

Self-Concept of the Gifted: A Critique

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1. Introduction

Of concern to educational psychologists is the emotional and social development of students, along with the traditional development of cognition. Educational services need to be developed that reflect this concern for students of all ability levels. While it is beyond the scope of this paper to examine the instruction of the gifted, the self-concept of the gifted does reflect the attitude of teachers and the general population to this matter. This paper examines the issue of the "self-concept of the gifted". To do so, necessitates a critical examination of the construct validity of the concepts "self-concept" and "gifted".

Section 3 reports on recent research bearing on the construct validity of "self-concept"; section 4 reports on the construct validity of "giftedness". Before that, section 2 sifts through the empirical evidence relating self-concept to gifted behaviors. Construct validity of these concepts would ensure that the relational studies - self-concept to giftedness - are measuring what in theory they purport to measure.

As displayed in the bibliography, most of the research reported on has been published in journals dealing with education and psychology. Unfortunately, only one study, that by Byrne (4), is based on Canadian data in a suburban area of Ottawa as published in the Canadian Journal of Behavioral Science.

A major limitation of this paper is that the research of section 2 and section 3 is somewhat disparate. No publications could be found that integrate these two fruitful areas of research. A cursory examination of the references suggest that these two bodies of research have not yet merged. The research relating self-concept to giftedness does not address itself to the matter of construct validity.

Finally, the concluding section examines some of the implications of these studies for special programs for the gifted along with the possibility that school "gifted behaviors" will translate into adult creative behavior. Again, it is beyond the scope of this paper to comment on the efficacy of such programs, particularly in a local setting such as British Columbia.

2. Self-Concept: Gifted

If self-concept influences behavior, the self-concept of gifted students is an important area of investigation. In this section, recent research publications concerning the self-concept or self-esteem of the gifted are examined. No definite conclusions are drawn. As discussed in the next two sections, difficulty in reaching conclusions can be attributed to a large extent to the uncertainty of the construct validity of both "self-concept" and "gifted". Without construct validity, it is difficult to compare research studies when different authors are measuring and comparing different conceptual objects using different measurement instruments. This can also explain why empirical evidence relating the causal link of self-concept to educational achievement is sparse, although self-concept has been incorporated into educational theory and interventions.

A group of 9-15 year old, academically gifted and artistically talented students were asked (7,64), "How do other people such as friends, teachers and parents treat you differently because of your special abilities?". Their response indicated that most students, (86%) did not report any negative reaction. Another group of 500 middle grade gifted and talented children (6) displayed an overwhelmingly positive response toward participation in special academic programs. They appreciated such programs provided no resultant conflict with regular class teachers or antagonism from their friends.

Does self-concept of gifted children differ from the standardized population? Does this depend on their participation in an academically talented resource program? Karnes and Wherry (11) studied 77 girls and 76 boys with an I.Q. greater than 120, (Wechsler Intelligence Scale for Children - Revised or the Stanford-Binet, Form LM), who had completed grade 4 through 7. On the basis of their examination using the Piers-Harris Children's Self-concept scale, they reported no significant differences were found among grades, between sexes, or between students enrolled in gifted programs and those not enrolled. However, gifted children had

significantly higher self-concept than their intellectually average counterparts.

In a similar study Bracken (1) examined 85 boys and girls with I.Q. in excess of 120 using three questionnaires to measure self-concept, attitude toward learning and peer relations. These self report attitudinal questionnaires had been developed and normed by the Institute for Development of Educational Activities, Inc. Unlike Karnes and Wherry, Bracken found that the gifted did not differ appreciably on their self-concepts or peer relations from a nongifted normative sample. However, in the one area that separates the two groups most directly, learning, significantly more favourable attitudes were reported by the intellectually superior children. Bracken concludes (1,717) "that a simplistic relationship between intelligence and self-concept is non-existent, and generalizations about gifted children's self-concept cannot easily be made".

