

- Jessup, L. M., & Valacich, J. S. (1993). (Eds.) *Group support systems*. New York: MacMillan.
- Johnson, D. W., Johnson, R. T. (1991). *Learning together and alone: Cooperative, competitive, and individualistic learning*. Englewood Cliffs, NJ: Prentice Hall.
- Johnson, D. W., & Johnson, R. T. (1992). What to say to advocates for the gifted. *Educational Leadership*, 50, 44-47.
- Kanekar, S., & Rosenbaum, M. E. (1972). Group performance on a multiple-solution task as a function of available time. *Psychonomic Science*, 27, 331-332.
- Karau, S. J., & Williams, K. D. (1993). Social loafing: A meta-analytic review and theoretical integration. *Journal of Personality and Social Psychology*, 65, 681-706.
- Kulik, J. A., & Kulik, C. C. (1992). Meta-analytic findings on grouping programs. *Gifted Child Quarterly*, 36, 73-77.
- Larey, T. S. (1994). *Convergent and divergent thinking, group composition, and creativity in brainstorming groups*. Unpublished Doctoral Dissertation. University of Texas at Arlington.
- Leggett, K. L., Putman, V. L., Roland, E. J., & Paulus, P. B. (1996). *The effects of training on performance in group brainstorming*. Presented at the Southwestern Psychological Association, Houston.
- Maznevski, M. L. (1994). Understanding our differences: Performance in decision-making groups with diverse members. *Human Relations*, 47, 531-552.
- Matthews, M. (1992). Gifted students talk about cooperative learning. *Educational Leadership*, 50, 48-50.
- Maznevski, M. L. (1994). Understanding our differences: Performance in decision-making groups with diverse members. *Human Relations*, 47, 531-552.
- Mills, C. J., & Durden, W. G. (1992). Cooperative learning and ability grouping: An issue of choice. *Gifted Child Quarterly*, 36, 11-15.
- Mullen, B., Johnson, C., & Salas, E. (1991). Productivity loss in brainstorming groups: A meta-analytic integration. *Basic and Applied Social Psychology*, 12, 3-23.
- Nastasi, B. K., & Clements, D. H. (1991). Research on cooperative learning. Implications for practice. *School Psychological Review*, 20, 110-131.
- Naval-Severino, T. (1993). Developing creative thinking among intellectually able Filipino children from disadvantaged urban communities. *Gifted Education International*, 9, 119-123.
- Nelson, S. M., Gallagher, J. J., & Coleman, M. R. (1993). Cooperative learning from two different perspectives. *Roeper Review*, December, 117-121.
- Nijstad, B. (1995). *Het geheel groter dan de som der delen? Productiviteitswinst in brainstorm-groepen*. Unpublished Doctoral Dissertation, University of Utrecht.
- Offner, A. K., Kramer, T. J., & Winter, J. P. (1996). The effects of facilitation, recording, and pauses on group brainstorming. *Small Group Research*, 27, 283-298.
- Osborn, A. F. (1957). *Applied imagination* (1st ed.). New York: Scribner.
- Osborn, A. F. (1963). *Applied imagination* (2nd ed.). New York: Scribner.
- Oxley, N. L., Dzindolet, M. T., & Paulus, P. B. (1996). The effects of facilitators on the performance of brainstorming groups. *Journal of Social Behavior and Personality*, 11.
- Paulus, P. B., Brown, V., & Ortega, A. H. (in press). Group creativity. In R. E. Purser & A. Montuori (Eds.), *Social creativity in organizations*. Cresskill, NJ: Hampton.
- Paulus, P. B., & Dzindolet, M. T. (1993). Social influence processes in group brainstorming. *Journal of Personality and Social Psychology*, 64, 575-586.
- Paulus, P. B., Dzindolet, M. T., Poletes, G., & Camacho, L. M. (1993). Perception of performance in group brainstorming: The illusion of group productivity. *Personality and Social Psychology Bulletin*, 19, 78-89.
- Paulus, P. B., Larey, T. S., & Dzindolet, M. T. (in press). Creativity in groups and teams. In M. Turner (Ed.) *Groups at work: Advances in theory and research*. Hillsdale, NJ: Lawrence Erlbaum.
- Paulus, P. B., Larey, T. S., & Ortega, A. H. (1995). Performance and perceptions of brainstormers in an organizational setting. *Basic and Applied Social Psychology*, 17, 249-265.
- Paulus, P. B., Larey, T. S., Putman, V. L., Leggett, K. L., & Roland, E. J. (1996). Social influence process in computer brainstorming. *Basic and Applied Social Psychology*, 18, 3-14.
- Qin, Z. (1993). A meta-analysis of the effectiveness of achieving higher order learning tasks in cooperative learning compared with competitive learning. *Dissertation Abstracts International*, 53, 2229-A.
- Rawlinson, J. G. (1981). *Creative thinking and brainstorming*. New York: John Wiley & Sons.
- Slavin, R. E. (1990). Cooperative learning and the gifted: Who benefits? *Journal for the Education of the Gifted*, 14, 28-30.
- Schunk, D. (1987). Peer models and children's behavioral change. *Review of Educational Research*, 52, 149-174.
- Stroebe, W., & Diehl, M. (1994). Why groups are less effective than their members: On productivity losses in idea-generating groups. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology* (Vol. 5, pp. 271-303). London: Wiley.
- Stroebe, W., Diehl, M., & Abakoumkin, G. (1992). The illusion of group effectivity. *Personality and Social Psychology Bulletin*, 18, 643-650.
- Torrance, E. P. (1970a). Dyadic interaction as a facilitator of gifted performance. *Gifted Child Quarterly*, 14, 139-146.
- Torrance, E. P. (1970b). Influence of dyadic interaction on creative functioning. *Psychological Reports*, 26, 391-394.
- Torrance, E. P. (1971). Stimulation, enjoyment, and originality in dyadic creativity. *Journal of Educational Psychology*, 62, 45-48.
- Torrance, E. P. (1974). Interscholastic brainstorming and creative problem solving competition for the creatively gifted. *Gifted Child Quarterly*, 18, 3-7.
- Torrance, E. P., & Arsan, K. (1963). Experimental studies of homogeneous and heterogeneous groups for creative scientific tasks. In W. W. Charters, Jr. & N. L. Gage (Eds.), *Readings in the social psychology of education*. (pp. 133-140). Boston: Allyn & Bacon.
- Valacich, J. S., Dennis, A. R., & Connolly, T. (1994). Idea generation in computer-based groups: A new ending to an old story. *Organizational Behavior and Human Decision Processes*, 57, 448-467.

