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THE ROLE OF NONCOGNITIVE VARIABLES IN EDUCATION

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ABSTRACT. Measures of noncognitive variables are examined in light of their potential role in the educational enterprise with particular reference to the problem of their measurement. In doing so, several noncognitive characteristics including biographical information, attitudes, affects, interests, temperament, cognitive style and values are discussed in terms of their distinctive features and educational relevance. Their different roles in education such as in improving instruction and learning, selection, placement and evaluation, are briefly examined.

1. INTRODUCTION

Measures of cognitive characteristics such as ability and achievement tests have had a long history of involvement in educational practice since intructional programs of almost all academic institutions have traditionally relied heavily on the cultivation of cognitive competence. This is obviously so because cognitive skills are useful bases for diagnosing learning strengths and weaknesses, and for planting instruction and remedying as well as for predicting later school achievement [23 and 13]. Noncognitive characteristics such as affective dispositions, feelings, attitudes, interests, and motivations constitute conditions that facilitate or inhibit cognitive achievement and like cognitive variables predict response to instruction [6, 12, 21, 23, 51 and 79].

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In fact, apart from sheer predictiveness, noncognitive characteristics share with cognitive variables a number of educationally relevant features. For instance, both variables serve as mediating or instrumental variables, either facilitative or disruptive, influencing level and rate of subject matter learning; as interactive or moderator variables determining differential responses, either qualitative or quantitative to different aspects of instructional method or context. Moreover, both variables also serve as outcome variables reflective of educational goals in their own right or of valued personal characteristics that should not be undermined by unintended educational side effects[1] [6, 48, 59, 69 and 117].

Furthermore, noncognitive characteristics such as attitudes and motives generally involve important cognitive components such as cognitive dissonance which is a conflict between present knowledge and new information, an incompatibility of new cognitions with those already held [27] while cognitive variables such as measures of intellectual abilities and subject matter achievements frequently entail motivational, attentional, and affective aspects of personality characteristics. Therefore, it can be said that the distinction between cognitive and noncognitive assessment is not categorical but rather one of degree between intellective and other personality determinants [24].

Moreover, with the understanding that cognitive and noncognitive have differentiable properties of diverse and complex elements that are intricately intertwined, the contrast cognitive versus noncognitive is used in this paper bearing in mind that cognitive does not imply *only* cognition and that noncognitive does not imply the absence of cognition.

In this paper an elaboration of the role of noncognitive characteristics in education is attempted. In doing so essential properties of cognitive and noncognitive assessment are addressed to underscore

critical aspects where both overlap and contrast. Then, a limited number of noncognitive variables such as interests, affects, attitudes, beliefs, motives, temperament, etc. are discussed in terms of their distinctive features and educational implications as well as the roles these noncognitive measures might play in the various functions of the educational enterprise such as in guidance, selection, placement, and the like.

2. PROPERTIES OF COGNITIVE AND NONCOGNITIVE MEASURES

In cognitive measurement, conditions are set to mobilize attention and optimize motivation to get a maximal performance in intellective skills or subject matter achievements while in noncognitive measurement, typical performance levels are guaged by controlling extraneous information — processing demands such as vocabulary, expression, and reading ability in such a way that, for instance, a self-concept scale does not turn to be a reading test in disguise. In general, at the level of measurement cognitive measures have correct answers and right-answer keys though all of them do not entail a dichotomous scoring of the rightness or wrongness of responses. But whatever scoring method is used directly or indirectly they require the existence of right-answers in some form, for otherwise it would be difficult, for example, to separate problem solving from free association. On the other hand, noncognitive measures have no correct answers apart from answers that are correct for each individual and have no right-answer keys external to the individual for verifying the correctness of the answer [67].

For instance, in self-report measurement of personality, some respondents are quite accurate in their self-perceptions and correct in their reports though we are unable to know who these accurate respondents are due to lack of right-answer key to signify their true attitudes or personality characteristics. Other respondents are variously inaccurate in their self-perceptions and self-reports because of tendencies of individuals toward impression management and

faking, desirability responding and response sets, and mechanisms of self-deception and defence. Attempts are frequently made to detect individuals extreme in their subjectivity and honesty through the use of special detection scales for lying and faking, random responding, and defensiveness, [15, 29, 43, 58, 60, 81, 87, 98]. Moreover, the absence of right-answer keys forces noncognitive assessment to draw inferences from consistency in response theory relying heavily on both convergent evidence supporting the meaning of the consistency and discriminant or divergent evidence offering less plausible interpretations to other related traits, response biases, or defensive tendencies [68 and 69].