Are gifted children only different in terms of better attitudes toward learning? Consider Lehman and Erdwins (13) examination of the social and emotional adjustment of young intellectually gifted children. Gifted children have a higher mental age than chronological age. Third grade students with an I.Q. in the 141-165 range have a mental age comparable to sixth grade students with an I.Q. of 100. Are gifted students advanced in other aspects also? According to Lehman and Erdwins, gifted students, "score consistently more positively on measures of social and emotional adjustment. They report more positive feeling about themselves, more maturity in interactions with others, and better relations with others". In fact gifted children are similar to their mental age mates on measures of nervous symptoms and cooperation and like neither on measures of sense of personal freedom, willingness to compromise, equality of participation and self-esteem.

Self descriptions are another means of gaining insight into the self-concept of gifted students. Are academically gifted and artistically talented students different in their self perception?

The following table displays the percentage of 9-15 year old students in each of these groups responding to a 13 item checklist as obtained by Guskin, et al (7,63)

Table 2.1

Percentage of Academically Gifted and Artistically Talented Students Agreeing to 13 Self-Descriptive Adjectives

Adjective	ACAD (N=242)	ART (N=44)	Total (N=286)
1. brilliant	28.9	13.6	26.6
2. average	19.4	40.9	22.7
3. successful	69.0	45.5	65.4
4. outstanding	28.9	27.3	28.7
5. talented	72.3	86.4	74.5
6. good in school	90.5	77.3	88.5
7. smart	81.4	65.9	79.0
8. good in the arts	39.3	81.8	45.8
9. gifted	64.0	65.9	64.3
10. intelligent	71.5	68.2	71.0
11. creative	79.8	79.5	79.7
12. imaginative	81.0	77.3	80.4
13. special	53.7	50.0	53.1

(248 students attending the College for Gifted and Talented Youth, Fall of 1982.)

On the basis of chi square tests for academically gifted and artistically gifted, the significantly different self descriptive adjectives were "successful", "average" and "good in the arts". In total, the academically gifted and artistically talented students perceived themselves as "good in school", "creative", "imaginative", "smart", "talented", "successful", "intelligent" and "gifted".

Apparently measuring self-concept is a problematic and complex task, given the differences between Karnes-Wherry and Lehman-Erdwins. A solid theoretical basis as a framework for evaluation is required to successfully correlate self-concept with giftedness. The next two sections examine the construct validity of self-concept and giftedness. Before that we consider the study by Brody and Benbow (2). They examine the social and emotional adjustments of adolescents extremely talented in verbal or mathematical reasoning. The previous study by Lehman and Erdwins provided evidence that students with an I.Q. in the 141-165 range were more than satisfactory on measures of social and emotional adjustment. In the

present study adolescents who represent the top 1 in 10,000 of their age group were identified.

Beginning in 1972, the Study of Mathematically Precocious Youth (SMPY) at Johns Hopkins University used the Scholastic Aptitude Test (SAT) to measure mathematical (M) and verbal (V) reasoning ability in young adolescents. Between 1980 and 1983, SMPY sought those youths who before age 13 scored at the 95th percentile for college-bound male 12th graders on SAT-M and SAT-V tests. The responses of these extremely gifted youth to a questionnaire designed to test self esteem, locus of control, depression and popularity were compared to the responses of a comparison group. The results are summarized in Table 2.2, (2,8).

Table 2.2

Means and Standard Deviations, by Group and Sex, of Self Esteem, Locus of Control, Popularity and Depression Scales.

	Self Esteem		Locus of Control		Popularity		Depression	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
High SAT-M								
Males	31.4	4.5	16.0	2.2	7.6	2.1	5.4	2.3
Females	32.3	4.4	15.5	2.3	8.0	2.2	6.0	2.8
Total	31.6	4.5	15.9	2.3	7.7	2.1	5.5	2.8
High SAT-V								
Males	29.8	6.0	16.1	2.2	6.7	2.6	6.0	2.4
Females	29.2	5.1	16.5	2.5	7.0	2.4	6.3	2.5
Total	29.5	5.5	16.3	2.4	6.8	2.5	6.2	2.5
Total Gifted								
Males	31.1	4.9	16.0	2.2	7.5	2.2	5.5	2.3
Females	30.6	5.0	16.1	2.4	7.4	2.4	6.2	2.6
Total	31.0	4.9	16.1	2.3	7.4	2.3	5.7	2.4
Comparison Group								
Males	31.0	4.2	14.4	2.4	9.0	1.9	5.8	2.0
Females	30.2	5.1	15.0	2.6	9.3	2.0	6.6	2.2
Total	30.6	4.7	14.7	2.5	9.2	1.9	6.3	2.2
Scale	40		20		2		12	