Identifying Gifted Adolescents using Personality Characteristics: *Dabrowski's Overexcitabilities*

Cheryl M. Ackerman

Cheryl Ackerman is a doctoral candidate in Educational Psychology with an emphasis in Gifted at Texas A & M University.

An exploratory study was conducted to determine the potential of overexcitability assessment as a method for identifying giftedness beyond traditional means. Overexcitability (i.e. an intensified way of experiencing the world) can occur in five areas: psychomotor, sensual, imaginal, intellectual, and emotional, and are assessed using the Overexcitability Questionnaire. In a group of high school students, discriminant analyses indicated that overexcitability (OE) profiles in the areas of psychomotor, intellectual, and emotional overexcitabilities differentiated between gifted and nongifted students. Approximately 35% of the nonidentified students had the same profile as the gifted subjects suggesting the potential of OE profiles for use in the identification of gifted students. Linguistic and cultural issues are discussed, as well as, the implications for research and instructional practice.

The identification of gifted individuals is an extremely difficult task. A primary reason for this is that finding appropriate measures that are reliable and valid for this purpose poses some formidable problems. One of the most critical problems in gifted identification stems from confusion in the field about what giftedness is and how it should be defined.

A Brief History of Gifted Identification

Throughout the history of gifted education, many definitions of giftedness have been proposed. Early on, Terman defined giftedness according to a single criterion, intelligence, as measured by test scores (Tannenbaum,

1991). Later, more complex definitions of giftedness were developed. These multidimensional definitions varied, with some focused on intellectual ability (Sternberg, 1985) or diverse abilities (Gardner, 1983), while others were more holistic (Betts & Neihart, 1988). A turning point for the gifted movement was Marland's (1972) definition of giftedness because it was the first to broaden the definition by including several areas not included previously: specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts, and psychomotor ability. Many others have developed multidimensional conceptualizations of giftedness including Renzulli (1978), Gardner (1983), Sternberg (1985), and Roeper (1982) that have made meaningful contributions to gifted education.

With significantly different defini-

*Manuscript submitted October, 1995.
Revision accepted June, 1996.*

tions of giftedness, identification becomes difficult. Some of these definitions have specific identification procedures, for example standardized intelligence tests, cognitive processes assessment, and creative product assessment. Each of these methods identifies a certain portion of the gifted population, but, leaves some unidentified. One aspect of gifted individuals that has received little attention in the identification process is personality characteristics. Incorporating these aspects of the gifted individual into the identification process might help identify those remaining unidentified. A method that might help the identification of gifted individuals become more complete through the examination of personality characteristics is based on Dabrowski's (1964) Theory of Positive Disintegration.

Overexcitability: An Alternative Conceptualization

Overexcitabilities, a concept developed from Dabrowski's (1964) Theory of Positive Disintegration (TPD), is a method that might help make identifying gifted individuals more effective. TPD is a developmental personality theory that offers a different approach to viewing giftedness. Dabrowski's theory focuses on the critical role that intensity of human experience plays in development and specifically emphasizes the role emotions play in the potential for individual development. TPD is not a theory of giftedness, but does provide an excellent framework that can be used as a foundation for characterizing giftedness and developing a method of identification. At the same time, the instrument and research based on TPD are presently in a form that teachers are unable to use because of the lengthy nature of the questionnaire and the technicality of coding responses.

Dabrowski based his theory on clinical and biographical studies of patients, artists, writers, members of religious orders, and gifted children and adolescents (Kawczak, 1970). He noted unique developmental patterns in many talented members of society (Miller & Silverman, 1987) and became interested in "the intensity and richness of thought and feeling, vividness of imagination, moral and emotional sensitivity....[of certain members of society whose] enhanced interactions with the world...seemed to be above the common and average in intensity, duration and frequency of occurrence" (Piechowski & Cunningham, 1985, p. 154). Dabrowski (1972) emphasized the importance of emotions in

development and believed we needed a theory of human development, "where emotional factors are not considered merely as unruly subordinates of reason but can acquire the dominant role of shaper of development" (p. 6).

Dabrowski introduced the concept of psychic overexcitability that he characterized as consistent overreaction to external and internal stimuli that appeared limited to certain dimensions (Piechowski, 1975). He identified five different forms of overexcitability: psychomotor, sensual, imaginal, intellectual, and emotional (Dabrowski & Piechowski, 1977; Piechowski, 1975). Dabrowski hypothesized that these very intense response patterns were innate, and that increased intensity, frequency, and duration of these overexcitabilities were indicative of a greater developmental potential (Miller & Silverman, 1987). He used the term overexcitability to emphasize the intensification of mental activity as well as the differential type of responding, experiencing, and acting distinguishable as characteristic forms of expression above and beyond the norm (Piechowski, 1986; Piechowski & Colangelo, 1984).

These OEs are indicators of Developmental Potential (DP) and therefore giftedness. Dabrowski (1972) stressed the importance of emotional, imaginal, and intellectual OEs above psychomotor and sensual. Furthermore, he said that emotional OE must be at least as strong as all other OEs to reach the highest level of development. The following are descriptions of the five overexcitabilities:

Psychomotor overexcitability is characterized by an organic excess of energy which manifests itself as a love of movement, rapid speech, increased capacity to be active, impulsiveness, pressure for action, and restlessness.

Sensual overexcitability is experienced as heightened sensory pleasure and is expressed as desires for comfort and luxury, being admired and in the limelight, and as the appreciation of beautiful objects (e.g. gems, furniture), writing styles, and words. Other manifestations include simple sensory pleasures such as touching, tasting, and smelling.