Though, noncognitive measures exist in almost endless variety nearly all of them are potentially useful to one degree or another in the educational enterprise. A few noncognitive variables will be briefly discussed with respect to their distinctive features and educational relevance to give some flavor of the importance of personality measurement in education. In this and following pages the variables discussed include biographical information, affect, attitudes, beliefs, interests, motives, temperament, cognitive styles, and values. In every case, the discussion will be limited to the most relevant and positive aspect of each variable along with the role it might play in the educational system.

3. NONCOGNITIVE VARIABLES[2]

Biographical information can cover a wide variety of information about individuals and their background. It includes such items as age, sex, place of birth, place(s) of residence, family background, number of brother(s) and sister(s), educational experience, work experience, physical characteristics such as height and weight, medical history, hobbies, bilingualism, reading habits, use of leisure time and talented accomplishments to capture directly the past behaviour of individuals [64]. Among these, the demo-

graphic characteristics over which the individual has no control, such as age, sex, family background, and bilingualism serve as integrative, adaptive, goal-attaining, and pattern maintaining functions in the education of the individual. Consequently, it is essential to identify and quantify these biographical characteristics that are relevant to the situation in terms of the contributions they make towards producing the educational outcomes envisaged for the criterion in question [3 and 118]. In fact, such proxy variables are widely used throughout educational practice (be it in research or in instruction) because of their marked covariation with psychological or developmental variables and because of their unique advantage of directly capturing the past behavior of a person as well as of their predictiveness of educational outcomes [6, 72, 92 and 105]. For instance, among the several studies carried out to characterize scientists who have demonstrated a high level of accomplishment Kulberg and Owens [52] and Morrison, Owens, Glennon, and Albright [74] found that biographical information correlated with creativity, professional interest, and research competence of engineers and scientists. In another study, Albright and Glennon [2] found that biographical variables distinguished between supervisory and research oriented scientists at all levels of a laboratory organization. McDermid [65] also found that biographical variables were the best predictors of supervisory and peer ratings of high-levels creative performance. In fact, he found correlations between paper and pencil tests and the criteria of creativity to be so low to be virtually useless for predictive purposes while biographical data proved to be significant predictor of both supervisory and peer ratings of creativity.

Hence, the above results suggest that biographical information about past accomplishments could be used for the early identification of students with the potential for high level accomplishments. In addition, they could also be used as one of the criteria for selecting students for special programs. In general, then, biographical

variables or experiential background factors are instrumental in determining who is admissible into an educational system at any level, what educational objectives and standards should appropriately be set, why one alternative topic or program is preferred over others for guidance, selection and placement function, and how instruction should take place to bring about the desired outcome [5, 6, 72 and 116].

Affects are positive and negative feelings that may be either specific to particular conditions or characteristic of particular individuals. They may be qualitatively differentiated feeling states, such as, shame, contempt, joy, surprise, sadness, fear, rage, and the like or they may be perceived feelings about something; or they may be free floating and generalized feelings, such as feelings of euphoria, vague uneasiness, or anxiety [16, 42, 96, 100 and 101]. According to Tomkins [102] affects are functions of the individual's information – processing capacities whereby the different affects are aroused as a consequence of the rate of stimulation increase, stimulation persistence, and stimulation decrease. In effect, then affects can serve either as a general amplifier or inhibitor of the drive they accompany. In fact, Tomkins illustrates it clearly by considering the hunger drive in the neonate. He states that the hunger drive in the neonate

> . . . ordinarily instigates the negative affective response – the cry of distress. This cry undoubtedly makes the hunger appear more urgent and harder to tolerate. The total distress is certainly greater than if there were hunger alone. Indeed, it is possible to comfort such a child by picking him up and walking with him. A child who has been thus soothed and stopped from crying will, nonetheless, eagerly take food when it is offered indicating that the affect was in independent response which had amplified the hunger [100, p. 49].