From these data, the following conclusions can be made. In relation to the comparison group, the highly gifted students perceive themselves as less popular, no different in self-esteem or depression, but report greater internal locus of control. Highly mathematical students perceive themselves as more popular than the highly verbally talented students. The latter also had greater social and emotional problems.

3. Self-Concept: Construct Validity

In the new "humanistic" education philosophy, improvements of a student's self-concept is an educational outcome in itself. Self-concept is often linked to academic achievement on the basis of some empirical evidence (21). Either way self-concept is an important variable in education and in educational evaluation and research. Unfortunately, the bulk of self-concept research until the last decade can be criticized on the grounds that their interpretations may not be valid. Self-concept research can be criticized because (22, 408):

1. definitions of self-concept are imprecise and vary from one study to the next,
2. data are not readily available on the equivalence of various self-concept measurement instruments,
3. data are not available to test rival counter interpretations.

In their seminal paper, Shavelson, et al conclude that until 1976, (22, 410)

" it appears that self-concept research has addressed itself to substantive problems before problems of definition, measurement and interpretation have been resolved. Until these problems have been dealt with in a manner made possible by advances in construct validation methodology, the generalizability of self-concept findings will be severely limited, and data on students' self-concepts will continue to be ambiguous."

Intuitively, self-concept could be considered as our attempt to build a scheme (in Piaget's terms) to explain ourselves to ourselves. A scheme that organizes our impressions, feelings and attitudes about ourselves. However, this intuitive definition is not very helpful for scientific research. To this end Shavelson and his colleagues have supplied a model of the organization of self-concept for individuals in the school years.

The Shavelson model divides general self-concept. Academic self-concept consists of four sub-areas:

1. English
2. History
3. Math
4. Science

Non-Academic self-concept is further divided into three areas, each of which consists of one or two sub-areas:

Social Self-Concept: 1. peers 2. significant others
 Emotional Self-Concept: 1. particular emotional states
 Physical Self-Concept: 1. physical ability 2. physical appearance

These facets of self-concept form a hierarchy from individual experiences at the bottom to general self-concept at the top. Although general self-concept is stable, the lower areas of the self-concept hierarchy vary greatly with variation in situations. As children grow older, their self-concept differentiates into the hierarchical structure, starting from a global, undifferentiated, and situation-specific view.

If we also admit that the individual evaluates himself in given situations, the terms self-concept and self-esteem can be used interchangeably.

On the basis of their own empirical investigations and a critical review of existing self-concept research, Byrne and Shavelson (4, 475) have recently concluded that:

- "(a) SC is multidimensional, having facets that are distinguishable from each other and that become increasingly independent with age;
- (b) SC is hierarchically organized, although the nature of this hierarchy has been debated in the literature;
- (c) the hierarchical structure of SC weakens with increasing age; and
- (d) SC is distinguishable from academic grades. "

Given the above, a teacher's concerns with self-concept become how self-concept affects a student's behavior in school and how life in school affects a student's self-concept in relation to these features. By guarding against a loss of self-esteem, the teacher can prevent the establishment of a negative identity and alienation from self.

Considering the importance of the construct validity of self-concept, an examination of the procedures involved to establish such validity is warranted. Self-concept is a hypothetical construct. Validation requires the examination of construct definition, instrument development and data collection.