Imaginational overexcitability in its purest form is expressed through vividness of imagery, rich association, use of metaphor in verbal expression, strong and sharp visualization (real or imaginary), and inventiveness. Other forms are vivid and detailed dreams or nightmares, fear of the unknown,

predilection with fantasy and magic tales, and poetic creativity.

Intellectual overexcitability, is expressed as persistence in asking probing questions, avidity for knowledge, discovery, and theoretical analysis and synthesis, a sharp sense of observation, independence of thought (often expressed in criticism), symbolic thinking, and a capacity to search for knowledge and truth are all manifestations of intellectual OE. It should not be equated with intelligence: for example, intelligence is expressed in the ability to solve math problems, intellectual OE is expressed in the love of solving them.

Emotional overexcitability is a function of the way relationships are experienced, and can be expressed as attachments to people, things, or places, or, one's relationship with oneself. Characteristic expressions include deep relationships, strong affective memory, concern with death, feelings of compassion and responsibility, depression, need for security, self-evaluation, shyness, and concern for others (Falk & Piechowski, 1991; Piechowski, 1975, 1986; Piechowski & Colangelo, 1984; Piechowski & Cunningham, 1985).

Although research in this area is only developing, those studies that have been conducted suggest that OEs are stronger in the gifted. Also, most of this research assessed OE strength using the Overexcitability Questionnaire (OEQ), a 21-item open-ended questionnaire, which is scored using content analysis. Among adults, OEs are stronger for the gifted than the nongifted (Miller, Silverman, & Falk, 1991; Piechowski & Cunningham, 1985; Silverman & Ellsworth, 1981) and similarly for children and adolescents (Gallagher, 1986; Piechowski & Colangelo, 1984). Some OEs were found to be strongest in artists when compared with the gifted (Piechowski & Cunningham, 1985; Piechowski, Silverman, & Falk, 1985) and to have greater strength in more creative gifted adolescents than less creative ones (Schiever, 1985).

However, it is not clear from the available literature whether overexcitability profiles consistently distinguish between groups of gifted and of nongifted individuals. Even so, a relationship is indicated between giftedness and intensity of OEs in the literature that points to significantly higher scores on imaginal, intellectual, and emotional OEs (Gallagher, 1986; Piechowski & Colangelo, 1984; Piechowski & Cunningham, 1985; Piechowski et al., 1985; Silverman & Ellsworth, 1981).

On the other hand, there are several issues that have surfaced in the lines of research dealing with Dabrowski's Theory of Positive Disintegration. For example, assessing overexcitabilities appears to have potential as a method for identifying gifted individuals. Therefore, it is crucial to determine an OE profile capable of distinguishing between the gifted and nongifted: It is also necessary to explore the influences of language and culture on overexcitability scores to investigate biases in the instrument. Finally, in the collection of literature on OEs and gifted subjects, there is only one study that has compared gifted and nongifted adolescents (Gallagher, 1986); all other comparative studies have used adult subjects. It seems imperative that research be performed on school age subjects because the best time to identify the gifted is early in their development.

The purpose of this study was to examine overexcitabilities as a method of identifying gifted adolescents. This research primarily investigated which overexcitabilities best distinguish between gifted and nongifted adolescents in order to determine a gifted-profile to be used as an identification procedure. Adolescents were chosen as subjects because the OEQ requires extended written responses beyond the ability of younger students. Specific research questions were:

- Can overexcitability profiles be used to discriminate between gifted and non-gifted students?
- Are there any unidentified students with a similar OE profile to that of the gifted students?
- Are there possible linguistic and cultural biases of this method. Specifically: does speaking more than one language fluently influence responses? is word count (i.e. the total number of words in response to the OEQ) related to OE scores, and is cultural influence responsible for differences in overexcitability scores?

The answers to these questions may provide school districts with valuable suggestions for identifying gifted and talented students, as well as a deeper understanding of them. If some students not identified as gifted by traditional means have similar OE profiles to those identified, this would indicate that these two groups of students have some common underlying characteristics. Those not identified as gifted could be in need of gifted programming, but, at risk of being refused.

Methodology

Subjects

The subjects were 79 tenth and eleventh grade students from two senior high schools in the Roman Catholic Separate School System in Calgary, Alberta. Forty-two students were identified for the gifted program using a multi-criteria approach based on Renzulli's (1977) model which assessed academic achievement and intellectual ability, creativity, and task commitment. Thirty-seven students were not identified. Teacher, parent, and self nominations created the initial pool of students to be considered. Academic grades, IQ scores, achievement test scores, nominations and recommendations, as well as statements from the students were used to determine whether a student should be included in the gifted program. A minimum IQ score of 120 was required for placement; although, allowances for lower scores were occasionally made if the student showed particular interest in the program or had a strong profile on all other components. Identification procedures also included specific criteria for each subject area.

The subjects ranged from 14 to 18 years of age. There were 10 males and 32 females in the gifted group and 20 males and 17 females in the general sample. The ethnic backgrounds of the subjects were extremely diverse and included individuals of Filipino, Polish, Croatian, Italian, and Czechoslovakian heritage, as well as many others.

Instruments

The Overexcitability Questionnaire (OEQ) (Lysy & Piechowski, 1988) consists of 21 open-ended questions to be answered in written form. These questions are intended to be thought provoking and elicit varied personal responses. Some examples of the questions are: "What has been your experience of the most intense pleasure?", "What kind of physical activity (or inactivity) gives you the most satisfaction?", and "How often do you carry on arguments in your head? What sorts of subjects are these arguments about?" While the questions were initially intended to elicit a specific OE, they actually elicit whichever OEs are strongest in an individual. Completion time varies depending on how much information the subjects have to write and the amount of effort put forth.

