

THE UNIVERSITY OF CALGARY

Investigating an Alternate Method of Identifying Gifted Students

by

Cheryl M. Ackerman

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE  
DEGREE OF MASTER OF SCIENCE

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

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MAY, 1993

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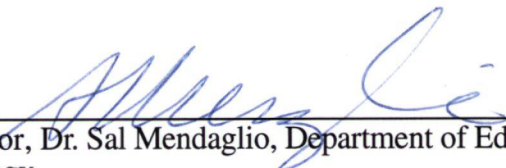
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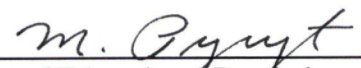
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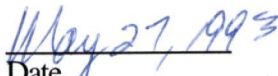
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The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies for acceptance, a thesis entitled "Investigating an Alternate Method of Identifying Gifted Students" submitted by Cheryl M. Ackerman in partial fulfillment of the requirements for the degree of Master of Science.

  
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Supervisor, Dr. Sal Mendaglio, Department of Educational Psychology

  
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Department of Teacher Education and Instruction

  
\_\_\_\_\_  
Date

## ABSTRACT

An exploratory study was conducted to determine the Overexcitability Questionnaire's (OEQ) potential as an alternative identification method for giftedness. The OEQ measures five areas of overexcitability, or intensified ways of experiencing the world. They are psychomotor, sensual, imaginal, intellectual, and emotional. A group of gifted and nongifted high school students were the subjects. Three research questions were asked: 1) Can overexcitability profiles differentiate between the gifted and the nongifted? 2) Are any nongifted subjects' profiles like those of the the gifted subjects? and 3) Are there limitations for the OEQ based on language or culture? The most important finding indicated that overexcitability profiles could differentiate between the two groups based on elevated psychomotor, emotional, and intellectual overexcitabilities. Gender differences were also found. The results of this study indicated that the OEQ has potential for use in gifted identification, however, further research is essential.

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## Chapter 1

### *Introduction*

#### *Statement of the Problem*

The identification of gifted individuals is an extremely difficult task. 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 of an elemental nature: What is giftedness and how should it be defined?

Throughout the history of gifted education many definitions of giftedness are proposed. In the early days, giftedness was defined according to a single criteria, intelligence as measured by standardised IQ scores. This definition was used by Lewis Terman in his monumental longitudinal study of genius that included 1,500 high IQ children (Tannenbaum, 1991). This identification method was also used initially by Leta Stetter Hollingworth (1926), a contemporary of Terman's.

After the 1920's, more complex definitions of giftedness were developed. These multidimensional definitions ranged from those that focused on cognitive capability (Gardner, 1983; Sternberg, 1985) to those of a more holistic nature (Betts & Neihart, 1988). A turning point for the gifted movement was Sidney Marland's (1971) definition of giftedness that he presented as Commissioner of Education of the United States. It was the first influential definition to broaden the conception of giftedness. Along with the usual general intellectual ability, Marland included several areas that had previously been absent; they were specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts, and psychomotor ability. Seven years later, Joseph Renzulli (1978) presented a different multidimensional definition. He did not focus on the specific areas of giftedness, but proposed three clusters of traits that are necessary to be considered gifted. These trait clusters, above average ability, above average creativity, and task commitment, can be applied to any culturally valuable domain.

Howard Gardner (1983) also proposed an approach to giftedness with many facets. Like Marland, he focused on different areas of giftedness and presented seven possible domains. These domains are linguistic, logical-mathematical, spatial, bodily-kinesthetic,

musical, *interpersonal*, and *intrapersonal* ability. Gardner asserts that these domains are essentially autonomous, each with its own memory, mechanisms of learning, and development. Robert Sternberg's (1985) approach to giftedness is based on his Triarchic Theory of Intelligence and deals only with intellectual giftedness. He proposed three forms of intellectual giftedness; analytic, synthetic, and practical. An individual can be gifted in only one of the three areas or in more than one.

Annemarie Roeper (1982) and George Betts and Maureen Neihart (1988) supported a holistic approach to the definition of giftedness. In both cases an integrated view of the gifted individual was emphasised; physical development, intellectual awareness, and emotions were considered together, not as separate entities within an individual. Roeper (1982) suggested that giftedness was a difference of kind, not simply degree; that is, gifted individuals were not merely ahead of their same age peers, the nature of their existence was different. Additionally, Roeper (1982) and Betts and Neihart (1988) proposed that there was significant differentiation among gifted individuals, as well as, between the gifted and the non-gifted.

With this number of significantly different definitions of giftedness, identification becomes difficult; procedures will be related to different definitions. Some of these definitions have corresponding identifications procedures, for example standardised intelligence tests, cognitive processes assessment, and creative product assessment. However, there are limitations to all of these procedures. The most consequential problem is that their limitations are often ignored. Therefore, some gifted students are not identified because of the inappropriate use of these measures. In spite of these limitations, the identification methods are quite useful for identifying gifted individuals.

An identification method that might help the identification of gifted individuals become more complete is the Overexcitability Questionnaire developed out of Dabrowski's (1964) Theory of Positive Disintegration. The Theory of Positive Disintegration is a developmental personality theory. According to this theory, an individual's development is determined by his or her *developmental potential*, which is innate and unchanging (Piechowski, 1975), and by his or her interaction with the environment. Developmental

potential can be evaluated through an individual's *overexcitabilities*. Overexcitabilities are intensified manners of experiencing the world and exist in five forms, psychomotor, sensual, imaginal, intellectual, and emotional (Piechowski, 1975).

The Overexcitability Questionnaire (OEQ), which has 21 open-ended questions, was developed by Piechowski and Lysy (1983) in order to measure the five overexcitabilities. Since then, a number of studies have shown that there are different overexcitability profiles for gifted subjects as compared to non-gifted subjects (Gallagher, 1985; Miller, Silverman, & Falk, 1991; Piechowski & Colangelo, 1984; Piechowski & Cunningham, 1985). In these cases, gifted subjects had higher overexcitability scores than their comparison groups. Elevated scores for emotional, intellectual, and imaginal overexcitabilities were frequently noted. While these studies did not investigate the possibility of using the Overexcitability Questionnaire as an identification method for giftedness, they provide support for such a possibility.