Five commonly used self-concept instruments are:

- a) the Michigan State Self-Concept of Ability Scale
- b) the Self-Esteem Inventory
- c) the How I See Myself Scale
- d) the Piers-Harris Children's Self-Concept Scale, and
- e) the Self-Concept Inventory.

Recently, Marsh and O'Neill (14) have introduced a new instrument called the Self Description Questionnaire III (SDQIII), for the measurement of self-concept along multiple dimensions similar to that proposed by Shavelson, et al.

Examples of SDQIII items are (14, 168-172):

1. I find mathematical problems interesting and challenging,
2. I have a poor vocabulary,
3. I like most academic subjects,
4. I am anxious much of the time,
5. I like my parents.

The responses of students to these questionnaires are tabulated and then related to the self-concept construct by various statistical methods. Three correlational methods frequently used are factor analysis, the multitrait - multimethod matrix and path analysis.

Factor analysis arranges a matrix of correlations into clusters among test items. Test items that measure "mathematics self-concept" should converge together, separately from test items that measure say, "verbal self-concept". Marsh and O'Neill's factor analysis of 296, 11th grade Australian girls responses to the SDQIII, delineated 13 self-concept areas.

These areas were Mathematics (Math), Verbal (Verb), Academic (Acad), Problem Solving/Creativity (Prob), Physical Abilities/Sports (Phys), Physical Appearance (Appr), Relations With Same Sex Peers (SSPr), Relations With Opposite Sex Peers (OSPr), Relations with Parents (Prnt), Religion/Spirituality (Sprt), Honesty/Reliability (Hust), Emotional Stability/Security (Emot), and General Self-Concept (Gen).

The above factors fit the structure of the Shavelson model remarkably well. However, general-self factor is not substantially correlated with other factors, suggesting that no strong hierarchical structure underlies the 13 SDQIII factors.

These same students, after completing the SDQIII tests, provided summary descriptions of themselves based on the first 12 of the SDQIII factors listed above.

Another statistical technique, the multitrait - multimethod matrix, can be used to compare correlations among factors, measured by different methods. Validity of the self-concept construct is represented in the agreement between two methods to measure the same factors through different methods. Correlations between the 12 self-concept factors obtained via factor analysis and the 12 summary descriptions are displayed in Table 3.1, (14, 161).

Table 3.1

Multitrait - Multimethod Matrix of Correlations Between Self-Concepts and Self-Descriptions

		<u>Self - Concepts</u>											
		Math	Verb	Acad	Prob	Phys	Appr	Ssex	Osex	Prnt	Sprt	Hust	Emot
S e l f D e s c r i P t i o n s	Math	76	05	24	16	04	04	04	-07	02	-01	-06	00
	Verb	06	47	25	46	03	19	25	12	05	08	01	06
	Acad	29	39	51	32	-02	14	08	60	10	-03	04	-01
	Prob	67	29	21	57	01	00	16	21	04	11	-01	02
	Phys	06	-05	-07	07	79	09	22	12	07	00	02	11
	Appr	04	08	07	09	03	65	21	28	05	-01	-09	07
	Ssex	-01	15	17	16	05	08	46	14	08	07	-05	06
	Osex	-06	08	-07	24	19	19	37	76	-05	-12	-10	18
	Prnt	02	06	19	08	04	17	10	01	73	17	17	09
	Sprt	14	00	27	15	00	03	-05	-10	17	73	01	06
	Hust	19	09	18	17	09	08	12	-01	17	13	33	02
	Emot	05	06	05	18	11	09	24	13	20	22	06	47

Note: Correlations (presented without decimal points) greater than .12 are statistically significant. The diagonal elements are convergence or validity coefficients.

The diagonal validity coefficients of Table 3.1, are substantially in excess of the amount needed for them to be statistically significant. The factor analysis method and the multitrait - multimethod matrix method as used above are sometimes called within-network studies and can be said to have identified a theoretical, consistent and distinguishable set of facets of self-concept.