Findings from the following studies provide evidence of construct validity

for intellectual and imaginal overexcitabilities. In a research study of artists and intellectually gifted adults, imaginal OE was higher for the artists and intellectual OE was higher for the gifted adults (Piechowski et al., 1985). Among Venezuelan artists, imaginal OE was the highest of the five OEs (Manzanero, 1985). Imaginal OE has also distinguished between low-creative and high-creative seventh and eighth graders (Schiever, 1985). Gallagher (1986) showed that among a group of sixth graders, intellectual OE distinguished between high and low scorers on the *Torrance Test for Creative Thinking*. Thus far, construct validity for emotional, sensual, and psychomotor OEs has not been confirmed; however, Silverman (1993) suggests that clinical data collected on gifted individuals offer some preliminary support.

Based on their findings, some of these authors make remarks regarding the use of the OEQ in schools based on their findings. Gallagher (1986) asserts that "as there is currently no other protocol which measures intelligence, creativity, and emotional sensitivity simultaneously, this instrument [the Overexcitability Questionnaire] could prove to be a valuable addition to the field" (p. 119). Schiever (1985) believes that the measurement of levels of OE could provide a new indicator of creative ability. A case can also be made for the use of the OEQ in education because it provides such rich information about each student. Additionally, many educators feel Dabrowski's concepts of OEs are useful in understanding the differences among gifted individuals, as well as, differences between the gifted and the nongifted. This understanding of individual differences is useful for purposes of programming and curriculum.

Content analysis is used to score the OEQ (Falk & Piechowski, 1991); a separate index is calculated for each of the five overexcitabilities. Each response can reflect any or all forms of overexcitability and the intensity is rated from 0, no overexcitability, to 3, a rich and intense expression. The highest possible score for each OE is 63: a score of 3 in a category for each of the 21 questions.

The questionnaires were rated by 10 raters who attended a special training seminar and tested 90% or above in agreement with the experts. All questionnaires were scored independently by two raters. The pairs of raters were shuffled several times to decrease the risk of

scorer bias. To ensure that the quality of rating remained consistent, the expert raters supervised the scoring. The raters remained consistent; their quality remained at the level of their training.

In past studies using the OEQ, reaching consensus between two raters was the method used to determine scores when raters differed. However, in a study using a similar open-ended instrument, it was found that averaging the scores of the raters was comparable to reaching consensus (Miller, 1985). Since the raters were spread throughout the United States and Canada, averaging scores was deemed a more time-efficient method.

All protocols were rated by two trained individuals. Interrater reliability for the overexcitabilities were: .91 for psychomotor, .92 for sensual, .97 for imaginal, .92 for intellectual, and .91 for emotional. For each scale the reliability scores were calculated by using Pearson Product Moment Correlations (Allen & Yen, 1979) to determine the correlation between rater 1 and rater 2 for each item across all 79 cases. These correlations were averaged and then stepped-up using the Spearman-Brown Formula (Allen & Yen, 1979) to determine the interrater reliability of a scale. This procedure was followed for each of the five overexcitability scales. The internal consistency for each scale as measured by Cronbach's Alpha was: .57 for psychomotor, .42 for sensual, .63 for imaginal, .72 for intellectual, and .77 for emotional.

A brief demographic questionnaire was used to gather information about the subjects' age, gender, spoken language(s) and language preference, their cultural background(s), and the number of generations their families had been in Canada. Questions regarding current or previous participation or opportunity to participate in the gifted program were included.

Data Analysis

To determine which of the OEs had the greatest discriminating power between the gifted and non-gifted students, a stepwise discriminant function analysis was performed. The dependent variable was classification as gifted or nongifted and the independent variables were the five OE scores. A subsequent classificatory analysis was performed to ascertain the number of students in the nongifted group that had similar OE profiles to those in the gifted group. Additionally, Pearson's Product Moment cor-

relations were performed between OEs and cultural influence (number of generations the family has been in Canada), and word count (total number of words in the response protocol). A Point-Biserial correlation was performed between the OEs and linguistic ability (the number of languages fluently spoken) because of the dichotomous nature of one variable.

Procedure

At the beginning of class, the researcher presented a brief explanation of the study that included information about its purpose, time commitment, confidentiality issues, and basic instructions. The questionnaire's non-threatening, non-judgmental nature was emphasized. This address was followed by a brief question and answer period.

The researcher gave each student a package complete with a consent form, demographic questionnaire, Overexcitability Questionnaire, instruction sheet, and a coded envelope for the confidential return of their information. Once distribution was completed, the students were given the remaining class time to work on the questionnaire package, approximately 55 minutes. They were instructed to complete the package for homework if the remaining class time was not sufficient. The packages were to be returned within the following week with the signed consent forms.

The majority of students finished during the 55 minute class period.

Results

The mean OE scores for the gifted and nongifted groups are presented in Figure 1. The means and standard deviations for both groups are: Gifted - psychomotor 7.93, 3.3; sensual 2.71, 2.0; imaginal 6.79, 3.8; intellectual 8.39, 4.2; emotional 11.94, 6.3 and Nongifted - psychomotor 5.08, 2.3; sensual 2.09, 2.0; imaginal 4.64, 2.6; intellectual 5.77, 3.3; emotional 9.15, 4.4. The gifted group show higher scores than the nongifted group for all five forms of OE.

The discriminant analysis identified three OEs as discriminating between the two groups: psychomotor, intellectual, and emotional. Wilk's Lambda, a measure of group discrimination, was minimized from .80 in Step 1 to .71 in Step 3. The optimal prediction equation in standardized form was: $D = .80z + .44z + .35z$ for psychomotor, intellectual, and emotional OEs respectively. The mean discriminant function scores were .59 for the gifted group, and -.67 for the nongifted group. The result of a Bartlett's Chi Square Test indicated that the two groups were significantly separated by the discriminant function, $\chi^2 = 25.73$, $p < .001$. Examination of the