The literature also indicates some problems that may exist if the Overexcitability Questionnaire is used for gifted identification. These difficulties include use with children under 12 years of age (Piechowski, 1990), and use with individuals whose semantic abilities in English are not high (Gallagher, 1985). One issue pertaining to the Overexcitability Questionnaire that has not been discussed thus far in the literature is cultural bias. However, it seems possible that cultural background could influence OEQ scores.

Therefore, in order for the Overexcitability Questionnaire to become a significant component of gifted identification procedures, further investigation is needed. Before the Overexcitability Questionnaire can be used to identify gifted individuals with confidence, the following must occur: Research must show that the Overexcitability Questionnaire can reliably differentiate between gifted and non-gifted individuals. To warrant its use as a supplementary instrument, research must also show that the Overexcitability Questionnaire provides a unique contribution to the methods presently in use. Finally, the limitations of the Overexcitability Questionnaire must be determined, so that the questionnaire can be used appropriately.

*Purpose of the Study*

The current investigation explored the following questions:

- 1) Can scores on the OEQ be used to discriminate between gifted and non-gifted individuals?
- 2) Can the OEQ be used to supplement current identification procedures by identifying individuals as gifted who were not identified based on current procedures?
- 3) Is the OEQ biased and what are some of its possible limitations?

## CHAPTER 2

### Literature Review

The following chapter is divided into three sections. The first section is a discussion of some classical and contemporary conceptual models and definitions of giftedness. The second section is an overview of various identification procedures in gifted education along with a critique of each. This section concludes with an in-depth presentation of an alternative method of identification that is new to the field. The final section addresses the purpose of the current study and outlines the research questions that were investigated.

#### *Definitions of Giftedness*

##### *Intelligence*

Terman (1926), upon launching into his well known longitudinal studies on eminence, was interested in characteristics of gifted individuals such as personality characteristics, physical attributes, and family characteristics and believed that hereditary factors played a supreme role in intelligence. Wells (1982) described Terman's gifted identification procedures as unidimensional where "general intellectual ability, as measured on a standardised scale, was the single attribute which defined this population" (p. 285). In his studies, Terman's subjects were "...within the highest 1 per cent in general intelligence as measured by the tests [Stanford-Binet and Terman Group Test] used" (Terman & Oden, 1951, p. 22). Terman defined gifted individuals as *intellectually superior* and used their IQ scores as the criterion for identification. One of Terman's (1926) hypotheses was that high-IQ children "...constitute the only pool out of which all geniuses inevitably emerge" (cited in Tannenbaum, 1991, p. 29).

Leta Stetter Hollingworth worked on similar research during this time and also emphasised the importance of intelligence in giftedness, however, her definition had a slightly different focus. Hollingworth (1931) proposed that the main difference between average and gifted children was in their degree of educability:

By a gifted child we mean one who is far more educable than the generality of children are. This greater educability may lie along the lines of one of the arts, as in music or drawing; it may lie in the sphere of mechanical aptitude; or it may consist in surpassing power to achieve literacy and abstract intelligence. (cited in Pritchard, 1951, p. 49)

Hollingworth believed that gifted meant well above average on standard scales of measurement for both intelligence and special talents, but discussed only intelligence because there was insufficient information available on the various talents (Hollingworth, 1926).

In Hollingworth's studies she used individuals in the top 1% in general intelligence to make her gifted sample but realised that this percentage was arbitrarily chosen and could be changed (Pritchard, 1951). She defined general intelligence as the "power to achieve literacy and to deal with its abstract knowledge and symbols" (Pritchard, 1951, p. 49). Hollingworth used a minimum criterion of 130 IQ on the Stanford-Binet in the initial selection, but in the final process she also considered other factors, thereby excluding some children with adequate IQ scores (Pritchard, 1951). Hollingworth asserted that intelligence tests were the only reliable and valid measure for identifying gifted children and that no other measure could replace them (cited in Pritchard, 1951, p. 50).

Although definitions based on intelligence cannot help but have a heavy loading of cognitive functions, either implicitly or explicitly, some frameworks are more multifaceted. For example, Sternberg (1991) essentially discussed giftedness only in the intellectual realm and based this discussion wholly on his Triarchic Theory of Human Intelligence (Sternberg, 1985). He put forth three main types of giftedness; analytic, synthetic, and practical which he considered "...general categories of superiority" (Sternberg, 1991, p. 46). The following are Sternberg's (1991) definitions of these types: Analytic giftedness, the type best measured by intelligence tests, is expressed in the ability to dissect problems and understand their parts. Synthetic giftedness involves one's ability to be "...insightful, intuitive, creative, or just adept at coping with relatively novel situations" (p. 45). Individuals with such abilities will not always perform well on conventional IQ tests; they may not see things the way most others do. Practical giftedness is illustrated by the person "...who can go into an environmental setting, figure out what needs to be done to succeed in that setting, and then does it" (p. 46). These individuals specialise in the *use* of abilities that they possess.

Sternberg discussed the components of intelligence, or “...loci of information processing that contribute to the kinds of giftedness described above” (p. 46). There are three groups of components: metacomponents, performance components, and knowledge acquisition components. Metacomponents, of which Sternberg has named eight, are “...executive processes used to plan, monitor, and evaluate problem solving and decision making...” (p. 46). Integration among the metacomponents is as important to giftedness as adeptness at each of them individually. Performance components are the processes that actually **do** the problem solving once the metacomponents determine which are necessary. There are numerous performance components that vary according to the type of problem being solved. Knowledge acquisition components are used to learn new information. “Gifted individuals are often particularly effective in the use of these components because they are so often adept at learning new information” (p. 49).

