to benefit differently. Furthermore, a study of twins reared apart, which is normally taken as strong evidence for the heritability of IQ showed a correlation of .87 for twins attending the same school and only .66 for those attending different schools and often receiving a different quality of education. IQ testing and schooling are so closely related that it is difficult to perceive how intelligence testing, as we know it, is relevant outside the academic world (Bronfenbrenner, 1974).

It should also be mentioned at this point that the impact of schooling on IQ is really profound. It is more than dissemination of cultural knowledge; schooling trains a child to be more reflective and helps the child to think not only in perceptive terms but also develop conceptual formulation. Such training is extremely helpful in taking the IQ tests. Some writers have asserted that it is difficult to distinguish between the constructs of achievement, aptitude and intellectual abilities (Anastasi, 1988).

It has been suggested that in schooling the most important factor affecting performance on the IQ test is the literacy level of the individual. IQ and reading ability seem to have a very high correlation with each other. IQ tests have to be described as the tests of literacy because they have a literate bias. For example, in the most commonly and most universally used test of verbal intelligence, vocabulary is highly correlated with the literacy level of the individual. Even non-verbal tests, like the Raven's Matrices, were found to be biased and related to literacy. We find that, even in some non-verbal tests, the rules of analysis, problem-solving, coding, transferring relationships, require analysis of the test. It is not surprising to find that deaf subjects do poorly on the Matrices. Because these abilities come from learning, training and experience, literacy helps a great deal in these operations of the mind. Literacy changes the way the knowledge is stored, organised and retrieved.

IQ tests are misused when the test results are interpreted to mean "quality of the mind". IQ has been used to exclude people from educational opportunities from which they would benefit from certain jobs they may be capable of doing. Intelligence is very closely tied to cultural technology. In the West, the cultural technology is literacy. It is, therefore, impossible to test intelligence in different cultures unless we know more about their technologies. If the test is designed to provide a good description of competence in a literate society, it is unlikely to have anything in common with tests suitable in an illiterate society. Unless we find these fundamental operations which cut across all forms of intelligence and intelligent behaviour, we cannot construct tests for different cultures. Still, we have to have operations which test through culturally relevant items.

Intelligence and Social Context

It is misleading to assume that human intelligence can exist as a trait rather than a product of social and cultural context. An individual used to specific social contexts will appear to be deficient when tested in an unfamiliar context. Reasoning is not only embedded in the mental representations of physical contexts but even more so in the social context. According to Vygotsky (1988), intelligence is an identifiable human characteristic that is an organising principle of social thought and activity. There is no such thing as intelligence as an individual characteristic separate from social context: "the very

mechanism underlying high mental functions is a copy from social interaction - all higher mental functions are internalised social relationships". Sternberg (1985) has put forward a triarchic theory of intelligence which asserts that intelligence is a purposeful and goal-oriented behaviour consisting of two general skills; the ability to deal with novel tasks and to learn from experience, intelligence depends on acquiring information processing skills and strategies to solve problems and finally, Sternberg asserts, intelligence cannot be understood outside a socio-cultural context. What may be relevant in one culture may not be in the other culture. Let us take an example from the Wechsler's Adult Intelligence Scale. "If you were lost in the forest in the day time how would you go about finding your way out?" is a very relevant question in the USA where tens of thousands of ramblers get lost every year and more than 1000 perish. However, there are many countries in the world where it would be absurd to test intelligence with such a question.

We should remember that a testing situation is a social situation which should make sense to the testee, and what is expected of him in that situation. Testing and describing people's mental abilities require far more sensitivity in the social context in which abilities are developed and expressed. Test situations are rarely a simple task. They involve other people. Although Raven's Progressive Matrices have been described as assessing intelligence in the contextualised way and is said to be culture-free (Keating & MacLean, 1987), even this so-called culture-free test cannot be described as a pure cognitive task isolated from social context.

The current research trends in social cognitive approach to early learning and development show that social and interactive processes play a far more important role than purely the individual's own cognitive abilities.