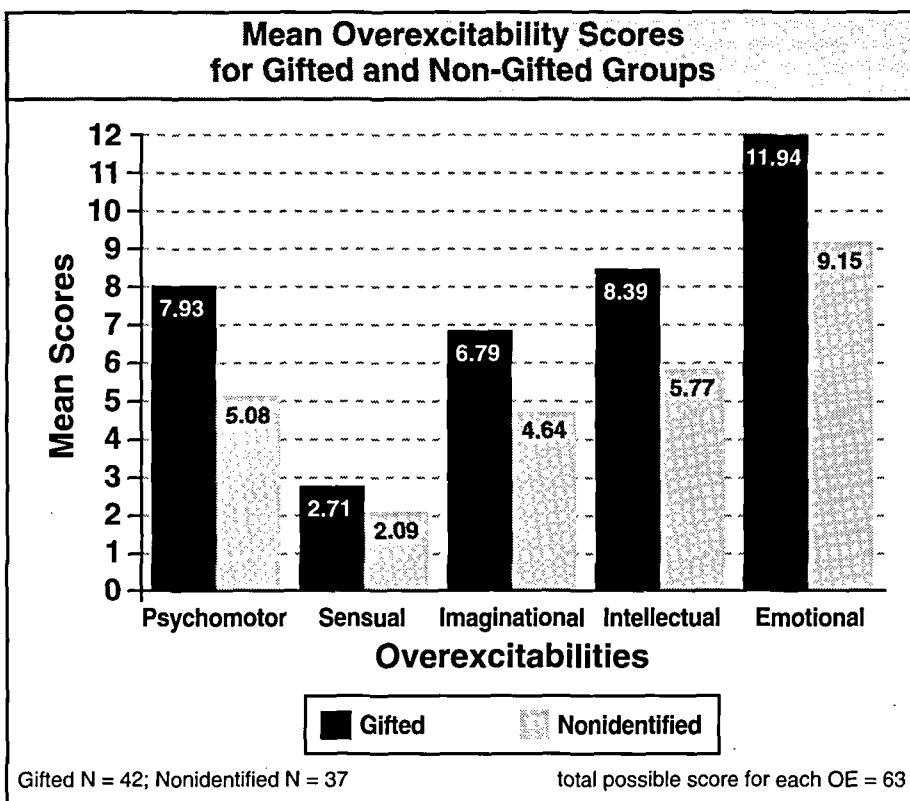


Figure 1

structure coefficients (correlations between the discriminant function and the predictor variables) indicated that subjects who scored high on the discriminant function were characterized by higher ratings of psychomotor, intellectual, and emotional OE. The structure coefficients also indicated that psychomotor OE best discriminated between the two groups followed by intellectual and emotional OEs. Therefore, this sample of gifted students could be described as being more energetic, having more drive, exhibiting more movement and chattering, being more emotionally sensitive, having stronger relationships and attachments, more intellectual curiosity, and a greater need for intellectual challenge than those not identified as gifted.

Classificatory analysis performed at the end of the discriminant analysis indicated that a total of 70.9% of all subjects were correctly classified using psychomotor, intellectual, and emotional OE scores; that is, into the groups the schools had placed them. However, 23 subjects were classified incorrectly: 13 of the 37 (35.1%) nongifted subjects were classified as gifted and 10 of the 42 (23.8%) gifted subjects were classified as nongifted.

For the analyses of possible cultural and linguistic influences on the OEQ, linguistic ability was defined as the number of languages a subject reported speaking fluently. In the total sample, some spoke only English, while others spoke two to five languages, including Arabic, Chinese, Croatian, Czechoslovakian, Dutch, Filipino, Inuit, Italian, Portuguese, Russian, Spanish, and Vietnamese. The distribution for the number of spoken languages for the gifted and nongifted groups was as follows: one language, 22 and 23; two languages, 9 and 10; three, 9 and 3; four, 2 and 0, respectively. Information for one nongifted subject was missing. Two groups were created - those who spoke only one language and those speaking more than one language: 52.4% of the gifted group spoke one language and 47.6% spoke more than one. In the nongifted group, 63.9% spoke one language while 36.1% spoke more than one language.

The correlations between the five OEs and linguistic ability, for the total, gifted, and nongifted samples, resulted in only two that were significant, $p < .05$ (see Table - 1): emotional OE showed a weak negative correlation with linguistic ability for the total sample, $r = .24$,

and the gifted sample, $r = .37$. No other correlations were significant.

The cultural background of the sample was diverse. A total of 31 different cultural backgrounds from four continents, Europe, Asia, North America, and South America, were represented. The measure used for cultural influence was generation Canadian, which ranged from immigrant status to fifth generation; those subjects whose families are newer to the country were considered more culturally influenced than those whose families had been in Canada for a longer period of time. The distribution of generational information for the gifted and nongifted groups was as follows: Immigrant, 4 and 1; first generation, 20 and 13; second, 9 and 7; third, 4 and 9; fourth, 4 and 3; and fifth, 2 and 0, respectively. Data from four nongifted subjects were missing.

The correlations between the five OEs and cultural influence, for the total, gifted, and nongifted samples, also resulted in only two that were significant, $p < .05$: emotional OE showed a weak correlation with cultural influence for the total sample, $r = -.25$, and the gifted sample, $r = -.33$. No other correlations were significant.

The total number of words, or word count, from all 21 responses was used as the unit of measurement for length of response. The correlations between the five OEs and word count for the total, gifted, and nongifted samples, resulted in several that were significant (all but one at the $p < .001$) with several in the moderate and strong range (see Table - 1).

Discussion

The Discriminant Function Analysis performed on the total sample indicated that three forms of overexcitability

created a profile able to discriminate between gifted subjects and nongifted subjects; elevated scores on psychomotor, intellectual, and emotional OEs. Psychomotor OE contributed most strongly to differentiation between the two groups. The second highest contributor was intellectual OE, and emotional OE was the smallest contributor included in the discriminant function.

These findings are not entirely consistent with the literature which suggests (Dabrowski, 1972; Dabrowski & Piechowski, 1977) that higher scores on emotional, intellectual, and imaginal OEs in gifted samples, as compared to nongifted ones, are the differentiating factors for the two groups. The current findings are consistent with two of the three OEs. Earlier studies, (Gallagher, 1986; Lysy & Piechowski, 1983; Piechowski & Miller, 1994; Piechowski & Colangelo, 1984; Silverman & Ellsworth, 1981), found emotional, intellectual, and imaginal OEs, in varying order, to be the highest three OEs for their gifted subjects. Therefore, even though emotional and intellectual OEs were the highest scores and were also identified as discriminating between the two groups in the current study, psychomotor OE was identified as the OE that most differentiated between the gifted and nongifted samples.