Two other issues that Sternberg found relevant to giftedness were the roles of experience and contextual functions. Every task an individual encounters is “...either relatively *novel* or relatively *familiar*” (p. 49). Where a task falls on this continuum has implications for which components are used, as well as the components’ execution speed. For example, task familiarity can lead to automatisisation of intellectual processes and although automatisisation frees processing resources, it also breeds inflexible thinking possibly impeding problem solving (Sternberg, 1991). In everyday experiences the components of intelligence serve three contextual functions. The three functions Sternberg referred to were: a) *adaptation* of oneself to a new environment so that the best fit possible can be established, b) *selection* of whether to adapt and conform to the new environment or to leave it because it is not suitable, and c) *shaping* of a new environment to more closely align it with one’s ideal situation. Sternberg stated “...that if there is a pinnacle of practical intelligence, it is in the ability of an individual to shape an environment” (p. 51).

In his final comments about the Triarchic Theory of Human Intelligence, Sternberg (1991) emphasised the considerable degree of variation found in the loci of giftedness and that to sum up an individual’s intellectual giftedness in a single number, an IQ score, is naive. Even with the differentiation among the intellectually gifted, he asserted “...that



there is one thing that people who are intellectually gifted throughout their lives have in common: They are people who know what they are good at, know what they are not good at, and are able to capitalise on their strengths and compensate for their weaknesses” (p. 51). Intellectually gifted individuals excel in some areas, but, not necessarily in all, or even many.

Howard Gardner also created a multifaceted intelligence theory applicable to giftedness. He first proposed his Theory of Multiple Intelligences when he wrote Frames of Mind (1983) and used this theory as a basis for viewing giftedness. He stated that “...we define *intelligences* as an ability or set of abilities that permit an individual to solve problems or fashion products that are of consequence in a particular cultural setting” (Ramos-Ford & Gardner, 1991, p. 56). The exact number of intelligences has not been established, neither has the specific nature and breadth of each been precisely determined (Gardner, 1983). Drawing from information on extremely diverse populations, for example, prodigies, gifted individuals, brain-damaged patients, *idiot savants*, normal children and adults, experts in different lines of work, and individuals from diverse cultures, Gardner (1983) formulated a set of criteria used to determine the set of intelligences.

I have become convinced of the existence of an intelligence to the extent that it can be found in relative isolation in special populations (or absent in isolation in otherwise normal populations); to the extent that it may become highly developed in specific individuals or in specific cultures; and to the extent that psychometricians, experimental researchers, and/or experts in particular disciplines can posit core abilities that, in effect, define the intelligence. (p. 9)

Thus far seven intelligences have been defined; linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, and intrapersonal. Linguistic intelligence includes abilities in syntax, semantics, and pragmatics as well as written and oral understanding and expression. Logical-mathematical intelligence consists of inductive and deductive reasoning and computational abilities. Traditional intelligence tests generally tap these two intelligences (Ramos-Ford & Gardner, 1991). Spatial intelligence “...entails the capacity to represent and manipulate spatial configurations” (p. 57). “...The ability to use all or part of one’s body...to perform a task or fashion a product” (p. 57) defines

bodily-kinesthetic intelligence. Musical intelligence has many components; pitch discrimination, sensitivity to rhythm, texture and timbre, as well as music performance and composition. Finally, the two person-oriented intelligences are interpersonal, the ability to understand the actions and motivations of people and to act on this information, and intrapersonal, which "...refers to a person's understanding of self....[and] includes knowledge and understanding of one's own cognitive strengths,...as well as one's feelings and emotions" (p. 58).

The intelligences are considered to be autonomous; they function and develop relatively independently of one another. "According to Gardner (1983) each one of these intellectual realms has its own specific memory, its own mechanisms of learning and...its own relevant history of development" (Shaughnessy, 1985, p. 72). "Especially suggestive [of this autonomy] are studies of tasks that interfere (or fail to interfere) with one another; tasks that transfer (and those that do not) across different contexts; and the identification of forms of memory, attention, or perception that may be peculiar to one kind of input" (Gardner, 1983, p. 65). Ramos-Ford and Gardner (1991) believe that this autonomy "...has significant implications for the gifted and talented community" (p. 58). They cite several examples of individuals who possess superior ability in one area while having average or even below average ability in several others.

#### *United States Commissioner of Education*

In response to the prevalent use and accompanied dissatisfaction with intelligence definitions of giftedness, such as those used by Terman and Hollingworth, Sidney Marland, Jr. (1971) as Commissioner of Education of the United States presented this as his definition of giftedness:

Gifted and talented children are those identified by professionally qualified persons who, by virtue of outstanding abilities, are capable of high performance. These are children who require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realise their contribution to self and society. (p.IX)

Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combination:

1. general intellectual ability;

2. specific academic aptitude;
3. creative or productive thinking;
4. leadership ability;
5. visual and performing arts;
6. psychomotor ability. (cited in Passow, 1981, p. 5).

Psychomotor ability was eventually removed from the list when the 1978 revision was presented (Wells, 1978). Marland's (1971) definition was revolutionary; it broadened the conceptualisation of giftedness drastically. It "...depicted a more flexible attribution of giftedness..." (Wells, 1982, p. 285). It included intellectual ability and specific academic aptitude, while putting equal weight on a number of more diverse areas of ability that had not previously been included.

### *Holistic*

Annemarie Roeper suggested that a holistic approach was necessary to understand the gifted. She believed that a child must be viewed as a total entity; "emotions cannot be treated separately from intellectual awareness or physical development; all intertwine and influence each other" (Roeper, 1982, p. 21). She believed that a gifted child's intellect and emotions "...are different from those of other children [his] age; they are not ahead or advanced. And they can only be understood if they are examined as a unit..." (Roeper, 1982, p. 21). Roeper (1982) proposed a definition of giftedness: "...giftedness is a greater awareness, a greater sensitivity, and a greater ability to understand and to transform perceptions into intellectual and emotional experiences" (p. 21).

