Is Overexcitability a Differential Personality Attribute of High-IQ Youth? A Comparison Study of Identified Gifted and Vocational High School Teenagers Using the Overexcitability Questionnaire (OEQ)

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A Comparison Study of Identified Gifted And Vocational High School Teenagers Using the Overexcitability Questionnaire (OEQ)

A Study Presented at the European Council for High Ability Conference Debrečen, Hungary August, 2000

by

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ABSTRACT
Recently in the field of the education of the gifted and talented, Dabrowski's concept of overexcitabilities have been spoken of. Five overexcitabilities are mentioned in the Dabrowski theory. These are sensual, psychomotor, imaginational, emotional, and intellectual. Overexcitabilities are only part of the theory of positive disintegration, (also called the theory of emotional development). Propounders of this theory have postulated that people with high IQs have greater tendencies to be high in the imaginational, emotional, and intellectual overexcitabilities, than people who do not have high IQs. A comparison study was done in Ohio, USA. A group of 52 adolescents identified as gifted by IQ scores who were attending a special summer institute was compared with a group of 52 adolescents who attended a vocational high school who were not identified as gifted and talented. The Overexcitabilities Questionnaire (OEQ) was administered to both groups. The OEQ is an open-ended questionnaire designed to elicit evidence of the presence of overexcitabilities. MANOVA analyses were performed. Results of the comparison study showed that the academically talented high school adolescents were significantly higher in intellectual overexcitability (OE). All females were higher in emotional overexcitability. No other differences between the two groups were present.
Introduction

The Overexcitability Questionnaire (OEQ) was developed by Michael Piechowski (1979) as a way of assessing the five forms of overexcitability (OE) in the Dabrowski theory of emotional development (Dabrowski, 1964; 1970; Dabrowski & Piechowski, 1977). These five overexcitabilities (OEs) are psychomotor, sensual, imaginative, intellectual, and emotional. Dabrowski thought that the OEs were innate and the presence of great intensity indicated greater developmental potential (Miller & Silverman, 1987; Piechowski, 1975).

Originally a 41 item open-ended questionnaire, the OEQ was refined and published as a 21 item questionnaire by Lysy and Piechowski (1983). A manual was developed (Falk & Piechowski, 1991; Falk, Piechowski, & Lind, 1994). The OEQ used in the present study consists of 22 open-ended questions (See Fig. 1) designed to elicit responses indicating the responder's relative intensities in each of the five OEs. Each question is scored on a range from 0 (no evidence) to 3 (high intensity) across all five OEs. Two trained raters score each questionnaire. Raters receive intensive training until their inter-reliability reaches above 90%.

Place Fig. 1 about here. "The Overexcitability Questionnaire"

Few studies have been done with the OEQ. In Piechowski and Cunningham (1985) the researchers studied 13 people interested in artistic pursuits in music, film, writing, and visual
arts, administering the OEQ. While this study was done before the scoring levels of intensity were developed, the artistically interested adults showed a marked intensity in imaginational OE, with emotional OE and intellectual OE similar to those high-IQ populations studied previously (Silverman & Ellsworth, 1981). Miller, Silverman, and Falk (1994) compared 45 high-IQ adults and 42 graduate students on both the OEQ and its companion instrument, the Definition Response Instrument (DRI) which measures levels of development in the hierarchy. Adults were found to have higher potential for emotional development, with women higher in emotional overexcitability and men higher in intellectual overexcitability. Piechowski and Miller (1995) made comparisons between interviews and written responses to the OEQ and the written responses were held to yield richer data. Ackerman (1993; 1998) studied 42 high-IQ adolescents and 37 comparison adolescents in Canada. These adolescents showed marked psychomotor OE, besides the expected intellectual OE and emotional OE.

Continuing studies are yielding information about specific groups with regards to the validity of the OEQ as a means of assessing intensity in the five areas. Studies of visual artists (Calic, 1994; Falk, Manzanero, & Miller, 1997; Manzanero, 1985; Piechowski, Silverman, & Falk, 1985) have shown that they have high imaginational OE scores. A study of Ohio visual arts, theater, and creative writing-talented adolescents found that they scored higher on imaginational overexcitability than did Canadian adolescents identified as gifted by high-IQ. (Piirto, Cassone, Ackerman, & Fraas, 1996). Gallagher (1986) found that sixth grade students who scored high on the Verbal subtests of the Torrance Test of Creative Thinking (TTCT) scored higher on the OEQ in imaginational OE and those who scored high on the Figural subtests of the TTCT scored higher on psychomotor OE.
Studies of high-IQ adults have shown that intellectual OE is dominant (Piechowski, Silverman, & Falk, 1985).

Schiever (1985) found that imaginalional, emotional, and intellectual OE differentiated between "High Creative" and "Low Creative" seventh and eighth grade students, who were determined to be creative by using the scores from the Something About Myself (SAM) portion of the Khatena Torrance Creative Perception Inventory.