The discriminating influence of psychomotor OE might be understood in light of a theoretical point that receives little attention: Psychomotor and sensual OEs alone cannot promote development to the higher levels, and if excessively strong, can even inhibit development. However, when combined with other forms of OE, they can contribute positively to development (Dabrowski & Piechowski, 1977). For example, at low levels of development, psychomotor OE is expressed as "violent irritability and

Correlation of Overexcitability Scores with Linguistic Ability, Cultural Influence, and Word Content for the Total Sample

	Psychomotor	Sensual	Imaginational	Intellectual	Emotional
Linguistic Ability*					
Gifted	-0.07	0.03	-0.04	0.14	0.24†
Nongifted	-0.15	0.00	0.07	0.23	0.37†
Cultural Influence*					
Gifted	-0.13	-0.13	-0.11	-0.07	-0.03
Nongifted	0.06	0.13	-0.01	0.00	-0.25†
Word Count*					
Gifted	0.13	0.11	0.00	-0.01	-0.33†
Nongifted	0.13	-0.10	0.11	0.11	-0.02
Word Count*					
Gifted	0.33*	0.22	0.46*	0.57*	0.71*
Nongifted	0.12	0.15	0.35†	0.47*	0.64*
Nongifted	0.21	0.21	0.43*	0.58*	0.80*

*: total sample correlations, †: $p < .05$, *: $p < .001$

Table 1

uncontrolled temper with easy return to equilibrium,...impulsive actions,...juvenile delinquency..."(Dabrowski & Piechowski, 1977, p. 114) while at higher levels of development it becomes subordinate to the higher OE forms, i.e. emotional, intellectual, and imagination-al, and provides the necessary energy to execute a developmental program of action (Dabrowski & Piechowski, 1977). Therefore, psychomotor OE, while not as strong, seems to play an essential role in the life of a more developed individual because it provides the energy necessary to act and persevere.

Based on this information regarding psychomotor OE, the results are more consistent with the theory than initial analysis indicates: Although psychomotor OE is the best discriminator between the gifted and nongifted groups, it has the third highest mean score after emotional and intellectual. Other researchers have commented on the possible relationship psychomotor OE has to giftedness and development. According to Gallagher (1986), "...high levels of activity and energy...may be connected with giftedness" (p. 118). In a recent article, Tolan (1994) suggests that, "if the definition of psychomotor [overexcitability]...were expanded to specifically include physical energy generated by intellectual or creative activity,...[it] might be seen to be more common to the gifted than previously believed" (p.77).

The importance of psychomotor OE in this study may be the result of the age of the sample used. In two studies (Gallagher, 1986; Schiever, 1985) with subjects between the ages of 12-14, the OE profiles included elevated intellectual, imaginal, and psychomotor. Therefore, psychomotor OE may be more important in adolescence than in adulthood. Another explanation could be that as an individual reaches higher levels of development, the OEs become more integrated, and in the case of psychomotor OE, it becomes subordinate to the others. Therefore, it would likely be harder to detect the presence of psychomotor OE based on the rating criteria of the OEQ. Typical responses are rated as psychomotor OE include "rapid speech, marked excitation, intense physical activity (e.g. fast games and sports), pressure for action (e.g. organizing), marked competitiveness... compulsive talking and chattering, impulsive actions" (Falk, Piechowski, Lind, 1994, p. 9) all of which reflect easily identified behaviors, *not* the role psychomotor OE plays when integrating with the other

OEs. However, there were two other studies using adolescent subjects where psychomotor OE was not one of the top three in the overexcitability profile (Piechowski & Miller, 1994; Piechowski & Colangelo, 1984).

In the current study, 13 of the 37 (35.1%) nongifted students were classified as gifted. This suggests that there are some students in the sample that have not been identified as gifted based on their I.Q. scores, peer, teacher, and parent nominations, and school grades, although, these students have personality characteristics similar to those students who were identified as gifted. Personality characteristics in this sense refer to psychomotor, intellectual, and emotional OEs, which are included in the discriminant function coefficient. Thus, it is possible that approximately 35% of the non-gifted students could be gifted based on the classificatory analysis results.

The classificatory analysis also indicated that a number of gifted subjects were misclassified. That is, their OE profiles were more similar to the nongifted profile than the gifted profile. Of the gifted students, 23.8% (10 of 42) matched the nongifted profile more closely. Therefore, while the score on the OEQ might be able to identify some students as gifted that would not have been identified based on the methods used in their school, it should serve as an additional measure, and not a replacement for current methods.

One of the most important findings in this study was that based on OEQ scores and profiles, 35% of the nongifted subjects matched the gifted profile based on statistical analyses. This provides some support to the notion that an additional method of identification is necessary and that the Overexcitability Questionnaire could be useful for this purpose. While there were also 24% of the gifted subjects with profiles similar to that of the nongifted, this point is not as important to the current study, because these individuals would already have been identified.

Investigating possible linguistic biases showed that for the total sample, word count was significantly correlated with all five forms of overexcitability. Generally, those subjects who wrote lengthy responses to the OEQ questions had higher scores than those subjects who wrote short responses. However, while long responses are more likely to result in higher OE scores than short responses, brief answers also result in

elevated OE scores and a long response does not guarantee high OE scores. Variance in OE scores resulting from word count ranged from 5% to 48% with a mean of 26%. Even for emotional OE, which had the highest correlation with word count, length of response accounts for less than half the variance in OE scores.

Among correlations between OE scores and spoken language ability, the only significant correlation was between emotional OE and language ability, for the total sample. However, the extremely low correlation for the non-gifted group between emotional OE and language ability ($r = .03$) made no contribution to the correlation for the total sample. Therefore, the only meaningful relationship is for the gifted group ($r = .37$). The positive correlation would indicate that those subjects who were fluent in only one language received lower emotional OE scores on average than those who were multilingual, especially for the gifted group.