Educationally, what this implies is that one is required to integrate an information — processing system with a complex emotional structure which communicates positive or negative information to the individual by appraising the various situations and the individual's capacity to deal rapidly and effectively with new stimulus information. In education relevant affects include feelings about school, about learning, about subject-matter, about the self as a learner, and about being evaluated—typically revealed in the form of test anxiety [4, 12, and 83]. It must be pointed out that individual differences in these school related affects should be taken into consideration, among other things, in such educational functions as instruction, guidance, placement, and evaluation. In addition, the development of positive feelings about self and learning, about subject matter and school and the development of interpersonal affection and expressiveness are also important aspects that must be given due consideration in the educational system.

Attitudes are predispositions of individuals to evaluate objects or aspects of this world in a favorable or unfavorable manner. They involve positive versus negative feelings about a social object or class of objects combined with cognitive components of positive versus negative evaluations. Consequently, attitudes have intellectual, biological, social, and emotional components that are influenced by the educative process through planned and random experiences. For instance, individuals have attitudes toward health, life, death, people, new situations, play, government, religion, and the like and these attitudes exercise a determining influence upon individuals to behave in a consistent way incroporating pro and con tendencies towards given objects [47, 56, 61, 64, 77 and 89].

Since one of the functions of education is the modification of existing negative attitudes and the creation of new ones that are positive and enduring the educationally relevant attitudes that need modification or reinforcement include orientations toward learning,

school, subject-matter, and self [1, 12, 47 and 89]. Specifically, attitude toward the self, especially the self as a learner, is educationally important both as instrumental variable and out come variable. For example, if a student feels that he is a bad reader he will see reading aloud as a threating and painful experience and will avoid it. An instructor might interpret this as a "bad attitude" or laziness. The teacher's reaction may still lower the student's concept of himself as a student and reader. This is so, because a person's self-concept has a powerful influence upon his action and that each person acts as the person he believes he is and can be. That is why the enhancement of self-concept is generally viewed as a central educational objective, especially for the disadvantaged [21, 45, 46, 48, 62, 79, 93, 120 and 121].

In general, attitude variables play an important role in such educational functions as instruction, guidance and evaluation as well as in setting educational objectives and standards for individuals to experience and acquire acceptable attitudes.

Beliefs are inferences made by an observer about underlying states of expectancy in which a particular relationship holds between the object under consideration and any other object, concept, value, or goal. As such, beliefs cannot be directly observed but must be inferred as best one can, with whatever psychological devices available from all the things the believer says or does [28 and 84]. In short, Rokeach explicitly describes belief as follows:

> . . . the total belief system may be seen as an organization of beliefs varying in depth, formed as a result of living in nature and in society, designed to help a person maintain, insofar as possible, a sense of ego and group identity, stable and continuous overtime, an identity which experiences itself to be a part of, and simultaneously apart from, a stable physical and social environment [84, p. 378].

Clearly then, the educational import of these generalized expectancies derives primarily from their implications for self-motivation, for their behavior-moderating effect, for their response to education and for their adaptability to later life [25, 34, 48 and 55]. Consequently, the major educational functions served by beliefs are in the area of instruction and guidance as well as in the organization and set up of educational objectives to develop positive characteristics towards life.

For instance, a widely investigated and educationally relevant dimension of belief, indentified as important to individual development and on a broader scale to national development is "locus of control". This dimension, sometimes refered to as IE, for "internal-external" control, describes the perception of personal control over the results and consequences of one's behavior or the perception of being controlled by outside forces such as fate, chance, or powers beyond one's control or understanding. In locus of control, "internals" are individuals who think of themselves as dominant over their behavior in controlling and reinforceing outcomes while "externals" are individuals who attribute their behavior to outside influences or to a power beyond their control or understanding [14, 19, 22, 33, 48, 88 and 95]. In short, internals are people who believe that they have control over the major events in their lives while externals are people who believe that their fates are decided by powerful deliberate or circumstantial forces beyond their control [88]. This implies that internals develop a belief that they are able to influence the world to get things done and so fashion a life for themselves with which they will be somewhat satisfied and as such they are optimistic achievers. On the other hand, externals gravitate toward discouragement and pessimism due to the fact that they fail more often than they succeed [80]. As Phares clearly indicated the "locus of control" variable influences behaviors such as motivation, attempts to master one's environment, delays of gratification, preferences or rewards, success and failure, as well as adjustment and defensiveness [80].