Other studies used the questionnaire and the theory differently. Flint, Schottke, Willmore, and Piirto (1997) found that the OEQ can be used in a qualitative way. Reading 100 OEQs for themes in the lives of talented adolescents yielded five overarching themes: hypersensitivity, God, life in other forms, a love of performing, and a propensity to challenge themselves and others. Piirto (1998; 1999; 2000) performed qualitative interpretation of the OEQ as a means of getting to know how intense are the responses of gifted and talented youth and adults. Studies such as that by Tucker and Hafenstein (1997) apply the Piechowski descriptions of the OEs to observations of young children, but the questionnaire itself was not used, for obvious reasons. Bream (1996) studied interracial differences in elementary school children. Domroese (1994) studied whether it is efficacious to use the OEQ for identification. Other studies are in progress.

**Methods**

The present study was conducted with 104 adolescents, (High-IQ: 13 boys, 39 girls; Vocational: 26 boys, 26 girls). The high-IQ adolescents were identified gifted students according to the *Ohio Rule for School Foundation Units*. They were identified as gifted by virtue of scoring two standard deviations above the mean minus the standard error of measurement on an approved
group or individual IQ test. They represented 35 of 60 Ohio counties. The vocational students were from one county.

Each of the 104 adolescents who participated in this study received an overexcitability score for each of the following five constructs: (a) psychomotor, (b) sensual, (c) imaginative, (d) intellectual, and (e) emotional overexcitability. The questionnaires were scored by two trained coders independently rating each question for the presence of each overexcitability. The coders did not know which groups they were rating. A mathematical average of the two coders' ratings was derived. The possible scores ranged from 0 (no presence) to 3 (high presence).

A 2 X 2 MANOVA was conducted on the scores based upon Hair, Anderson, Tatham, and Black’s (1998) opinion “if the researcher desires to maintain control over the experimental error rate and there is at least some degree of intercorrelation among the dependent variables, then MANOVA is appropriate” (p. 339). Before analyzing the data, 4 outliers were identified which might impact the results. These were 3 high-IQ gifted males and one vocational high school female. According to Hair, et al (1998):

MANOVA (and ANOVA) are especially sensitive to outliers and their impact on the Type I error. The researcher is strongly encouraged first to examine the data for outliers and eliminate them from the analysis, if at all possible, because their impact will be disproportionate in the overall results. (p. 349)

Based upon our analysis, these four subjects were eliminated due to their impact on the results.

Therefore, the final analyzed sample consisted of 100 subjects (high-IQ gifted: 10 boys, 39 girls; vocational: 26 boys, 25 girls). Two separate MANOVAs were conducted based upon Stevens’ (1996) advice:
In a situation such as this (some difference should exist for some variables based on empirical and/or theoretical evidence) what is called for are two separate MANOVAs, one MANOVA for the variable for which there is solid support and a separate MANOVA for variables which are being tested on a heuristic basis" (p. 153).

As previously mentioned, Dabrowski and Piechowski (1977) contended that the intellectual,imaginational, and emotional overexcitabilities are closely linked. Therefore, we conducted one MANOVA consisting of those three dependent variables and the other MANOVA with psychomotor and sensual as the dependent variables.

**Results**

Table 1 displays the results of the multivariate tests that included the three dependent variables of intellectual, imaginaional and emotional overexcitabilities. For each of the statistical tests, alpha was set at .05. Our results suggest the interaction of classification (high-IQ gifted or vocational) and gender level is not significant, $F (3, 94) = .006, p = .999$, and the partial eta squared value is less than .001. Based on the nonsignificant $F$ value of the interaction effect, the statistical tests for the main effects were examined. With respect to gender, the results were significant, $F (3, 94) = 6.57$ and $p = .000$. Classification was also significant, $F (3, 94) = 4.24, p = .007$. The partial eta squared values for gender and classification are large at .17 and is medium for classification at .12.

Due to our interest in the three separate measurements of the significant main effects, the univariate tests of the main effects were conducted. To control for inflated Type I error rate, we adjusted the univariate test for the number of dependent variables included in the MANOVA. For the first MANOVA, which included three dependent variables, we divided the alpha level by
three. Thus, alpha was set at .017. Results are displayed in Table 2.

Our results indicate that the gifted adolescents scored statistically significantly higher than the vocational adolescents in intellectual overexcitability \((p = .005)\). In addition, females scored statistically significantly higher than males in emotional overexcitability \((p = .005)\). This is consistent with findings of previous studies of gifted and nongifted adults in both the intellectual and emotional results.

The second MANOVA, which included the psychomotor and sensual overexcitabilities as the dependent variables, was conducted. The results are displayed in Table 3. As we theorized, there was no significant interaction nor main effect indicated by our results: interaction of classification and gender \(F (2, 95) = .047, p = .954\); gender \(F (2, 95) = .691, p = .504\); classification \(F (2, 95) = .091, p = .914\). Thus no follow-up univariate tests were conducted.