The results of correlations between cultural influence and OE scores indicated that only one was significant. For the gifted group, the correlation between cultural influence and emotional OE was $r = -.33$. Therefore, the longer a gifted subject's family spent in Canada, the lower the emotional OE score.

Since this is the first study to address cultural and linguistic influences, the correlational analyses should be considered in that light. Some methodological considerations are: The subjects were all from private Roman Catholic high schools restricting religious representation. The diversity of cultural backgrounds is not a common phenomenon. Also, the unbalanced number of males and females in the gifted group could have influenced the results.

Another set of considerations that should be mentioned relate to the questionnaire itself. The questions are currently under review to determine if it will be possible to decrease their number and still get reliable results (N.B. Miller, personal communication, April 2, 1993). These discussions focus on the validity of individual questions; and whether they are tapping all OEs effectively.

Even with the possible methodological concerns, there is still a great deal of valuable information that can be used as the starting point for further research. One of the main purposes of an exploratory study is to set the groundwork for future investigations.

The results indicated that gifted subjects were differentiated from their nongifted peers based on their higher psychomotor, intellectual, and emotional OE scores. While this was an unexpected finding, it clearly illustrates that scores on the OEQ can differentiate between gifted and nongifted students. Because of the central part psychomotor OE played in the analysis, which has not been noted in previous studies, it is important that further research be conducted to verify these findings.

Investigating some of the possible limitations of the OEQ proved to be useful. While the overwhelming number of high positive correlations between word count and OE scores must be replicated, it does have implications for the administration of the instrument. Emphasizing the importance of writing as much as possible and imposing no time constraints would be helpful. The OEQ can be administered in oral form. Research shows that responses with higher psychomotor OE scores and lower emotional OE scores are given on oral administration compared with the written form (Piechowski & Miller, 1995). Piechowski and Miller also report that the majority of subjects in their study, between the ages of 9 and 14, preferred the oral form. They also recommend that the oral form be used with children below the age of 11. One major difficulty with the oral administration is the amount of time required to administer and transcribe responses.

The investigation of language ability and cultural influence biases in this study were not very informative. It is possible that different cultures will show different OE profiles. Perhaps in the more typically expressive cultures there would be an elevated emotional OE score. Manzanero (1985) found that samples of Venezuelan and American artists had similar OE profiles. However, a series of independent studies performed on diverse cultures would elucidate this issue.

Another consideration for this line of research is its practicality for use by teachers in classrooms. The Overexcitability Questionnaire can provide useful qualitative information for teachers about their students, but, it is not tenable as a quantitative assessment instrument in its present form. Further research must work toward creating a version of the OEQ that is not only theoretically and statistically sound, but also realistic for widespread school use.

The most important contribution of this study is its indication that the assessment of overexcitabilities can be a viable additional identification method for giftedness. Further research is necessary to determine the most appropriate uses for this method as well as the specific profiles that can be used for identification purposes. The differentiating power of psychomotor OE scores in this study would be one place to begin.

Implications for Practice

There are several implications for education that arise from Dabrowski's theory and the related research, some of which are theoretical and some that are more practical. Dabrowski's theory of Positive Disintegration offers a new conceptualization of giftedness that may be useful in the classroom. While behaviors are easily observed, it is often difficult to determine the motivation behind them. Using overexcitabilities as a lens, a student's behavior can, perhaps, be reframed; for example, if children are not attending to the lesson it is possible that they have an attentional disorder, however, it is also possible that their intellectual and imaginal overexcitabilities are working on a problem more personally relevant or simply more interesting. The second explanation describes children who are differentially attending while the first describes children who are not attending.

An extremely important contribution this theory offers to parents and educators is that individuals may have any combination of overexcitabilities which may contribute to the understanding of individual differences. This might help parents and educators understand that gifted individuals are not homogeneous, they are different from each other in many respects, overexcitabilities being only one. Perhaps this information may promote more tolerance and understanding of these differences.

Data from the Overexcitability Questionnaire can also provide information valuable for gifted programming and curriculum design. Since the OEQ is an open-ended instrument, a wealth of qualitative information for each student is available in their responses. Responses include most exciting experiences, things that make them think, activities they find most satisfying, and other similar information. Teachers could incorporate these findings into their lessons to improve the likelihood that students will actively participate.

This research study also has implications for the identification of gifted students in school. Most generally, overexcitabilities have been shown to differentiate between gifted and non-identified students in high school where the gifted have higher scores on all forms of overexcitabilities. This means that if teachers were trained to recognize characteristics of overexcitabilities in their students, some students who would normally go unidentified, might be identified in this manner.

Currently, the Overexcitability Questionnaire is not tenable as a quantitative assessment instrument, in its present form. Its main drawbacks are the length of administration time, the level of writing skills and expressive language, and the cost of scoring or training to become a rater. Further research must work toward creating a version of the Overexcitability Questionnaire that is not only theoretically and statistically sound, but also realistic for widespread school use to serve as an identification instrument that would ensure a diversity of high ability students in the gifted classroom.