Academic Vs. Non-Academic Intelligence

The academic view of intelligence concentrates mainly on the individual's cognitive processes and there is a strong underlying belief that those who are successful in meeting the challenges of the academic world can also equally meet the challenges of the world. But the real world challenges may require certain strategies, styles, modes of cognising and skills that may not be related to the academic

performance. Furthermore, it is possible for an illiterate to be intelligent and as an expert illiterate can show in the real world all the hall marks of intelligent behaviour.

A unitary concept of intelligence assumes that intelligence is an innate ability that can be summoned into different cognitive abilities. So intelligence gives us the innate potentiality for achievement in areas like abstract reasoning, verbal analysis, creative expression, quantification, visuo-spatial organisations, and so on. Also, environmental opportunities will enable us to develop these potentialities. Therefore, the argument goes, being proficient in one area means being equally proficient in other areas but, as we have seen, most of us are not equally gifted in all these potentialities, nor do we have equal opportunities to develop these abilities evenly, even if we have the same opportunities. The fact is that most of us can perform on complex levels only in some of the areas at which we have the potentialities and we have had the opportunities to emphasise these potentialities and we have the motivation to take advantage of such opportunities. Thus, we do not function in an equally complex manner in all aspects of life or in all the tasks that are set to assess intelligence. The concept of generality of intelligence across tasks and across situations is not substantiated, it is more of a theoretical assumption rather than a practical reality.

Sternberg (1983) believes in the existence of multiple intelligences, each with an underlying capacity to acquire knowledge, detect relationships and monitor ongoing cognitions in a given context in order to adapt as the changing demands of learning context. Whereas intelligence sets the limit on how much can be acquired in a particular cognitive domain, the environmental challenges and opportunities that one faces during development determine what shall be acquired. Only when the environmental challenges, opportunities and motivation are similar can the individual differences and their abilities reflect individual differences in underlying intelligence. Furthermore, there are many sets of cognitive abilities that are not adequately reflected by IQ despite their high level of complexity and abstraction. An implication of this view of intelligence is that the individual possessing a lower IQ may exhibit a high level of cognitive abilities in the non-academic setting. Whereas those with a higher IQ will display less cognitive abilities in non-academic matters because of remaining environmental challenges leading to differential employment

of the underlying intelligence. IQ scores do not predict social behaviour, but only a level of ability.

Cognitive strategies used in academic and non-academic areas in different social, cultural, and occupational settings can be very different. The acknowledgement of cultural influences lead to the conclusion that cognitive abilities depend on the particular environmental challenges and opportunities that the individual has to deal with. Only when people have been exposed to comparable environmental challenges and opportunities will their intelligence influence the extent to which cognitive abilities are crystallised.

IQ Testing and the Third World

In the developing countries, progress in education and mental health services have created a need for IQ tests. For research and clinical purposes, IQ testing is gaining the same importance as it once did and to some extent still does in the West. In Pakistan, for instance, several attempts have been made to translate and adapt well-known tests of intelligence like the Binet, Raven's Matrices and, of course, the Wechsler. Such undertakings rely on the reputation of the tests, the ease with which they can be used and the supposed cultural fairness of the tests. It is the implicit belief in these ventures that tests devised in the West are "valid" and "reliable" instruments which can measure intelligence universally. It is like the thermometer which will work anywhere. Indeed, the enthusiasm to have these tests is such that the inherent limitations of theory and the testing procedures are generally ignored. Most seriously, one finds that the cultural, contextual and linguistic aspects of the test items are accepted unquestionably. The net result of such adaptations is of little scientific or practical value for the general masses (at best, these tests might work for a very small proportion of individuals belonging to the high socio-economic groups educated along the Western lines in the main cities of these countries).

Even though there is ample evidence to suggest that the tests developed in the West would be inappropriate for use in developing countries, much precious time, money and effort are spent in this entire exercise. Apart from the intrinsic limitations of the IQ testing, there are other factors which make the traditional testing approach even more irrelevant in these situations. People's notion of intelligence