Interests are pleasurable feelings that attract an individual to objects, persons and activities. Interests accompany activities that are undertaken for their own sake and as such entail selective awareness or attention to relevant stimuli, along with increased arousal and energy, leading to extremely intense interests and then to excitement [100]. Interests may be looked upon as reflecting a stable pattern of choice among alternatives in the absence of external pressures in such a way that they induce an individual to seek out particular objects and activities in a consistent pattern [32 and 90]. Moreover, interests change with opportunity when (1) they are no longer consistent with the self-concept; (2) they do not lead to a desired goal; and (3) they lead to dissatisfaction [89].

It is important to note from our earlier discussion that interests, attitudes, and affects overlap to a considerable degree but they also embody important distinctions for education. For instance, a student who is intensely interested in a subject like atomic physics might have favorable attitudes towards its technological potential and negative attitudes toward its distructive uses, and have feelings of fear or anxiety about the learning demands of the material. Hence, its implication for education lies in the area of school curricula, instruction and sensory stimulation in a learning situation. Moreover, interests also serve as intrinsic motives for education since they help sustain relevant activities not only in the absence of external reinforcement, but also in the face of negative reinforcement [41 and 110]. Consequently, in educational practice interest variables might play in different educational functions particularly in those functions that are oriented toward student learning, guidance, selection, placement and evaluation.

Motives are impulses, needs, drives, emotions, expectations or desires that impel one to action and that frequently operate below the level of consciousness [8 and 112]. Although, all the noncognitive variables under discussion qualify as motivational to some degree we

will be concerned here primarily with those motives traceable at least in spirit to Murray's [76] theory of social needs such as the need for achievement, affiliation, autonomy, dominance, order, play, social recognition, and the like. Primary among these are the need for achievement and the need for social approval which are quite relevant to educational practice and have been widely studied in social and learning contexts [7, 20, 38, 63, 86, 104, 107 and 108]. For instance, according to McClelland [63] the need for achievement, a product of the extent to which people are reinforced by evidence that they have accomplished a difficult task and have lived up to some standard of excellence, will impel the individual toward the improvement, strengthening, and healthy development of the self and thereby help the society to be more powerful, productive and prosperous. In this respect, motives with their manifold implications for education are relevant to important educational functions such as guidance, placement, selection, instruction and evaluation.

Temperament is a general disposition that typically characterizes the manner in which the behavior of an individual occurs-as distinct from the content of the activity, the ability levels or capacities required for performance, and the motives impelling action--with respect to his characteristic activity, rhythmicity, adaptability, distractibility, mood, intensity of reaction, and focus of attention [99]. Essentially, temperament refers to behavioral styles which differentiate responses among individuals as a function of intensity, direction, consistency, and quality of expression. Temperament dimensions such as positive versus negative, responsive versus unresponsive, active versus passive, controlled versus uncontrolled, and objective versus egocentric include such bipolar characteristics as confidence versus inferiority, impulsiveness versus deliberateness, cheerfulness versus depression, objectivity versus hypersensitivity, emotional maturity versus immaturity, nervousness versus composure, ascendance versus timidity, friendliness versus hostility, and tolerance versus criticalness [35]. For instance, the bipolar nature of tempera-

ment may be illustrated by citing Young's example concerning aspects of emotional maturity and immaturity of individuals. He says that:

> . . . a two-year-old kicks and screams when refused a second helping of some desired food. Adults take this for granted. They say, "He is just a baby and he behaves like one emotionally." If, however, a six-year-old behaves in the same manner, he is regarded as "naughty". When a nine-year-old kicks and screams in this situation we say he is "spoiled". But, such conduct from an adult would be regarded as a sign of emotional immaturity. If an adult were to scream and kick because he or she was refused a second helping at dinner, a psychiatrist would be summoned! [119, p. 84].