**Discussion**

In comparing these results with those of the few other empirical studies that have been conducted using the Overexcitability Questionnaire, the presence of intellectual OE among high-IQ gifted people seems to be confirmed. This appears to be a foregone conclusion since identification in Ohio is based upon IQ test results. The constant presence of intellectual OE in correlational studies comparing identified high-IQ gifted students with other students may have curricular implications; that is, the curricula for high-IQ gifted students should be based on intellectual differences they display. Though this is a common assertion, often high-IQ gifted students receive the same curriculum as all students do, even though they display the intellectual ability to do abstract thinking at a higher level than other students (Piirto, 1999).
Based upon our results, we do not advocate the use of the Overexcitability Questionnaire as an instrument for the identification of the gifted, as reliable and valid IQ tests and achievement tests already exist and they identify intellectual ability in mainstream middle-class children. The OEQ has been explored as a means of alternative assessment and as a vehicle for identifying students who are creative (Ackerman, 1995; 1998; 1999; Piirto, Cassone, & Fraas, 1996). The time-intensiveness and expense required to code the responses and the lack of a large database of studies suggest that the OEQ is experimental, and not valid for such use. A new instrument, the OEQ II, is in development. This is a Likert-style instrument that shows promise (Falk, Piechowski, & Piirto, 2000).

The OEQ may, however, be employed as an observational tool to explore the areas of developmental potential of students (Flint, Schottke, Willmore, & Piirto, 1997; Piirto, 1998; Piirto, 2002). Responses are often colorful, vivid, and indicative of passion and intensity. People who write well might find the OEQ an instrument much to their liking. For example, one high-IQ adolescent, in answering the question, “How often do you carry on arguments in your head?” said:

We [sic] never argue inside my head. Well...... almost never. A few times we have argued about why we never arguments, and once all five of us argued about how there were really ten of us, but that was over as soon as the other twenty of us showed up. Oh, and just yesterday we had an argument about what a smartass I am, but obviously I won, because I am still one as I write this answer.

The informal assertion heard in conversation among experts on the gifted and talented, and on list-serves on the internet, that high-IQ gifted people display higher overexcitabilities or intensity in all five areas—sensual, psychomotor, imaginative, emotional, and intellectual—was
not upheld by this study. Vocational high school students also displayed such intensities.

A vocational student studying horticulture may display a high level of sensual overexcitability when discussing the feel of the soil or the combination of smells experienced during a walk through the greenhouse while a high-IQ gifted student may not display such an overexcitability at all. While many of the high-IQ gifted adolescents in our study did display intensity in more than one overexcitability, only one teenage boy scored high (a score of 3) in three of the five overexcitabilities. However, as one of the four outliers, he was eliminated from the overall analysis. (See Charts 1 through 5 for profiles of total scores by OE.)

The cases of the outliers are interesting. When included in the analysis, the three male high-IQ outliers did indeed impact the results for imaginative OE. A difference in imaginative OE would have occurred if they were in the analysis. This may or not be due to small sample size. The female vocational outlier, when left in the analysis, did not impact the results for emotional OE to a significant degree. We believe this is due to the larger group of females in the study. In Ohio, 3 out of 4 summer institute attenders are female.

While we admit that the sample size for males is small, we are nevertheless intrigued by these male outliers. These individuals are so far beyond the mean, or what one might call the "average high-IQ student," that further study of these particular boys is of interest. What makes their imaginative OE responses so different from the rest of the group? With a larger sample size of males from across the state, will we find more of these high scorers in imaginative overexcitability, thus increasing the mean and decreasing the concept of the outlier? Or will we discover some new correlation between high-IQ giftedness and imaginative overexcitability in boys? It warrants further study.
References


Table 1

Multivariate Tests - Imaginational, Intellectual, Emotional

(Wilks’ Lambda)

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<th>Variable</th>
<th>F (3, 94)</th>
<th>p</th>
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<td>Subject * Gender</td>
<td>.006</td>
<td>.999</td>
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<tr>
<td>Gender</td>
<td>6.57</td>
<td>.000 *</td>
</tr>
<tr>
<td>Subject</td>
<td>4.24</td>
<td>.007 *</td>
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Table 2

Univariate Tests

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<th>Imaginational</th>
<th>Intellectual</th>
<th>Emotional</th>
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<tbody>
<tr>
<td>Subject * Gender</td>
<td>.894</td>
<td>.937</td>
<td>.964</td>
</tr>
<tr>
<td>Gender</td>
<td>.272</td>
<td>.107</td>
<td>.005 *</td>
</tr>
<tr>
<td>Subject</td>
<td>.405</td>
<td>.005 *</td>
<td>.565</td>
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### Table 3

Multivariate Tests - Psychomotor, Sensual

(Wilks' Lambda)

<table>
<thead>
<tr>
<th>Variable</th>
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</tr>
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<tbody>
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<td>Subject * Gender</td>
<td>.047</td>
<td>.954</td>
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<td>Gender</td>
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<tr>
<td>Subject</td>
<td>.091</td>
<td>.914</td>
</tr>
</tbody>
</table>
Chart 1: Emotional OE

Chart 2: Imaginational OE

Chart 3: Psychomotor OE

Chart 4: Sensual OE
Chart 5: Intellectual OE