Roeper (1982) recommended that the many categories giftedness is often divided into, (e.g. intellectual, creative, or musical) be viewed as many parts of a whole where the parts influence each other and some are more strongly manifest in a given individual than others. Diversity among the gifted population can be explained, at least in some aspects, by Roeper's approach. Drawing from her observations, Roeper proposed six types of gifted children based on how they choose to cope with their emotions: the perfectionist, the child/adult, the winner of the competition, the exception, the self critic, and the well-integrated child. She considered these types to be generalisations that may not describe any given child with complete accuracy. While Roeper (1982) acknowledged that giftedness is

usually defined by one aspect of the personality which is most apparent, she is reluctant to separate that one aspect for fear of not considering the total person. She nevertheless admits that it is helpful to be aware of the particular aspect which is most apparent when attempting to understand a child" (p. 24).

Betts and Neihart (1988) also ascribe to a holistic approach to giftedness that is based on "...several years of observations, interviews, and reviews of literature..." (p. 248). In their view "giftedness should not be defined by separate categories; every aspect of personality and development influences and interacts with every other aspect" (p. 248). They not only suggest that the gifted are different in their behavior, feelings, and needs from non-gifted individuals, but, that these characteristics also differentiate among individuals within the gifted population; the gifted population should not be viewed as a homogeneous group (Betts & Neihart, 1988).

Betts and Neihart (1988) attempt to "...describe a theoretical framework to profile the gifted and talented that differentiates gifted individuals on the basis of behavior, feelings and needs" (p. 248). They present six different profiles of gifted and talented students: successful, challenging, underground, dropout, double labelled, and autonomous. Included was information for each profile regarding an individual's feelings and attitudes, behaviors, and needs, plus adult and peer perceptions of the individual, identification suggestions, and suggestions for home and school support. They emphasize that "it is important to remember that this is a theoretical concept that can provide insights for facilitating the growth of the gifted and talented, not a diagnostic classification model..." (p. 248).

### *Product Oriented*

Witty (1958), in response to definitions based on IQ, "recommended that the definition of giftedness be expanded and that we consider any child gifted whose performance, in a potentially valuable line of human activity, is consistently remarkable" (cited in Passow, 1981, p. 7). Twenty years later Renzulli (1978) presented a similar definition. He believed that "...no single criterion should be used to identify giftedness..." (p. 182), and proposed his Triad Model of Giftedness. Renzulli stressed the importance

of three clusters of traits in giftedness: a) above average intelligence, b) above average creativity, and c) task commitment. He stated that “gifted and talented children are those possessing or capable of developing this composite set of traits and applying them to any potentially valuable area of human performance” (p. 261).

Renzulli defined *well above-average ability* in terms of either general or specific ability where general ability consists of processing information, integrating experiences, and abstract thinking and “specific abilities consist of the capacity to acquire knowledge, skill, or the ability to perform in one or more activities of a specialised kind...” (Renzulli, 1986, p. 66). Well above-average ability refers to the top 15-20% in performance or potential performance in any area, general or specific (Renzulli, 1986). *Task commitment* is a non-intellective cluster of traits, as compared to the other two clusters. It is a “...refined or focused form of motivation....[that] represents energy brought to bear on a particular problem (task) or specific performance area”(Renzulli, 1978, p. 182). “The third cluster of traits that characterises gifted persons consists of factors usually lumped together under the general heading of ‘*creativity*’ [italics added]” (Renzulli, 1986, p. 71). This is the only definition of creativity offered in several of Renzulli’s publications (1977, 1978, 1986). However he does make two somewhat clarifying statements about his definition: Creativity is more than just divergent thinking (Renzulli, 1977, 1986) and creative *accomplishments* are the important factor for giftedness (Renzulli, 1978, 1986).

Above-average ability, above-average creativity, and task commitment are interlocking clusters of traits and each cluster is considered to be an equal contributor to giftedness (Renzulli, 1978). “...No single cluster ‘makes giftedness’....it is the interaction among the three cluster that research has shown to be the necessary ingredient for creative/productive accomplishments”(p. 182). Allowing for the top 15-20% of students to be included makes it possible for a greater number to be involved in a program as compared to some of the narrow definitions that include only the top 5% students. Additionally, this type of definition increases the size of the talent pool from which individuals can move in and out of giftedness; when a student is lacking in task commitment he or she is “out,” and when an acute interest is taken in a project, he or she is “in” (Renzulli, Rimm, & Smith, 1981). ,

### *Personality*

This approach to giftedness will be discussed in greater detail than those already presented. It is the basis for the alternative identification approach to be explored in this study. Dabrowski's (1964) Theory of Positive Disintegration is a developmental personality theory and offers a different approach for viewing giftedness. Dabrowski based his theory on over two decades of 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). Dabrowski became interested in "...the intensity and richness of thought and feeling, vividness of imagination, moral and emotional sensitivity..." (Piechowski & Cunningham, 1985, p. 154) 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" (p. 154). Dabrowski (1972) emphasised the importance of emotions in development. He believed that "we need a general 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).

The Theory of Positive Disintegration is based on a multilevel, developmental principle. It does not deal with the specific contents of human growth or basic human needs, as do other theories. It "...deals directly with the nature of the developmental process" (Piechowski, 1974, p. 87). "Positive disintegration is the name for the [developmental] process by which the structure of a higher level replaces the structure of a lower one" (Piechowski, 1975, p.239). "Thus, the personality develops through the loosening of its cohesiveness....[and] allows the possibility of reconstruction at a higher level" (Dabrowski, 1964, p. 3). This approach to personality development was considerably different from the norm. Dabrowski (1964) felt that many unstable conditions, generally thought to have only adverse effects of people, such as depression, anxiety, nervous breakdowns, and personality disorders, were more often gateways to higher levels of personality development and should be viewed in a more positive light.