When self-concept factors are correlated with external criteria, such empirical investigations are called between-network studies. Marsh and O'Neill demonstrate that mathematics achievement is substantially correlated with Math self-concepts, less highly correlated with other academic self-concepts and uncorrelated with nonacademic factors. Similarly, language achievement is most highly correlated with Verbal self-concept, less correlated with other academic self-concepts and uncorrelated with self-concepts in nonacademic areas. Student perceptions of the extent to which parents are pleased with and interested in their school work correlate with both the parent and academic scales. Because of the obvious importance of these correlations for influencing students' self-perceptions and perhaps academic achievement and intent, Table 3.2, replicates part of that of Marsh and O'Neill (14, 163).

Table 3.2

CRITERION MEASURES	Coefficients of Correlation Among Self-concept Scales and Other Criteria												
	Self-Concept Scales												
	Math	Verb	Acad	Prob	Phys	Appr	Ssex	Osex	Prnt	Relg	Hnat	Emot	Goal
School Certificate Scores In:													
Mathematics	58*	11	27*	03	02	05	-04	-08	-08	00	-08	08	02
English	19*	42*	24*	17*	-11	02	-01	-03	-12	00	-09	06	06
Self Report Criterion (paraphrased)													
Have been happy at home this year	06	12	19*	02	00	08	03	-06	61*	14	19*	18*	20*
Parents pleased with my school work	08	12	34*	05	07	08	03	07	26*	07	14	06	14
Parents interested in my school work	05	16*	31*	09	05	04	08	02	46*	14	12	02	07
Parents expect me to be able student	16*	00	07	-03	-07	-05	02	-12	00	00	00	01	04
Parents expect me to be better student than I am	-10	-03	-18*	-02	-06	-13	-06	-03	-24*	-02	-05	-05	-04
Parents want me to go on to higher education	12	13	16*	01	-10	-03	-07	-07	00	09	-05	-08	02
I plan to go on to higher education	18*	09	31*	12	01	04	02	-10	14	12	-05	18*	15*
I generally work to my utmost ability in school	16*	10	38*	05	-01	-01	-04	-11	14	17*	14	-07	03
I have enjoyed science classes this year	23*	15*	23*	16*	07	07	01	-03	03	08	-02	15*	17*
I have enjoyed English classes this year	21*	20*	14	11	-03	02	02	01	20*	08	16*	-02	05
I have enjoyed history classes this year	-06	15*	29*	03	-06	-02	03	-14	24*	05	17*	00	07
I have enjoyed religion classes this year	07	-10	07	-03	05	-14	-18*	-18*	09	36*	09	-09	-06
I have enjoyed school this year	12	06	25*	09	06	02	-07	-03	22*	15*	06	09	17*

* p < .01

Notes: The correlation coefficients are presented without decimal points.

The academic scale is highly correlated with plans to go to higher education; self-concepts in the academic areas and in the area of relations with parents, are highly correlated with enjoyment in different academic classes.

While of utmost importance, the factor analytic techniques do not establish causality. Does a change in self-concept cause changes in achievement? Or is the causality just the reverse? Shavelson and Bolus (23, 7) after reviewing theory and empirical work up to 1982, concluded that "(n)either theory nor past research permits us to formulate a hypothesis about the direction of causality". This confirms Schierer and Kraut's (21), evaluation of educational programs that have attempted to change self-concept. The programs designed to change achievement by improving self-concept were not successful.

According to Shavelson and Bolus, to test for causality, a theoretical model of the causal dominance of self-concept or achievement must be formulated. They used crosslagged models to examine simultaneously the following competing causal explanations.

- a) achievement (grades) at Time 1 causes changes in self-concept at Time 2;
- b) self-concept at Time 1 causes changes in grades at Time 2;
- c) subject matter self-concept at Time 1 causes changes in academic self-concept or general self-concept.

Their results pointed to the causal predominance of self-concept over achievement.

However, in an attempt to replicate the Shavelson and Bolus study, Byrne (3) could not establish the causal predominance between self-concept and academic achievement. Given the important of self-concept in education, much more work needs to be done on the matter of causality.