It must be noted that temperament dispositions are generally stable, though changeable since the survival and development of any temperamental characteristic depends on the degree to which that particular factor is supported and maintained by the environment. Obviously, since individuals differ in temperament and in behavioral patterns of activity and reactivity and understanding of a student's temperament characteristics is crucial in determining how teachers should handle a student, what demands and expectations should be placed on a student, and how such demands and expectations should be formulated and carried out. Hence detailed knowledge of a learner's temperamental characteristics would be of great significance in establishing healthy teacher-student relationship and in helping to prevent the development of behavioral and learning problems in children. Moreover, it may be accomodated in such educational functions as guidance, instruction and evaluation rather than being the objective of educational change.

Cognitive styles refer to information-processing regularities consonant to underlying personality trends. They are consistencies of attitudes, preferences, or habitual strategies that determine a person's

characteristic modes of thinking, remembering, perceiving, problem solving, and of looking at the world and his relationship to it [68, 69 and 103]. Implied here is the existence of individual differences in ways these cognitive functions are carried out, and their stability over many different activities and situations. In short, one's way of thinking and perceiving stems, in part, from properties of personality which distinguish one individual from another [40, 70 and 113].

Some examples of dimensions of cognitive styles that have been researched on include field-independence versus field-dependence, cognitive complexity versus simplicity, reflectiveness versus impulsivity, leveling versus sharpening, constricted versus flexible control, and scanning versus focusing [30, 39, 68, 69, 78, 91 and 94]. These styles embody a contrast between two modes of functioning, neither of which is uniformly more adaptive. For instance, the cognitive style, levelers and sharpeners, contrasts how people perceive and remember stimuli. That is to say, if levelers and sharpeners were asked to consider a geometric figure that is almost but not quite square, levelers will tend to "level" or even out, minor differences in order to see the figure as a simple square while sharpeners pay attention to minor departures from form and hence are likely to notice and rember the fact that the figure was not perfectly square. If both groups were asked to reproduce the figure from memory, levelers will tend to draw a perfect square while sharpeners will tend to draw a rectangular shape--may exaggerate the shape [94].

In essense, cognitive styles are interesting individual difference variables that have both theoretical and practical implications to education since they combine cognitive development with personality development and appear to be shaped through socialization.

As research evidence indicates cognitive styles variously influence how students learn, how teachers teach, how students and teachers interact, and how educational and vocational choices are made [30, 39, 49, 71 and 115].

Cognitive styles in education are especially useful in guidance and instruction because of the positive aspects of the message they render regardless of which pole of cognitive style a student leans toward [114]. In general, the educational objective of cognitive styles should be to develop and enhance flexibility in modes of thinking—to the degree possible—and to convert cognitive styles into cognitive strategies, so that they will be selectively and appropriately applied in learning and performance as a function of varied task requirements [8, 17, 18, 31 and 85].

Values are conceptions, explicit or implicit, distinctive of an individual or a characteristic of a group, of the preferable, of the good and of the desirable which influences the selection from available modes, means, and ends of action [8, 17, 18, 31 and 85]. Though, values are not the only determinants of behavior they definitely shape the kind of person one becomes and the type of life one builds for oneself. In fact, according to Rokeach [85] a value is an enduring belief that transcends attitudes toward objects and toward situations. It is a standard that guides and determines action, attitudes toward objects and situations, ideology, presentation of self to others, justifications, evaluations, and the like. As such, values serve adjustive, ego-defensive, knowledge, and self-actualizing functions. In connection with this Andie L. Knutson points out that:

> . . . Man, perhaps more than any other creature, is a valuing animal. A subtle network of values, chiefly acquired in infancy, guide both the direction and mode of his thought and action, and give meaning and significance to his efforts. The intensity with which these values are held may at once impart fervor to his strivings and blind him to other possible, even more fruitful alternatives. Unless shaken up by some unusual situation or value conflict, he may be unaware of their guiding – and restricting – influence [50, p. 300].

Values pervade the entire educational enterprise and are particularly significant in setting objectives or standards in defining what is desirable and what is possible at any time within the scheme of what is desirable and to carry out what is possible in the spirit of what is desirable [26]. In addition, values that are variously endorsed as educationally important are concerned with development of explicit knowledge and clear thinking about one's values and with development of judgemental structures for analyzing, interpreting, and deciding about social problems [57 and 82]. Furthermore, values are essential components in such educational functions as in guidance and instruction as well as in setting educational objectives and standards.