There are five levels of personality development in Dabrowski's (1964) theory. Miller and Silverman (1987) characterised each developmental level according to three areas of personal feelings: a) feelings toward values, b) feelings toward self, and c) feelings toward others. Figure 1.1 outlines the progression of the three areas of feeling through the five developmental levels from level 1 to level 5. Personality development is seen "...as a

Figure 1.1: Three Areas of Feeling at Each Developmental Level

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Feelings toward values: self-serving - stereotypical - individual - universal - transcendent

Feelings toward self: egocentricity - ambivalence - inner conflict - self-direction - peace & harmony

Feelings toward others: superficial - adaptive - interdependent - democratic - communionistic

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nonontogenetic evolutionary pattern of individual growth" (Dabrowski, 1972, p. 11). In other words, progression through the five levels of development is not automatic; one's age is not necessarily an indication of one's developmental level. Development is a function of other conditions. It is influenced by three groups of factors: a) constitutional or hereditary, b) environmental or social, and c) autonomous or self-determined (Miller & Silverman, 1987). The level of development that can be reached by any individual is determined by his or her original innate endowment, which Dabrowski referred to as developmental potential. One's developmental potential can only be achieved under ideal environmental and internal circumstances (Piechowski, 1975). It is important to add that developmental potential does not change throughout life; it remains constant (Piechowski, 1975).

Dabrowski also introduced the concept of psychic overexcitability. "Dabrowski noticed that many children, adolescence, and also adults, consistently overreacted to external and internal (i.e., intrapsychic) stimuli. The important aspect of his observation was that while the stimuli were different, the overreacting appeared limited to certain dimensions" (Piechowski, 1975, p. 255). He referred to this tendency to overreact as "psychic overexcitability" and named five different forms: a) psychomotor, b) sensual, c)

imaginational, d) intellectual, and e) emotional (Dabrowski & Piechowski, 1977a; Piechowski, 1975). The term overexcitability “...is a translation of the Polish word ‘nadpobudliwosc’ meaning ‘superstimulatability,’ the intended sense is of robust surplus and intensity” (Piechowski, Silverman, & Falk, 1985, p. 540). Dabrowski hypothesised that these very intense response patterns were innate, and that such increased intensity, frequency, and duration of these overexcitabilities was indicative of a greater developmental potential than the norm (Miller & Silverman, 1987). He used the term *overexcitability* to emphasise 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).

The five forms of overexcitability can be thought of as dimensions of mental functioning (Piechowski, 1979). They are the basic components of developmental potential; special talents and abilities make some contribution to one’s developmental potential as well (Dabrowski, 1972; Dabrowski & Piechowski, 1977b). The five independent modes of functioning or experiencing are sensual, psychomotor, intellectual, imaginational, and emotional overexcitability (Piechowski, 1974; Piechowski & Colangelo, 1984) and are present in every individual, at least in rudimentary form (Piechowski, 1975). The following are descriptions of the five overexcitabilities:

*Psychomotor overexcitability* is characterised by an organic excess of energy which manifests itself as a love of movement, rapid speech, and increased capacity to be active. Impulsiveness, pressure for action, and restlessness are also manifestations of psychomotor overexcitability.

*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 refined beauty. Other manifestations include simple sensory pleasures derived from such things as touching objects (e.g., fabric, tree bark, skin), the taste of food, and the smell of anything from gasoline to an apple orchard in full bloom. Also, appreciation of beautiful objects (e.g. gems, furniture), writing styles, and words are considered sensual overexcitability.



*Intellectual overexcitability* must first be distinguished from intelligence. For example, intelligence is expressed in the ability to solve math problems, while intellectual overexcitability is expressed in the *love* of doing math problems. Persistence in asking probing questions, avidity for knowledge, discovery, and theoretical analysis are manifestations of intellectual overexcitability. “Other expressions include: a sharp sense of observation, independence of thought (often expressed in criticism), symbolic thinking, development of new concepts, striving for synthesis of knowledge; a capacity to search for knowledge and truth” (Piechowski & Colangelo, 1984, p. 82).

*Imaginational overexcitability* in its purest form is expressed through vividness of imagery, rich association, use of metaphor in verbal expression, strong and sharp visualisation, and inventiveness. Other forms are vivid and detailed dreams or nightmares, fear of the unknown, predilection with fantasy and magic tales, poetic creativity, and a developed sense of humour.

*Emotional overexcitability* is a function of the way relationships are experienced, and can be expressed as attachments to people, things, or places, as well as, one’s relationship with oneself. Piechowski (1975) explained an important aspect of emotional overexcitability: Intensity and display of emotions are not sufficient to be considered a developmentally significant expression, the relationship feelings must be present. Characteristic expressions include deep relationships, strong affective memory, concern with death, and feelings of compassion and responsibility. Depression, need for security, self-evaluation, shyness, and concern for others are also characteristic expressions of emotional overexcitability (Piechowski, 1975, 1986; Piechowski & Colangelo, 1984; Piechowski & Cunningham, 1985).

Piechowski (1979) suggested that these five forms of overexcitability could be thought of as the main channels of perception. They have frequently been likened to color filters through which all stimuli, external and internal, reach a person (Piechowski, 1974, 1979; Piechowski & Cunningham, 1985). Each filter can be widely open, partially open, or almost closed; the size of the opening determines the quality and quantity of the information flow. Examples of different intensities of emotional overexcitability are, low,

“I feel really high when I play football with my friends [boy, age 13]” and high, “When I feel really happy I feel like nothing can go wrong for the rest of my life....When I am really happy it is more so than other people I know. When I am quite happy I am so high that it seems like nothing could ever get me into a bad mood [boy, age 13]” (Falk & Piechowski, 1991, p.2). Also, these filters determine to which stimuli an individual is capable of responding, and in what way. “In a profile of a person who shows signs of overexcitability, we will normally find a dominant form accompanied by varying strengths of other forms” (Dabrowski & Piechowski, 1977a, p. 35). With this in mind, the wide variety of stimuli a person is exposed to will often be converted to the most reactive form, the dominant overexcitability.

“If more than one, or all five channels have fairly wide apertures, then the abundance and diversity of information (that is, simultaneous experiencing in different modes) will inevitably lead to dissonance, conflict, and tension” (Dabrowski & Piechowski, 1977a, p. 32). However, there is agreement in the literature that such dissonance, conflict, and tension are the substrates of the developmental process and enrich one’s mental development (Dabrowski, 1972; Dabrowski & Piechowski, 1977a, 1977b; Piechowski, 1979).