varies from culture to culture. How they reorganise information, use it in planning, execution of actions, and expressed in intelligent behaviour, may vary from one culture to another. The mental strategies involved in the problems in the Wechsler may not be appropriate in every culture. The expressions of language, the rationale of behaviour, the logic of the thought-processes, are different in different countries. What is an appropriate answer in one society may not be appropriate in a different society. Intelligence is what people need to meet the challenges in their lives and the degree to which certain skills are required to meet these challenges. IQ is said to have a high correlation with literacy for the majority of the population. In the West, the literacy level is taken almost for granted. However, the literacy rate in the developing world is very low, perhaps 10% in some countries to 30% in others. So the Western designed tests are largely inappropriate for the vast majority of populations. To make matters worse, the rate of literacy in the developing world is said to be going down. The increase in the absolute numbers of literate people is grossly over-shadowed by the overall increase in populations in these countries. Therefore, the Binets' and the Wechslers', even if they were perfect tests, would be inappropriate for the illiterate masses. In many countries, the native languages may have very strong oral traditions. Written languages change, not only the character of the language from poetic to prosaic but also it alters the way information is coded, organised and retrieved. Thus, the very character of the test items becomes inappropriate in a different cultural context.

Another problem in the adaptation of foreign tests is the strong urban and rural divide in the Third World countries. In a primarily rural society, parts of these countries become urbanised and industrialised and the development is often lopsided, so much so that as time goes on the social, economic, and cultural differences between rural and urban populations is ever increasing. There is a greater cultural diversity in Third World countries than in the industrialised and developed countries of the West. Against that, even the so-called cultural-fair tests have been shown to differ significantly from the normative data of rural and urban populations. In an interesting and pioneering study (Ansari & Iftikhar, 1984), Raven's Matrices were given to urban and rural school children of 6th, 7th and 8th grade. It was found that the gap between the two increased with age, urban pupils doing better than the rural ones as they got older. One possible

explanation for this finding is that rural and urbanised school children differed in their cognitive experiences.

The Illiterate and The Uneducated

In many traditional societies, there is a strong representation of the rural population unaccustomed to years of formal schooling, with predominantly poetic language which is largely unwritten. To them, the Western concepts of intelligence and intelligence tests which are strongly biased towards verbalised formal schooling and written language traditions are not appropriate. Still, we know that intelligent and skilled behaviour does occur in traditional societies. We can observe and assess intelligent behaviour provided we study and measure in the context in which it appears. Wagner and Sternberg (1986) have said that non-academic and practical intelligence is as much a part of human repertoire as the academic intelligence is said to be. In a traditional society, this concept is even more important and relevant. We study the practical cognitions and behaviour strategies employed by the individual. The hunting behaviour of the pigmy is a very complex task and the technologies are very precise. They show objectives and purposes and overall strategies in their behaviour. The knowledge of animal husbandry shown by villagers in traditional society is found to be as good and sometimes superior to that of the experts. The Bedouin's navigational skills requires a cognitive map on which he plans the course, maintains the route all the time. These skills show an abstract concept of understanding rather than just the rote-learning and perceptual knowledge. Such behaviours are obviously logical if not technological.

Practical Intelligence

The study of practical intelligence has paved the way for a new perspective on intelligence, which is distinct from the academic one. Scribner (1984) refers to practical thinking that is embedded in the larger scale of purposes and activities of daily life. Practical thinking serves to achieve the role of every-day activities in which one engages. Study of workers in factories, bartenders, salesmen, waitresses, etc., have shown that they use fairly sophisticated methods of problem-solving to accomplish their goals. Some practical reasoning is used to make their job easier. We come across many instances in which we find organisational qualities and administrative

skills, abilities to handle others, ability to do complex calculations in the head, having a conceptual knowledge of cash flow, profit margins and so on in those who are virtually illiterate and these individuals with practical intelligence will, of course, do poorly on the traditional IQ tests. The key element of practical intelligence in occupational settings is the ability to learn and then apply information that is never explicitly taught to workers but is essential for success in their jobs. This is the tacit knowledge (Wagner & Sternberg, 1986) which is rarely verbalised but enables the worker to read unwritten and unspoken demands of the job, and those who are high in academic intelligence do not necessarily fare well in real-world and many who have acquired tacit knowledge are not particularly adept in performing on measures of academic intelligence. In meeting practical demands, one needs to learn the physical constraints of the job, its social aspects and facilitative conditions. Academic achievements do not necessarily teach these skills.

