Research

A Comparison of the Concept of Overexcitabilities with Measures of Creativity and School Achievement in Sixth-Grade Students

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This was an investigation of 12 gifted and 12 randomly selected sixth-grade students to determine the relationships between levels of overexcitability and scores on the Torrance Tests of Creative Thinking and the California Achievement Test. Responses to the Overexcitability Questionnaire were compared to the Torrance Tests of Creative Thinking Verbal and Figural subtests via a Pearson r correlation and a Mann-Whitney test of significance.

Subjects who scored in the top third on the Verbal subtest of the Torrance Tests of Creative Thinking had significantly higher Imaginational Overexcitability scores than those who scored in the lower third, whereas those whose scores were in the top third on the Figural subtest had significantly higher Psychomotor Overexcitability scores.

Picture, if you will, the following scene: four educators are asked to use their individual criteria to select one person who would qualify as their prototype of a "gifted individual." Each responds with one of the following persons: Pablo Picasso, Bill Bradley, Albert Einstein, and Eleanor Roosevelt. Hardly a cohesive group! Sadly enough, if the criteria of only one of the experts had been used to select for actual programming, three of these extremely gifted persons would have been excluded — and whom would you have left out?

Although the reasons why there is such diversity in the concept of giftedness are many, one of the most important is that the procedures used to identify various dimensions of giftedness do not spring from one cohesive framework. There is, however, a theory of human development which states that the overt characteristics of intelligence, sensitivity, and creative ability may be the indicators of a deeper structural organization. The Theory of Positive Disintegration (TDP), developed by Dabrowski (1964), establishes five areas of human development which, in various combinations, could be representative of an innate potential for a higher level of development. The innate tendency for "psychic overexcitability," or the ability to take in and process larger than usual amounts of stimuli from the environment, may be expressed in any or all of five areas: Psychomotor, Sensual, Imaginational, Intellectual, and Emotional. Thus, intelligence and creativity may be separate but equal avenues of expressing potential. These Overexcitabilities (OEs) work in combination with the environment and the individual's drive to excel to form what we recognize as a gifted person.

Not all OEs are apparent to the same degree in one person, and it is the degree of intensity of the different OEs which could be used as an indicator of giftedness. In the attempt to discover whether or not this is the case, a questionnaire has been developed which is designed to elicit indicators of OEs in the respondents. This Overexcitability Questionnaire (OEQ) has been used in studies comparing adult gifted persons and persons with normal intelligence on measure of IQ and exhibited OEs. Results indicated that Intellectual and Emotional OEs are higher in gifted adults than in a random sample of graduate students (Silverman & Ellisworth, 1980). Piechowski and Colangelo (1984) reported data concerning the use of the OEQ to measure developmental potential in gifted adolescents. In this study, 49 gifted adolescents, aged 12-17, were asked to complete the OEQ. The scores on these protocols were compared with the scores of gifted adults, average adults, and adult artists. Some of the results included the following: (a) gifted adolescents had lower scores than gifted adults on Sensual and Intellectual OEs, but made equivalent scores on Imaginational and Emotional OEs; (b) gifted adolescents scored lower than normal adults on Sensual OE; (c) gifted adolescents scored higher than normal adults on Intellectual and Emotional OEs; and (d) gifted adolescents scored significantly higher than normal adults on Imaginational OE. These results led the authors to conclude that there is a relationship between intellectual giftedness: Emotional, Intellectual, and Imaginational (Piechowski and Colangelo, 1984).

A recent development in the attempt to measure indicators of OE in children is the use of an oral questionnaire, developed by Piechowski on a grant from the Spencer Foundation. This interview consists of using verbal
The students of the school were members of the school's program for gifted students (GATE) and half were selected at random from the regular school program. Qualification for the GATE program included teacher and parent evaluation based on a modified version of the California Behavioral Characteristics of Superior Students Inventory (Shinn, Smallman, & Hartman, 1971). A high academic record, average performance on the California Achievement Test (CAT), and a high score on the OES (Oral and Expressive Communication Test) Mental Ability, All of the subjects were younger middle-class or upper-middle-class households. The students were either 11 or 12 years old. There were five males and seven females in the gifted group and four males and eight females in the random sample. All of the subjects in both samples were Caucasian, with the exception of one Oriental-American in the gifted sample. Of the subjects in the random sample, two had been identified to participate in the GATE program but chose not to participate.

Instruments

Torrance tests of creative thinking (TCT). Two parts of the TCT were used in the study. Verbal (Form A) and Figural (Form A). The Verbal subtest of creativity was the number of ideas, the study and revealed that the "High Creative group showed higher on all factors: original, Emotional, and Intellectual than the Low Creative group" (p. 152). However, as yet has been completed for comparing the levels of GATE and OES in girls and gifted children as opposed to gifted adult students. Most of the other studies conducted to date have used subjects selected on the basis of intellectual giftedness rather than creativity or other indices of giftedness. Unfortu-nately these alternatives are investigated, it will be determined whether or not the questionnaire can be used as an identifier of "giftedness" in the population of intellectual giftedness alone.

The focus of the present study was to determine if there was a significant difference in observable GEs between the following groups: (a) High Verbal Creative and Low Verbal creative sixth-grade students, (b) High Verbal Creative and Low Figural Creative sixth grade students, (c) Superior Verbal raw scores on the CAT subtests (reading, grammar, and mathematics); (d) sixth graders identified as gifted and a random sample of sixth-grade subjects.