Although all overexcitabilities contribute to one’s development, they do not do so equally. Emotional, intellectual, and imaginal overexcitability are more developmentally significant than sensual and psychomotor, and give rise to psychic richness (Dabrowski, 1972; Dabrowski & Piechowski, 1977a). Additionally, emotional overexcitability is essential to reach the highest developmental level (Piechowski, 1975). “Great strength of psychomotor and sensual forms limit development to the lowest levels only” (Piechowski, 1975, p. 258). These two forms cannot by themselves lead to an increase in psychic processes (Dabrowski & Piechowski, 1977a), however, their possibilities for positive development are enhanced when combined with the richer forms of overexcitability (Dabrowski, 1972).

“Only when the expressions of ‘excitability’ are beyond and above what can be considered common or average do they make a significant contribution to development”

(Piechowski, 1979, p. 28). Dabrowski and Piechowski (1977b) point out that development is most accelerated when all five overexcitabilities are present in their most intense form. Piechowski (1979) offers additional clarification about what types of expression are considered to be developmentally significant:

And it is this criterion—contribution to a higher level of development—that guides the selection of expressions of *overexcitability* apart from the expressions that are not developmentally significant. Thus, for instance, one may readily consider violent and explosive temper as a sign of emotional overexcitability. But, this is insufficient. Violent emotions which are uncontrolled, not reflected upon, and which do not occur in the context of a true and deeply felt personal relationship, do not count as emotional overexcitability in the sense of the term as used here. This is because intense, even violent, feelings cannot go unchecked in the context of a personal relationship out of consideration for the other person. (Piechowski, 1979, p. 28)

Because these enhanced modes of experiencing contribute to an individual's psychological development, their strength is considered a measure of developmental potential (Dabrowski & Piechowski, 1977a; Piechowski, 1975, 1986).

Dabrowski (1972) suggested that reality is seen in a stronger and more multisided manner by those possessing either one or several forms of overexcitability. He added that "reality for such an individual ceases to be indifferent but affects [him] deeply and leaves longlasting impressions" (p. 7). Schiever (1985) noted that "these heightened responses to stimuli...have the effect of making concrete stimuli more complex, enhancing emotional content, and amplifying every experience" (p. 223). Because overexcitabilities are taken to be a measure of developmental potential, they are seen as a measure of one's giftedness (Piechowski, 1979), and, when combined with one's environment and drive to excel form what is recognised as a gifted person (Gallagher, 1986).

There are numerous models and definitions of giftedness, some of which were just outlined. Although such definitions and models can be quite detailed there is no guarantee that a corresponding identification procedure has been outlined in similar detail. The following section is a presentation of some of the procedures used for identifying gifted students.

### *Identification Procedures*

#### *Intelligence Assessment*

*Intelligence tests.* The widespread use of intelligence tests for gifted identification created a need for many different types of assessment instruments. There are individually administered tests, as well as group tests. Some are multilevel, or appropriate for students at different developmental stages, and ages, while others are specific to one age-group. Additionally, there are those intelligence tests that have addressed issues of socioeconomic status, cultural, and gender differences. The administration procedures for these tests vary a great deal: Some intelligence tests are untimed while others have strict time limits for some or all portions of the test. Some tests require training in order to administer and interpret their results while others merely require a thorough reading of the test manual. The following are some examples of intelligence tests that are often used in gifted identification.

The Wechsler Intelligence Scale for Children - Revised (WISC-R) (Wechsler, 1974) is often used for assessment of elementary school children (Feldhusen & Baska, 1989), although it can be used for children up to age sixteen. This is an individually administered intelligence test with a combination of timed and untimed sub-tests. To administer this test one must be properly trained (Karnes & Collins, 1981). The Stanford-Binet, the intelligence test used in Terman's studies, is similar in form and administration procedures to the WISC-R.

An intelligence test with different qualities is the Canadian Cognitive Abilities Test (CCAT) - Form 7 (Wright, 1989). The CCAT is a multilevel test that can be used for students in grades three through twelve. It is a group test with time constraints and can be administered without any special training. Additionally, a great deal of attention was given to item fairness regarding ethnic and gender biases.

Raven's Progressive Matrices, both Standard (1956) and Advanced (1962) Forms, are considerably different types of intelligence tests than the aforementioned examples in two respects. First, they do not have portions that are verbal in nature and there are norms for untimed administration, as well as, timed administration. These tests are completely

figural and therefore “may be appropriate for culturally diverse students” (Karnes & Collins, 1981, p. 249)

These outlines provide examples of various procedures found among the numerous intelligence tests that exist. The procedures are diverse to meet the differing needs of those educators, administrators, and psychologists that make use of such instruments.

*Cognitive processes assessment.* Based on his triarchic theory of human intelligence, Sternberg (1991) is developing the *Sternberg Triarchic Abilities Test* to be used as an assessment instrument to measure the various abilities outlined in his theory; for example analytic, synthetic, practical, and automatisisation abilities. The test also provides scores for verbal, quantitative, and figural processing. Sternberg suggested that one special use of his test was to identify gifted individuals. A total of seven subscores are derived from the test; “the idea is that someone may be gifted with respect to some aspects of the theory but not others” (Sternberg, 1991, p. 51). The test was created in two forms and at nine levels to be used with individuals ranging from kindergarten to adult.

Sternberg (1991) asserts that The Sternberg Triarchic Abilities Test is broader and more progressive than conventional intelligence tests. It measures abilities other than analytic and provides separate scores for each ability area. This test measures processes rather than products thereby decreasing the strength of environmental influences on an individual’s score; for example, it “...measures the precursor to vocabulary—learning from context...” (Sternberg, 1991, p. 52). Sternberg did not include severe time limits in his test except for the automatisisation subtest and therefore distinguishes between mental speed and mental strength. The last difference Sternberg (1991) emphasises is that his test is based on theory and not mere empirical information as are conventional intelligence tests. As a result, what Sternberg’s test measured is clearly defined. “Thus, the idea of testing is to expand our notion of giftedness and then be able to identify as gifted those individuals who may be adept in skills that are not measured by conventional tests” (p. 52).