4. Gifted: Construct Validity

Giftedness is not easily measured. Educational Psychologists tend to distinguish between the academically gifted and "creative/productive" gifted. Academically gifted students have high I.Q. and learn lessons easily and quickly. Creatively gifted students do well in the solution of problems that require the application of information in new and effective ways. Truly gifted children produce work that is potentially of lasting importance. While scores on creativity and I.Q. tests are positively related, some students with high I.Q. do not score highly on creativity tests, (26, 494).

It is not the objective to examine the many definitions and ways of measuring intelligence. The concluding section will examine evidence of the distinction between creative potential and its actualization. Rather, in this section, we shall sift through recent research that relates to the construct validity of labelling a group of students as "gifted".

A popular and widely used test of achievement is the Stanford Achievement Test (SAT). If the results of SAT, (or other similar group tests) are used to stream students into a gifted program, (or to identify potential problems), educators should be concerned with the construct validity of SAT. Watkins and Wiebe (25) report their factor analytic investigation of the SAT with a group of 339 first grade pupils chosen from a suburban school district in the North Texas area. Using procedures similar to the factor method described in the previous section, only one factor emerged. The SAT consists of eight subtests: Vocabulary, Reading A, Reading B, Word Study Skills, Mathematics Concepts, Mathematics Computation and Application, Listening Comprehension and Spelling. Since only one factor was determined via factor analysis, the construct validity of the SAT from first grade students must be questioned. Since some educators identify gifted students as early as grade one, these results are important for educators in the adolescent area. Watkins and Wiebe conclude that at best, SAT

could be measuring a general fluency or comprehension test factor at this grade level.

A popular method of establishing creative potential is with divergent thinking tests. Do these tests exhibit construct validity? Runco and Albert (20) evaluated the reliability and convergent validity of originality of several types of DT tests of gifted and nongifted children. Their subjects were 240 students enrolled in grades 5 to 8 aged 10 to 14. These students had been divided into three groups consisting of 97 "gifted", 53 "talented" and 90 "nongifted" children. The first two groups had been formed on the basis of their scores on the Teacher Indicator of Potential test (16), with the gifted students also having I.Q. above 130. The divergent tests (DT) were scored on the basis of three indices:

- a) fluency - number of distinct ideas
- b) unusual - infrequency of other students who gave similar responses
- c) unique - response just given by one individual.

The 240 students were divided into two equal groups on the basis of their scores on the California Achievement Test (CAT). Each group was subdivided further into groups on the basis of each student's total unusual-original score on five DT tests. Four groups emerged: high achievement - high originality; high achievement - low originality; low achievement - high originality; and low achievement - low originality. All students were given two additional creative tests, TESC - Teacher's Evaluation of Student's Creativity(8) and CAL - Creative Activities Checklist (18).

The means and standard deviations for each measure and each group are displayed in Table 4.1. Entries of Table 4.1, suggest that the High-High group was more reliably original than the Low-High group and that the High-Low group was more reliably original than the Low-Low group.¹ This refutes the "threshold hypothesis" of intelligence which posits that creativity and intelligence are independent only at upper levels of intelligence. (20, 440)

Table 4.1

Means and Standard Deviations (in Parentheses) for Each Group and Each Measure.

Measure	Low-Low	Low-High	High-Low	High-High	Total
Fluency	23(5.3)	42(12.7)	29(8.2)	61(20.0)	38(19)
Unusual	13(3.7)	33(13.2)	17(6.9)	63(39.3)	31(28)
Unique	1(0.8)	4(2.3)	2(1.3)	11(9.9)	5(6)
CAT	-.82(.45)	-.64(.40)	.65(.45)	.84(.61)	0.0(1.0)
CAL	1.79(.39)	1.86(.35)	1.96(.33)	1.97(.30)	1.92(.87)
TESC	4.24(.87)	4.59(1.02)	4.33(1.33)	4.69(1.47)	4.44(1.24)
Math %	67(22)	74(18)	90(11)	93(9)	81(19)
Language %	67(16)	66(17)	82(17)	85(14)	75(18)
Reading %	67(16)	70(17)	83(12)	85(14)	77(17)
	n=56	n=57	n=56	n=56	n=225

Further statistical tests of these data led Runco and Albert to draw the following conclusions (20,483):

"in the nongifted population, ideational "originality" and "flexibility" were seriously confounded by ideational "fluency", and hence were not reliable indices of divergent thinking.