4. REMARKS ON INFLUENCES OF NONCOGNITIVE VARIABLES

Overall, as we have seen, noncognitive variables not only have manifold implications for all educational enterprises but also play different roles in different educational functions, particularly those functions oriented toward student learning and development. In the first place noncognitive variables may be of use to answer the question of *access* or *the enhancement* of educational opportunity such as who is to be admitted to a program or to an institution at a given educational level. The noncognitive variables that may contribute towards this end are experiential background factors, social sensitivity and creativity [9, 36, 44, 66, 97, 106 and 109].The last two have not been discussed in this paper. Secondly, all noncognitive measures discussed except temperament (and such noncognitive variables as coping, social sensitivity, curiosity and creativity)[10, 11, 18, 37, 53, 54, 73, 75 and 111] could serve in answering questions of the sort *what* should be taught and accomplished at the various educational levels such as elementary, secondary, and higher education and *which* of several alternatives should be attended to or addressed in setting *objectives and standards* in any given educational system. Thirdly, the influence of noncognitive variables may be seen in light of the *guidance* function they play by raising such questions as why one alternative topic or

program is preferred over others and *what* purpose or value is being served. In this respect, again, all the noncognitive variables mentioned are potentially useful but among them values take the lead followed by interests and motivation. Fourthly, another critical educational function for which noncognitive variables are useful is in the area of *selection*. Here, question of selection try to determine where the education of an individual could take place since students that are rejected by one institution or program may yet be accepted by another. For instance, visually impaired individuals can not be accepted in all specialized higher institutions or programs. Coupled with this, the selection function may also determine whether an individual could be allowed to enter a program such as honors or compensatory programs as opposed to regular courses [116]. Hence, noncognitive variables of experiential background, creativity, interests, developed sensitivity and motivation could definitely provide useful adjucts to the traditional selection criteria of ability and achievement measures in any educational system. Fifthly, the *placement* function, at least in higher education, may be used to exempt qualified students from certain courses permitting them to start at an appropriate level. It may also be used for remedial purposes where an academically weak student acquires the prerequisite knowledge and skills. Moreover, it may be of value for group pacing, especially in the form of ability grouping, to permit variation in course length or level of accomplishment the student is able or willing to display [116]. The noncognitive measures that are of prime importance in the case of placement are interests, feelings, experiential background factors, and motivation. The sixth educational function, deals with questions of *how* teaching takes place with respect to teaching style and learning styles as well as with respect to learning conditions and student characteristics. Hence, with respect to instruction all of the noncognitive measures discussed as well as creativity, curiosity, coping strategies, social sensitivity especially motivation and cognitive styles are potentially helpful in enhancing the teaching-learning process. Last, but

least, the seventh educational function is *evaluation*. It deals *how well* the educational enterprise is faring in its various objec- including an appraisal of side-effects and educational by-pro- ts. All of the noncognitive variables discussed are potentially ul either as outcome or as moderators of differential educational ct.

n short, noncognitive variables are variously involved in the ational functions of access, objectives and standards, guidance, tion, placement, instruction and evaluation with the pattern of vement, somewhat different at different levels of the educa- l sequence. In this paper the positive functions of noncogni- measurement in educational practice was emphasized rather their pitfalls though their use in education entails value judge- which could invite misuse. Therefore, it is suggested that for proposed use of noncognitive measures it is quite essential to mine the variables with respect to their psychometric adequacy construct validity as well as to appraise them with respect to value implications of their proposed application.

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NOTES

uthor of this paper is one of the contributors in the researching and writing book entitled *Educational Outcomes Measurement in Developing Countries* os, F. G., Muskin, S. J., and Billings, B. B. [48].

University Testing Center of Addis Ababa University administered in 1973 3 graduating senior high school students an aptitude test along with it s noncognitive measures such as biographical information factors, self- pt, test-anxiety, self-esteem, anomie, fatalism, general achievement motiva- school achievement motivation, locus of control, status concern, rigidity cial desirability in an attempt to predict success in the University. The ere designed to enable assessment of outcomes as they relate to the broader f education.

llowing are sample items that are illustrative of the item types used for each noncognitive measures mentioned above. It is also important to note cept for the biographical information and fatalism measures the individual d to show his feeling or opinion by agreeing or disagreeing with the given ent.

trative sample items

(i) Biographical information (Choose one among A, B, C, D, E)

a) How much schooling did your father have?