*Multiple Intelligence Assessment.* Ramos-Ford and Gardner (1991) outlined an assessment process for the identification of gifted children based on Gardner’s (1983) theory of multiple intelligences. Some of the main principles for identification based on a

multiple intelligence approach that Ramos-Ford and Gardner felt were essential were ecological validity, intelligence-fair assessment, and individual working styles. Ecological validity refers to the degree to which the assessment situation resembles actual working conditions. According to Ramos-Ford and Gardner (1991), assessment of an individual's abilities is most informed and useful when ecological validity is high. Intelligence-fair assessment refers to the appropriateness of the assessment instrument for any given intelligence; for example, social intelligence assessment would include observing the child in direct interaction with others, not by means of a verbal questionnaire. Ramos-Ford & Gardner also emphasise the importance of determining an individual's approach, or working style in each domain of intelligence; that is, "...the level of engagement, persistence, and distractibility of an individual as [she] interacts with a variety of materials" (p. 59). Ecological validity, intelligence-fair testing, and working styles provide rich information useful for effective pedagogical programming (Ramos-Ford & Gardner, 1991).

Project Spectrum is a preschool where assessment aspects, based on the multiple intelligence approach to identification, are integrated into the curriculum at different points. The guiding factors are "...a general philosophy and approach to preschool curriculum; the development of 15 measures that more formally tap 4-year-olds' cognitive capabilities in the seven domains of intelligence and their subcomponents; and the identification of over a dozen working styles seen in different children of this age" (Ramos-Ford & Gardner, 1991, p. 61). The fifteen measures used are meant to complement an enriched classroom and to be stimulating and fun for the children. Some of the measures include narrative-storytelling board, music production-singing activity, creative movement-biweekly curriculum, and many others. The measurement approaches vary from holistic checklists to quantified score sheets depending on the activity.

All of the information gathered from the fifteen measures is compiled to create an intelligence profile for each child. The importance of an individual's *intelligence profile* is stressing his or her *relative* and *absolute* strengths (Ramos-Ford & Gardner, 1991). Ramos-Ford and Gardner (1991) define relative strengths as those cognitive abilities that

are strong in relation to those within an individual, whereas absolute strengths are those cognitive abilities that are strong compared with a group of peers. “The MI [Multiple Intelligences] approach to assessment strives toward identifying the gift in every individual” (Ramos-Ford & Gardner, 1991, p. 63) and stresses the importance of ongoing assessment.

### *Creative Production*

Renzulli, Rimm, and Smith (1981) created the Revolving Door Identification Model for identifying gifted students based on Renzulli's (1978) three-ring conception of giftedness. Renzulli et al. (1981) described the important components of their identification model: the three clusters of traits, four general families of information, and sources of information. The three clusters of traits used to define giftedness, above average ability, above average creativity, and task commitment, were defined earlier. These three psychological constructs have been translated into four families of information that are more practical for classifying behavior; they are psychometric, developmental, sociometric, and performance.

Psychometric information is that information gathered through the assessment of human traits, usually in the form of standardised tests (i.e. intelligence, aptitude, creativity, achievement, musical and artistic ability). Developmental information is used to describe and document behaviors in order to identify those that are different (i.e. above or below) from the generality of peers in a given category; for example, rating scales for motivation, leadership, dramatics, etc. “Sociometric information is defined as information about an individual that is provided by members of his or her peer group” (p. 42). Lastly, performance information includes actual final products created by an individual as well as descriptions of such accomplishments. Such abilities as leadership, task commitment, and proficiency are noted in this area of information and can take the form of scientific investigations, dramatic performances, written materials, event organisation, etc.

Renzulli et al. (1981) included an extensive list of sources of information (i.e., actual measurement devices for the many types of information) that must be gathered in the identification process. They range from standardised tests to rating sheets and anecdotal

information that can be slotted into one of the families of information. Renzulli et al. (1981) pointed out that the four families of information are not mutually exclusive; they do overlap. They added that, "...the specific category into which a particular instrument or procedure is classified should not be the major concern so long as we keep the multiple criteria approach in mind" (p. 37).

To help understand the role this information plays in the identification process, two additional categories must be defined, status and action information. Status information is defined as "...any and all types of information that can be prerecorded ('put down on paper') prior to the time that a student actually gains entrance to (or is revolved into) a special program" (p. 31). The foremost purpose of this type of information is to form the talent pool of students to eventually be considered for advanced level enrichment. Status information can come from any of the four families of information, however, performance information will generally be used as action information. Action information is defined as "...the dynamic interactions that take place when a student becomes extremely interested in or excited about a particular topic, area of study, issue, idea, or event in his school or non-school environment" (p. 36). Whereas status information generally provides insight into a students above average ability, action information supplies examples of creativity and task commitment. Action information is primarily used to determine at what point a student should be revolved into the program from the talent pool: It should not be used to predetermine who should be rotated into the program as is the purpose of status information (Renzulli et al., 1981).

All of these models, definitions, and identification procedures have advantages, as well as shortcomings. Much of this is because each one focuses on certain aspects of giftedness; some are very specific, thereby neglecting various relevant issues. The following section is a critique of the previously outlined literature.

### *Critique of Definitions and Identification Procedures*

#### *Intelligence*

It is well known that intelligence tests are frequently used as the identification method of choice for gifted programs and research studies (Hall, 1985; Hoge, 1988; Kaufman &



Harrison, 1986, Sternberg, 1991; Treffinger & Renzulli, 1986) and too often as the sole criterion. "...The tests have predictive power for success in schooling, but little predictive power outside the school context, especially when more potent factors like social and economic background have been taken into account" (Gardner, 1983, p. 16). Official definitions of giftedness are often multidimensional and include statements about levels of motivation, creativity, and leadership. "Yet, the actual selection of the gifted pupils may be based solely on scores from an individual IQ test such as the WISC-R, an instrument whose scores carry no connotations respecting academic motivation, creativity levels, or leadership qualities" (Hoge, 1988, p. 13). Additionally, "...as indicated by Anastasi (1982), there are many important characteristics of children that intelligence tests have never attempted to measure, for example, mechanical, motor, musical, and artistic abilities, emotions, and attitudes" (cited in Kaufman & Harrison, 1984, p. 158). Renzulli (1978) found that "the studies clearly indicate that most numbers and proportions of our most productive persons are not those who score at the ninety-fifth percentile on standardised tests nor were they necessarily straight-A students" (p. 182).