REFERENCES

- Betts, G. T. & Neihart, M. (1988). Profiles of the gifted and talented. *Gifted Child Quarterly*, 32(2), 248-253.
- Dabrowski, K. (1964). *Positive disintegration*. Boston, MA: Little, Brown.
- Dabrowski, K. (1972). *Psychoneurosis is not an illness*. London: Gryf.
- Dabrowski, K. & Piechowski, M. M. (1977). *Theory of levels of emotional development: Volume 1 - Multilevelness and positive disintegration*. Oceanside, NY: Dabor Science.
- Falk, R. F. & Piechowski, M. M. (1991). *Criteria for rating levels of intensity of overexcitabilities*. Unpublished manuscript. University of Akron, Akron, Ohio.
- Falk, R. F., Piechowski, M. M., & Lind, S. (1994). *Criteria for rating levels of intensity of overexcitabilities*. Unpublished manuscript. University of Akron, Akron, Ohio.
- Gallagher, S. (1986). A comparison of the concept of overexcitabilities with measures of creativity and school achievement in sixth-grade students. *Roeper Review*, 8(2), 115-119.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books, Inc.
- Hollingworth, L. S. (1926). *Gifted children: Their nature and their nurture*. New York: Macmillan Company.
- Kawczak, A. (1970). The methodological structure of the Theory of Positive Disintegration. In K. Dabrowski, A., Kawczak, & M. Piechowski (Eds.), *Mental growth through positive disintegration*. London: Gryf.
- Lysy, K. Z., & Piechowski, M. M. (1983). Personal growth: An empirical study using Jungian and Dabrowskian measures. *Genetic Psychology Monographs*, 108, 267-320.
- Manzanero, J.B. (1985). *A cross-cultural comparison of OE profiles and levels of development between American and Venezuelan artists*. Unpublished master's thesis, University of Denver, Denver, CO.
- Marland, S. (1972). *Education of the gifted and talented. Report to Congress of the United States by the U.S. Commissioner of Education*. Washington, D.C.: Government Printing Office.
- Miller, N. B. (1985). *A content analysis coding system for assessing adult emotional development*. Unpublished doctoral dissertation. University of Denver, CO.
- Miller, N. B., & Silverman, L. K. (1987). Levels of personality development. *Roeper Review*, 9(4), 221-225.
- Miller, N. B., & Silverman, L. K., & Falk, R. F. (1994). Emotional development, intellectual ability, and gender. *Journal for the Education of the Gifted*, 18, 20-38.
- Piechowski, M. M. (1975). A theoretical and empirical approach to the study of development. *Genetic Psychology Monographs*, 92, 231-297.

Piechowski, M. M. (1986). The concept of developmental potential. *Roeper Review*, 8(3), 190-197.

Piechowski, M. M., & Colangelo, N. (1984). Developmental potential of the gifted. *Gifted Child Quarterly*, 28(2), 80-88.

Piechowski, M. M., & Cunningham, K. (1985). Patterns of overexcitability in a group of artists. *Journal of Creative Behavior*, 19(3), 153-174.

Piechowski, M. M., & Miller, N.B. (1994). Assessing developmental potential in gifted children: A comparison of methods. *Roeper Review*, 17(3), 176-180.

Piechowski, M. M., Silverman, L. K., & Falk, R. F. (1985). Comparison of intellectually and artistically gifted on five dimensions of mental functioning. *Perceptual and Motor Skills*, 60, 539-549.

Renzulli, J. S. (1977). *The enrichment triad model: A guide to developing defensible programs for gifted and talented*. Mansfield Center, CT: Creative Learning Press.

Renzulli, J. S. (1978). What makes giftedness? Reexamining a definition. *Phi Delta Kappan*, 60, 180-184, 261.

Roeper, A. (1982). How the gifted cope with their emotions. *Roeper Review*, 5(2), 21-24.

Schiever, S. W. (1985). Creative personality characteristics and dimensions of mental functioning in gifted adolescents. *Roeper Review*, 7(4), 223-226.

Silverman, L.K. (1993). The gifted individual. In L.K. Silverman (Ed.), *Counseling the gifted and talented* (pp. 3-28). Denver: Love.

Silverman, L. K., & Ellsworth, B. (1981). The theory of positive disintegration and its implications for giftedness. In N. Duda (Ed.), *Theory of positive disintegration: Proceedings of the third international conference on the theory of positive disintegration* (pp. 179-194). Miami, FL: University of Miami School of Medicine.

Sternberg, R. J. (1985). *Beyond I.Q.: A triarchic theory of human intelligence*. Cambridge, MA: Cambridge University Press.

Tannenbaum, A. J. (1991). The social psychology of giftedness. In N. Colangelo & G.A. Davis (Eds.), *Handbook of Gifted Education* (pp. 27-44). Toronto, Canada: Allyn and Bacon.

Tolan, S.S. (1994). Psychomotor OE in the gifted: An expanded perspective. *Advanced Development*, 6, 77-86.

CALL FOR MANUSCRIPTS

TALENT IDENTIFICATION AND DEVELOPMENT INTERNATIONAL PERSPECTIVE

Guest Editor: Roberta M. Milgram

The editor is seeking articles on the conceptualization, identification, and assessment of giftedness in countries outside of the United States. Theoretical statements, empirical research studies, and cross-cultural investigations will be welcomed.

A major change is taking place in the field of gifted education in the United States. The challenge for educators is no longer seen as how to distinguish between gifted and nongifted youngsters based upon IQ measures but rather how to identify and nurture in young people potential, domain-specific talents in any one of a large number of socially useful, specific domains including but not confined to science, music, mathematics, social leadership, sports, drama, creative writing, art, computer and foreign languages. The purpose of this special issue is to explore the ways in which the current trends in giftedness in other countries around the world are similar to or different from those in the United States.

Manuscript due date: March, 1998.

Please send 4 copies of the manuscript prepared according to the
Publication Manual of the American Psychological Association to:

Ruthan Brodsky, Editor
Roeper Review PO Box 329 Bloomfield Hills, MI. 48303

Authors are welcome to correspond by e-mail (milgram@ccsg.tau.ac.il) or by air mail with:
Roberta M. Milgram, Tel Aviv University School of Education Ramat Aviv, Israel 69978

CALL FOR PAPERS

Cognition of the Gifted

Guest Editor: Eunsook Hong

The editor is looking for articles of original empirical studies, theoretical analyses, literature reviews, and case studies dealing with basic and applied topics in the study of cognition of the gifted. The editor seeks manuscripts that examine varying perspectives on cognitive development, strategies, learning and problem-solving in the gifted with particular emphasis on the cognitive structure and processes in the performance of the gifted. The domains of competent performance to be analyzed may vary ranging from the hard sciences to the performing arts.

Suggested topics include how the gifted differ or do not differ from other individuals regarding their problem representation, accuracy and speed of information processing, amount and accessibility of knowledge base, and development and use of learning, performance strategies, and metacognitive skills.

Manuscript due date: December 31, 1997

Submit 4 copies with a letter specifying this special issue to:
The Roeper Review, PO Box 329, Bloomfield Hills, MI 48303.

Send questions to: Eunsook Hong
Department of Educational Psychology, University of Nevada
Box 453003, Las Vegas, NV 89154-3003