Ford (1986) asserts that practical intelligence can be observed in life pursuits or goals and requires social competence. Social competence consists of pro-social skills (sensitivity to others' feelings): social instrumental skills (know-how to get things done), social ease (social adaptability) and self-efficacy (having a self-identity and good self-concept).

In an interesting experiment, Sternberg, Conway, Ketron and Bernstein (1981) asked lay persons and experts to rate how the characteristic 250 personal descriptions were of an:

(a) Ideally intelligent person

(b) An academically intelligent person

(c) Everyday intelligent person.

Factor analysis of lay person responses yielded four main factors:

(1) Practical problem-solving abilities

(2) Social competence

(3) Character

(4) Interest in learning and culture.

Experts ratings, however, yielded three factors:

(1) Practical problem-solving ability

(2) Adaptive behaviour

(3) Social competence.

In practical intelligence, cognitive processes may develop into cognitive competencies which will be seen in cognitive performance in everyday life situations. The two main advantages of the concept of practical intelligence are, firstly, like the traditional IQ in which development does not end at 16 or 18, practical intelligence goes on improving for a much longer period of time. Secondly, training can actually increase practical intelligence. Practical intelligence can be measured by direct observation in practical or simulated situations and not just abstracted from indirect behavioural observations.

The concept of multiple intelligence is also interesting. Walter and Gardner (1986) have argued that the unitary notion of intelligence fails to do justice both to the different abilities people bring to bear on their everyday activities and to the structure of intelligence, cognitions, as it presumably exists in some form in their head. However, a good theory for intelligence should account for both academic and practical performances within the scope of a single period.

Cognitive competence refers to a set of abilities, talents or mental skills which we can call intelligence by virtue of innate endowments and training. Individuals differ in their profits of skills and their combinations. Cognitive competence involves those abilities which permit one to solve problems which evolve in a particular cultural setting. This includes the approach to a situation in which a goal has to be ascertained, located and pursued along the appropriate routes. It could be a chess problem or making a quilt or ending a story, creating a scientific theory, running a political campaign or opening a shop. The activities required are capturing knowledge, formulating new

information and using it in novel situations (there are certain universal faculties; for example, language, either written or oral, spatial abilities, geometric reasoning, numerical skills). In the assessment of cognitive competence, all aspects of intellectual behaviour are measured. Deviating from the unitary concept of a general intelligence, Walter and Gardner (1986) present a list of seven different types of intelligence given below.

1. Musical

2. Bodily-Kinaesthetic (dancers, actors, athletes, instrumentalists, surgeons, etc.)

3. Logical, mathematical (non-linguistic)

4. Linguistic

5. Spatial (navigational skills, use of maps, visual arts)

6. Inter-personal (sensitivity to notice changes among others. For example: changes in mood, temperament, motivation, intentions, ability to read the intentions of others). These skills do not necessarily depend on language

7. Intra-personal (access to one's own feelings, range of emotions, capacity to discriminate these feelings and label them, draw upon them as a measure of understanding and guiding one's own behaviour)

The authors present weighty evidence from brain research and evolutionary investigations and cross-cultural comparisons to support their theoretical correlations. They assert that these intelligences are independent. However, they do not say what these networks are made of nor how effectively you can measure them. The distinction between the general and the specific factors gets a bit blurred in this area. Still, the theory of multiple intelligence makes a useful contribution towards a more generally applied concept of intelligence.

Furthermore, an interesting contribution of this theory is that it also paves the way to challenge the unitarian concepts of memory, learning, comprehension and social behaviour. Current approaches in

the study of cognitive behaviour emphasise the context in which a behaviour takes place. Take memory, for instance; it is not the unitary system, and for this the Wechsler Memory Scale has been so much criticised. There are many specific memories, e.g memory for names, memory for numbers, memory for spatial relations, memory for language, and so on. Similarly, other dimensions of cognitive functioning should also be looked at only in the context in which they take place.