Other topics investigated included which of the GE scores was associated with low group differences in the specific research areas, and the effect of the subjects' sex on his/her GE profile.

Method

Subjects

The subjects for this study were 26 sixth-grade students in a suburban middle school in an upper-middle-class neighborhood. Twelve

A Pearson Product Moment correlation coefficient was computed comparing the CAT total scores, verbal, and figural, with the levels of the indicated in each of the five subtests, and GAT scores and OES (r = .21). Figural subtests and GAT scores (r = .31), and Figural subtests and OES (r = .21). All other correlations approached zero.

An arbitrary break in the verbal and figural TCT scores was selected to designate High and Low Creative groups. The High Creative group had scores represented the High Creative group, and the bottom third the Low Creative group. A Mann-Whitney test performed between the high and low verbal subtest scores revealed a significance of high scores in the High Creative group as compared to the Low Creative group (p < .05) or high and low Figural subtest scores were found, significant differences were found in the level of short-term memory of the High Creative group compared to the Low Creative group. Other differences between the two groups were not significant.

A Mann-Whitney analysis of the high (statistic 6-9) and low (statistic 5-6) scores of each of the CAT subtests yielded the following results:

1. Reading subtest — High scores were significantly higher in Intellectual GE than low scores (p < .02). No other significant differences were found.

2. Grammar subtest — High and low scores on the grammatical subtest were significantly different on measures of indicated Intellectual GE (p < .05). No other mode of GE were significantly different between the two groups.
Table 1. Mean Overachievability Scores of Students Scoring High on Low Measures of Creativity and School Achievement

<table>
<thead>
<tr>
<th></th>
<th>Verbal</th>
<th>Figural</th>
<th>Math</th>
<th>Reading</th>
<th>Grammar</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>H</td>
<td>L</td>
<td>H</td>
<td>L</td>
<td>H</td>
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<tr>
<td>P</td>
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<tr>
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<td>7.40</td>
<td>8.13</td>
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</tr>
<tr>
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<td>11.90</td>
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<td>10.80</td>
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<td>11.88</td>
<td>13.75</td>
<td>7.85</td>
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</table>

* Significant at .05

Since the selection for the GATE program was based on intellectual ability, the significant differences in Intellectual OE between the gifted and random groups is understandable, but the interfaculty identifiers would not account for the large differences between the groups on Imagination and Emotional OE. Again, it seems that emotional sensitivity may walk hand in hand with superior intellectual capacity.

The limited sample size of the study demands that it be replicated to substantiate the current results. However, the replacement profile provides potential verification of the significant differences found here. It also could clear up the true direction of the differences which came tantalizingly near significance (See Table 1). This is especially true of the difference between high and low scorers on the CAT Mathematics subtest on the measure of Emotional OE (p .06), and the difference between Low Verbal Creative subjects and High Verbal Creative subjects on Intellectual OE (p .02). Each of these statistics, whether or not they should prove significant in larger populations, would add a new perspective on our understanding of creativity, particularly that associated with mathematic and creative ability.

The current findings do give further support to the notion that giftedness exists as an identifier of giftedness in children. Not only is there an indicated relationship between giftedness and level of certain OEs, the OEQ could provide previously unavailable data on each child's strengths and weaknesses.

Table 2. Mean Overachievability Scores of a Random Sample of Students and a Sample of Gifted Students

<table>
<thead>
<tr>
<th></th>
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<th>Gifted Sample</th>
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<tr>
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<td>11.58</td>
</tr>
<tr>
<td>E</td>
<td>8.33</td>
<td>15.41</td>
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* Significant at .05

Discussion

The lack of correlation between OE scores and the TTCT raises some questions about the nature of the different creativity tests. Why would the OEQ fail to correspond to the TTCT? The most probable answer is that while scores for the OEQ are based on behaviors which are dependent upon actual creative performance. Creative potential does not in itself guarantee the ability to create on command. Thus, one-to-one parallels between personality and creative potential are not possible.

The significant difference obtained by means of the TTCT auditory test between High and Low Creative subjects on the OEQ raises interesting results. The High Figural Creative subjects were consistently higher on measures of Psychomotor OEs. This result indicates that high levels of activity and energy, as well as intellectual aptitude, may be connected with giftedness.

Verbal Creative subjects were generally higher on measures of Imaginative OE, although this difference was present between the Figural Creative groups. This could indicate a bias on the part of the OEQ towards an emphasis on semantic representations, which may prove to be a limitation of the protocol, as those without good semantic ability may not perform as well on the questionnaire as those with high verbal aptitude.

Significant differences were found between high and low scorers on the CAT subtests. As the difference between high and low scorers on the Reading and Grammar subtests involves memory recall and the ability to use specific and detailed rules, it is natural that the subjects who were highly successful in these areas would have strong Intellectual OE. The high scoring subjects on the Math subtest were significantly higher in Intellectual OE, probably reflecting the highly intellectual process of solving mathematical equations. The level of Imaginative OE could be indicative of the visual/spatial relationships connected with mathematical ability, as well as the subjective quality of the subjects' intuitive thought.

The results found between the subjects identified as gifted and those in the random sample further support to the theory that giftedness is multidimensional, as significant differences we found along three modes of OE: Intellectual, Imaginative, and Emotional.

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