A. no education
B. grade school or less
C. high school
D. College education
E. graduated degree (M.A., M.S., Ph.D., M.D.)

b) Did your parents live together all of the t you were growing-up?

A. yes
B. no, because one died
C. no, because they both died
D. no, because they separated
E. no, because they were divorced

(ii) Self-concept (Agree - Disagree)

a) I become scared when I think of something I hav e wrong.
b) I always try to do what I tell others to do.

(iii) Test anxiety (Agree - Disagree)

a) Thoughts of doing poorly interfere with my rmance on tests.
b) The harder I work at taking a test or studying ne, the more confused I get.

(iv) Self-esteem (Agree - Disagree)

a) My feelings are easily hurt.
b) I often get discouraged at what I am doing.

(v) Anomie (Agree - Disagree)

a) Everything changes so quickly these days that I often have trouble deciding which are the right rules to follow.
b) These days a person doesn't really know whom he can count on.

(vi) Fatalism (Choose between (1) and (2)

a) (1) There are certain people who are just no good
(2) There is some good in everybody

b) (1) One should always be willing to admit mistakes
(2) It is usually best to cover up one's mistakes

(vii) General achievement motivation (Agree - Disagree)

a) It is sometimes hard for me to go on with my work if I am not encouraged.

b) When I do not like a subject taught in school, I do not do well in it

(viii) School Achievement Motivation (Agree - Disagree)

a) I do not always do my homework
b) I do not enjoy participating in class discussions

(ix) Locus of Control (Agree - Disagree)

a) In my case getting what I want has little or nothing to do with luck.

b) Sometimes I feel that I don't have enough control over the direction my life is taking.

(x) Status Concern (Agree - Disagree)

a) A man's real worth depends on what he accomplishes in this world.

b) An individual is what he does, not what he m or intends or thinks.

(xi) Rigidity (Agree - Disagree)

a) I sometimes keep on with a thing until others e patience with me.

b) I do not mind setting aside a task that I have und n before it is finished.

(xii) Social Desirability (Agree - Disagree)

a) The fact that some of my friends or acquaintan dislike me does not bother me.

b) I am always courteous, even to people who ar greable.

It may be conjectured that the determination of such noncognitive cha eristics, in standardized testing programs, will not only help determine whet school system is reaching its goals but also will definitely have - bearing in the d opment and enhancement of the educational system of a nation. To serve as an i tration, a table of intercorrelations of a cognitive (aptitude) and the noncogniti easures mentioned above, as determined by the University Testing Center is g From the table it can be observed that the results, though inconclusive, do ear to operate in a predictable fashion though their future use and value will b reatest when they are tied to the testing of specific hypotheses in the educatio enterprise.

S.No.	Aptitude	General Achievement Motivation	School Achievement Motivation	Fatalism	Test Anxiety	Anomie	Locus of Concern	Self-esteem	Status Concern	Rigidity	Social Desirability
	1	2	3	4	5	6	7	8	9	10	11
1	1.00	.21	.28	−.21	−.21	.09	.23	.34	.11	.12	.29
2	.21	1.00	.42	.05	.18	.27	.26	.17	.19	.17	.18
3	.28	.42	1.00	.03	.13	.29	.27	.24	.14	.12	.21
4	−.21	.05	.03	1.00	.31	.24	.06	−.05	.01	.01	−.08
5	−.21	.18	.13	.31	1.00	.40	−.09	−.21	.11	.04	−.23
6	.09	.27	.29	.24	.40	1.00	.10	.01	.06	.12	.01
7	.23	.26	.27	−.06	−.09	.10	1.00	.30	.15	.10	.27
8	.34	.17	.24	−.05	−.21	.01	.30	1.00	.33	.25	.56
9	.11	.19	.14	.01	.11	.06	.15	.33	1.00	.25	.22
10	.12	.17	.12	.01	.04	.12	.10	.25	.25	1.00	.27
11	.29	.18	.21	−.08	−.23	.01	.27	.56	.22	.27	1.00