. . . the divergent thinking interitem and interest correlations of the gifted children were significantly larger than those of the nongifted children. Still, ideational originality was adequately reliable after fluency was controlled only in the figural (nonverbal) divergent thinking tests." 2

The results of Runco and Albert (20) do demonstrate that ideational originality is determined to a large extent by the cognitive ability of the subjects involved.

On creativity tests, originality can be thought of as the number of unusual or unique ideas. Flexibility is defined as the number of categories or themes in the responses. In his review of the literature, Runco (19) concluded that the case against the discriminant validity of fluency, originality and flexibility is quite strong, based on research of the divergent thinking of non-gifted individuals. Table 4.1 demonstrates that the ideation of gifted individuals differs both quantitatively and qualitatively from that of

nongifted individuals. They generate more ideas and have more reliable divergent thinking scores.

Perhaps gifted individual's fluency, originality and flexibility scores have more discriminant validity than nongifted. Runco tested this hypothesis with 97 gifted children, I.Q. with a range of 130 to 165, from an intermediate school in Southern California. Each facet of divergent thinking, fluency, originality and flexibility was tested using two tests based on verbal stimuli and two tests based on figural stimuli.

The divergent thinking indices again lacked discriminative validity. However, verbal and figural tests were clearly distinct, consistent with Guilford's theory that verbal and figural stimuli represent different informational contents.

As presently operationalized, originality and flexibility are not useful indices of creativity as measured by divergent thinking. However, divergent thinking tests are indicators of creativity, albeit fluency alone is presently the only variable that does the predicting.

To screen students to determine the gifted should be done by tests that are based on a sound theoretical foundation. The structure-of-intellect theoretical model of J. P. Guilford is based on research findings from genetics, neurology, the biological sciences and experimental psychology. This research indicates three "faces of intellect": mental operations, types of content and different products.

The Structure of Intellect Learning Abilities (SOI-LA) test (15) is widely used by American school districts to screen the gifted. Subtests of the SOI-LA are based on the three dimensions of the Guilford model: operations - cognition, memory, evaluation, convergent production, and divergent production; content - figural, symbolic and semantic; products - units, classes, relations, systems, transformations and implications. Presently the SOI-LA subtests measure 26, 3-way combinations (e.g. divergent production of figural units, divergent production of semantic units).

Again the situation is characterized by a lack of construct validity investigations, particularly in the adolescent age group. Roid (17) used multiple - group confirmatory factor analysis of 26 subtests of the SOI-LA taken by a group of second grade students. Evidently the content dimension exhibited construct validity, with all three components - figural, symbolic, and semantic being confirmed. Here again the figural component tended to predominate.

The debate on identifying the gifted is far from being resolved. Much more work needs to be done, particularly based on Guilford's three dimensional model.

5. Summary

Objectives of education are to develop positive self-concepts and to increase "gifted behavior". To ensure that these goals are being met by educational activities necessitates that self-concept and gifted measurement techniques exhibit construct validity. The evidence relating self-concept to "gifted behavior" is somewhat contradictory. Most gifted students might well have self-concepts as high or higher than general students. Highly mathematical students reveal themselves as more popular than highly verbal students. Self-concept and "gifted" construct validity must be established if programs to change achievement by improving self-concept are to be developed and evaluated.

The Shavelson model of section 3, appears to exhibit construct validity. Multitrait - multimethod matrix techniques indicate the 12 factors of the model are measured consistently. While not settled, the evidence suggests that probably the line of causality goes from self-concept to academic achievement.

Divergent thinking tests based on the Guilford model appear to be the most successful indicators of creativity. However, all divergent thinking tests examined in section 4 boil down to one variable, fluency, as originality and flexibility are confounded with fluency. Recent evidence refutes the "threshold hypothesis" as creativity and intelligence are positively correlated.