Another way of looking at IQ measures is whether we test the trait or state of intelligence. We know that many factors like emotional state, test-taking attitude, testing situation, can also affect the individual's performance on the test. In the Wechsler Intelligence Scales, for example, we test the present functioning level of intelligence of the individual. This performance is subject to fluctuations. We know some sub-tests are more sensitive to non-intellectual factors than others. Digit Span, Mental Arithmetic and Digit Symbol Coding are more easily affected by anxiety, depression and poor concentration. The timed sub-tests of performance parts are also more sensitive to these factors than verbal sub-tests. Memory and learning play an important part in cognitive competence and have a high correlation with overall intelligence, yet we find that one-trial learning, for example, immediate recall of a story, or a design, is more easily impaired by adverse emotional factors. Hence, what we are measuring is the "state" of intelligence. In order to measure the trait, we have situations in which the effect on non-intellectual factors is eliminated as far as possible. This could be achieved in determining the ease with which an individual is able to acquire new knowledge, assimilate it, re-formulate it and re-deploy it in other situations. One of the ways in which this can be done is in assessing the ability of the individual to learn new information over trials, re-assessing the rate and the speed of learning in a serial learning model.

The Paired Associate Learning model of the Wechsler Memory Scale (Wechsler & Stone, 1973) is a very useful approach in assessing the learning ability. Ten pairs of words, with six easy associations (like: baby-cries; up-down) and four difficult associations (like: obey-inch; school-grocery) are presented over three trials. Each trial is followed by immediate recall when the subject is given feedback whether the answer is correct or not. Contrary to the Wechsler original formulation, the overall score is not found to be

very meaningful. It is the improvement over trials that is more reflective of the auditory-verbal learning ability of the subject. Often we find that, due to emotional factors (anxiety, depression, etc.), many subjects would do poorly on their first trial but as we go on, they begin to show a certain degree of improvement in their performance. By the third trial, we expect an average intelligent person to have learned all the easy and at least one of the difficult pairs. Two pilot studies conducted at the Government College, Lahore, and the Pakistan Institute of Medical Sciences, Islamabad, are worth mentioning here. Both using the Paired Associate Learning Test approach successfully differentiated between normal and handicapped children in the first study and normal and demented subjects in the second study. The Paired Associate Learning approach is very adaptable for auditory as well as visual modalities. In another study (Mahmood, 1989), a non-verbal Paired Associate Learning Test was developed, originally for assessing the potential intelligence of the deaf subjects. This visual recognition task was presented along the same lines as the Paired Associate Learning Test. It was found that, for the deaf subjects, while it had a low correlation with WAIS non-verbal intelligence score, it had a high and significant correlation with less verbally loaded tests like the Porteus Mazes and the test also differentiated between normal and mentally handicapped subjects quite successfully, the latter scoring one standard deviation below the normal population mean. Although a sample of 57 university students tested in the Sudan produced similar results to the British norms, cross-cultural validity of the test cannot be assumed. Still, the approach is considered to be reasonably valid and flexible.

For the Raven's Matrices, it should be more appropriate to construct a test in which the figures should relate to the patterns or designs more commonly found in the culture in which the test is going to be used. Such patterns will have at least a much higher face validity than the items used in the original test.

Winberg (1989) asserts that human intelligence could be viewed as malleable. This plasticity of human behaviour is a pervasive quality of the human organism. Individual differences in the malleability of intellectual functions are in part due to genetic make-up. But the genes do not fix behaviour; rather, they establish a range of possible reactions and a range of possible experiences that the environment can provide. The environment can determine whether the full range of

genes activity is expressed, so how quickly we learn depends not only on the genetic endowment but also on the nature of the environment. Thus, in order to assess the potential or the trait of intellectual level, one has to provide the optimum environment in which a particular skill is assessed. Eliminating the differences in individual experiences, we should assess the learning ability in most of these measures. Any assessment procedure for IQ testing should test a wide range of intelligences, without any pre-supposition of inter-correlations. The test items should be culturally specific and available verbally (both in the form of oral and written language) as well as non-verbally. The relevance of the test items should be empirically based and finally, the test procedures should have a single trial as well as serial learning modes. For specific jobs, problem-solving behaviours or task analysis should be carried out and functional assessment of skills required for the completion of the task should be ascertained.

In order to assess intelligence, one has to have a model which provides a framework for measuring each of the relevant aspects of each intelligence. A taxonomic concept would be consistent with the current theories of learning as well as the emerging concept of intelligence testing presented in the preceding sections of this paper. This model would operate at four hierarchical levels. Tests need to be constructed for each level and for each intelligence separately. The model presented here is by no means conceptually exhaustive or mechanically applicable. The Taxonomic Model of Assessing Intelligence is given below:

1. *Perceptual Skills*
   Including observations, distinguishing between similarities and differences, pattern recognition, abstractions and deductive reasoning

2. *Acquisition*
   Learning new information, speed of learning, serial learning as well as rote learning

3. *Comprehension*
   Understanding what is learned. Concept formation of underlying principles involved in new learning. Social understanding and behaviour. Learning of proverbs, sayings, words and phrases, and the ability to use them in

different contexts

4. *Generalisation*
   Transfer of learning. Performance and demonstration. The use of abstract principles in new and novel situations. Use of "what if" and "what would you do if" approach and inductive reasoning.

To sum up the argument, it can be said that the traditional concept of intelligence and its measuring procedures need a radical review. IQ tests started as merely a technique of identifying school children with low potential for academic achievement and they did the job admirably. Perhaps it was this success that led the experts to draw from the IQ the origins of which remained embedded in the classroom, untenable inferences and make over-generalised statements about the life as a whole and ascribe concrete properties to the numerical value of a score. IQ testing became a victim of its own success, a prisoner of its own history, an idea frozen in time. In spite of reservations expressed by many psychologists (e.g., McClelland, 1973), the myths surrounding intelligence and IQ have persisted to this very day. By and large, the traditional approach to intelligence testing still rules, and the danger is that the Third World is following suit.

The belief that IQ is a heritable characteristic and consequently the faith in IQ tests has led some to conclude that some races are superior to others. It is not surprising that for others, the very concept of intelligence reeks of a political ploy to discriminate and segregate classes and people. This bitter controversy has become more of a political issue than a scientific rational argument (see Block & Dworkin, 1976).

Looking at the history, origin and the achievements of intelligence testing, one cannot help feeling a certain degree of ambivalence. IQ tests are fairly accurate about predicting the individual's capacity for academic achievement but, as we have seen, this information is not very useful in predicting success and failure in real life.

It should be reiterated that rejection of the concept of intelligence per se is not the aim of this discourse, for it would be like throwing away the baby with the bath water. Rather, it is to make a case for

updating the concept and developing it to incorporate the real world of the individual. Intelligence does not exist in the classroom alone. Nor is it independent of personality. It is influenced by genetic as well as socio-economic, cultural (even sub-cultural) and experiential as well as technological factors. In keeping with the recent developments in clinical psychology, we should also look at social, behavioural and functional aspects of intelligent behaviour - the efficacy of the individual. Perhaps we might call it "competence" instead of intelligence. This competence manifests itself in the total behaviour of the person. Therefore, the question should not be "How high the IQ is?" but "How competent the person can be?". The quest for this capacity for competence in life is a far more rational and useful concept than an absolute figure like the IQ.

Thus, in the construction of the tests of Competence, we should use criterion sampling methods. If we want to know who will make a good teacher, we first find out how good and bad teachers differ. The test must be based on these identifiable competencies. Moreover, the test should be designed to reflect the influence of training and experience. Competence, like intelligence, is not an inheritable, fixed entity, unmodifiable by experience. Therefore, the individual's capacity to learn and improve a competence is a more realistic reflection of the real life behaviour than just one-off test performance on a test of ability. Furthermore, competence should be taken as a 'state' and not as a 'trait'. It is changing and fluctuating, due to biological state as well as environmental and personality factors in an occupational setting. It can be argued that one would require scores of tests to assess every ability an individual would require to do a job properly. In constructing such tests we should look for those clusters of competencies required for a number of jobs.

A behavioural-functional analysis of jobs may reveal that interpersonal skills, communication, ability to set realistic goals, development of self-reliance, ability to take initiative and so on, are at least as important to real-life situations as academic achievements and aptitudes. These tests should not contain fixed-choice answers since real life is never such a cut-and-dried affair. Nor is it so neatly structured. Competence would mean how to find a solution to the problem and not only the correct solution. Ideally, the assessment of a competence should be carried out in simulated life situations rather than through paper and pencil techniques only. At the moment, some

of these ideas may seem far-fetched but it is a question of re-educating ourselves to bring in line the concept of intelligence with the rest of clinical psychology.

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