The concluding section supplies evidence that academic achievement is a good predictor for nonacademic achievement. Gifted programs did not rank very high in relation to other programs for one Junior High School examined.

6. Conclusions

Measuring self-concept and giftedness is a problematic task. Admirable objectives of education are to develop positive self-concepts and to increase "gifted behavior" at all ability levels. While each objective is desirable as an independent objective, if "gifted behaviour" is enhanced by improved self-concept, promoting self-concept becomes a critical goal of education. Even if self-concept just limits "gifted behavior", as indicated by the correlation studies above, it's importance in education cannot be denied.

Does "measured gifted behavior" in children and adolescents translate into creative performances outside of school and in the 'real world' in later life? A detailed examination of the concurrent and predictive validity of creativity as measured by divergent thinking tests is beyond the scope of this research paper. Various authors, E. P. Torrance (24), Kogan and Pankove (12) and Howieson have addressed this question. Torrance himself found that results on creativity tests during high school, did predict creative achievement in adult life. Kogan and Pankove found that intellectual aptitude (I.Q.) measures were a better predictor of nonacademic achievement than divergent thinking productivity. Howieson's attempt (10, 132) to reconcile these differences led him to substantiate the belief that "as 'creatives' progress through the school system, their powers of divergent thinking move closer to the norm." Further, that "it would appear from the present data that selective procedures from special programs on the basis of the early test batteries should be approached with caution".

This paper has stressed the construct validity of both self-concept and giftedness. If these concepts are used in educational programs, if these concepts are used to predict effects in adult life, the first step is to ensure that researchers and educators are all talking about the same thing. Construct validity means that the explanatory constructs in an agreed upon psychological or other theory (here self-concept and creativity) are actually being measured and worked with in the establishment and operation of educational programs.

The evidence from sections 3 and 4 indicates that much more work needs to be done on the construct validity of self-concept and giftedness. When precise definitions for self-concept and giftedness are established, that are acceptable to a majority of educational researchers, a better understanding of the self-concept of the gifted and the predictors of non-academic creative behavior should obtain.

Self-concept is often defined as an individual's perception of self. Psychologists, sociologists and other social scientists have devoted much time and effort theorizing about self-concept and relating it to other constructs. Since it is not just used by one discipline, establishing rigor is more difficult, albeit more important to promote transfer of knowledge across disciplines.

The research reviewed in section 2 above indicates more resources could be diverted to improving the self-concept of gifted children. While gifted students have more opportunities than others, greater demands are placed on the academically gifted. If these excessive demands occur at the formation stage of self-concept, negative effects can persist throughout the individual's life.

These days, the trend is to supply more gifted programs in the schools. Can gifted programs be operated in the schools so that general students, teachers and parents have a positive attitude toward bright students. Colangelo and Kelly (5) have devised a simple procedure to help measure people's perceptions of various activities at school; basketball, choirs, newspapers, football, gifted program, track etc. They report that for one junior high school the gifted program was viewed on par with other academically-oriented programs, but the academic program lagged behind other programs in perception of importance. Gifted students want to participate in special programs. Attitudes should be developed that encourage peer acceptance of gifted students and parental acceptance of students having the opportunity to participate in such programs.

In British Columbia the Teacher's Federation produces the Journal of the Association of Educators of Gifted, Talented and Creative Children in British Columbia. Along with other material, they present information on the methods of instruction for the gifted. Some rigorous testing of the relationship between self-concept and the gifted in the British Columbia educational environment would certainly be welcome.

F O O T N O T E S

- 1 More reliably original because their mean scores on the unusual and unique indices are significantly greater. When the DT indices and the CAT were correlated, they were highly correlated in the High-High group and unrelated in the Low-Low group.
- 2 The first part of these conclusions bear with those of Hocevar (9) who found that the reliability and convergent validity of the originality scores were a function of individual differences in ideational fluency rather than originality.

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