Kaufman and Harrison (1986) outlined numerous reasons why intelligence tests are useful and should not be disregarded; for example, superior identification of academic achievement and success, excellent psychometric properties, proficiency in identifying non-stereotypical gifted students (i.e. underachieving and handicapped), fairness to minority ethnic and racial groups. Because giftedness is very often equated with above average intelligence, standardised I.Q. test scores are usually used for identification purposes.

One major problem with this approach is that standardised I.Q. tests are predictive of academic achievement (Hersen, Kazdin, & Bellack, 1984; Gardner, 1983) and "...emphasise 'schoolhouse' giftedness..." (Treffinger & Renzulli, 1986, p. 152). Therefore, using them for gifted identification purposes automatically discriminates against students who fit poorly into the educational system. Perhaps some areas of giftedness are more prevalent than we realise while being less critical for achieving academically. If this is true, superior ability in such areas would have two major disadvantages; a) these superior abilities would not likely be recognised and b) the student would have to rely on his or her

abilities that are less superior. In such cases, achievement would reflect the student's less developed abilities. For example, Betts and Neihart (1988) point out that teachers may view gifted students who are high in creativity as too spontaneous, nonconforming, and disruptive.

Intelligence tests are extremely valuable assessment devices. "If an identification technique works well in some cases but has limitations in others, you don't discard it until you find another one with the same strengths and fewer limitations" (Felder, 1986, p. 176). However, these limitations are often ignored. Intelligence test scores are frequently used as the sole criterion for inclusion in research studies and gifted programs. According to Kaufman and Harrison (1986), this should never be done. "Standardised [IQ] tests have a place, but there is little justification for their virtual monopoly in identification" (Shore, Cornell, Robinson, & Ward, 1991, p. 52).

In Sternberg's (1991) discussion of his triarchic test he states that "the advantage to the use of a test such as this one is that intellectual giftedness is defined more broadly than would be the case if one used only a single IQ score" (p. 51). While having only a single IQ score has been deemed inappropriate for gifted identification (Kaufman & Harrison, 1986; Sternberg, 1991), Tannenbaum (1991) asserted that "the recent shift of emphasis from proficiency to process of thinking promises to yield better clinical insights into giftedness (Sternberg, 1986), but again the sole stress is on mental functioning while ignoring other vital facilitators in the psyche and environment" (p.27). Sternberg (1991) mentioned that his theory and identification procedure are not inclusive; "creativity is important,...as are personality dispositions and motivational states" (p. 53). While it is reassuring to know that Sternberg acknowledges the importance of creativity and personality, it is a serious shortcoming of the identification procedure not to incorporate them. Sternberg does, however, feel that his approach to giftedness provides a broader understanding of intellectual giftedness.

Ramos-Ford and Gardner's (1991) approach to gifted identification "...yields rich information about a child's distinctive profile of capabilities, interests, and styles of learning across the many domains of human cognition" (p. 63). It has many positive

attributes, such as, ecological validity, intelligence-fair testing, and suggestions for future individualised programming. Ramos-Ford and Gardner's (1991) identification procedure broadened the conceptualisation of intellectual giftedness to include more discrete processes (i.e. movement, music, visual arts, etc.), as does Sternberg's (1991), however, Thorndike and Hagen (1959) stated that "they have not improved matters by advocating probes into special aptitudes, considering the bleak outcomes of longitudinal research on the validity of such measures" (cited in Tannenbaum, 1991, p. 27).

#### *Holistic and U.S. Commissioner of Education*

Although both the Holistic and United States Commissioner of Education definitions of giftedness are insightful in their own ways, they do not offer any specified procedure for practical identification purposes. While they have much to add to the area of gifted identification in the form of differing approaches, there are no concrete applications provided to insure proper interpretation of their assertions.

Renzulli (1978) directed attention to three weaknesses in the Marland definition. First, the Marland definition does not include any motivational factors, which according to Renzulli (1986), are an essential part of the identification process. Second, the six categories of giftedness are not parallel in nature: that is "two...[are] general performance areas in which talents and abilities are manifested. The remaining categories are more nearly processes that may be brought to bear on performance areas....[for instance] processes such as creativity and leadership do not exist apart from a performance area to which they can be applied" (Renzulli, 1978, p. 181). The last point Renzulli (1978) made about the Marland definition is that it is often misused and misinterpreted. Although there are six categories outlined in the definition, and many practitioners "talk a good game," high intelligence test scores continue to be used as a minimum requirement for entrance into gifted programs. The definition "...fails to give the kind of guidance necessary for practitioners to avoid such a pitfall" (p. 182).

#### *Product-Oriented Frameworks*

The Revolving Door Identification Model (Renzulli et al., 1981) was based on Renzulli's (1978) three-ring conception of giftedness and his Enrichment Triad Model

(1977) for gifted programming purposes.

It is an approach designed to increase substantially the number of students involved in special services, minimise concerns about elitism by doing away with the you-have-it or you-don't-have-it concept, and most importantly, provide supplementary services *at the time* and *in the performance area* where such services have the highest potential for doing the most good for a particular youngster. (Renzulli et al., 1981, p. 5)

In order to increase the number of students receiving special services, that is enrichment programming, Renzulli et al. (1981) proposed the establishment of a "talent pool" consisting of 15% to 25% of the general student body "*It is important to emphasise that all Talent Pool students are considered to be members of the special program, even at times when they are not revolved into an advanced level enrichment experience* [italics in original]"(p.7). Therefore, the usual 5% of students involved in gifted programs (Renzulli, et al., 1981) is increased three to five times. This method of identification, by including a greater number of students and depending on measures of creativity and task commitment, decreases the applicability of the gifted-elitist analogy that is often made in programs where IQ is the sole criterion for inclusion. Lastly, the possibility for more appropriate individual programming is dramatically increased because level three enrichment activities, self-directed advanced projects, are individually determined *by the student* based on his or her high commitment and interest levels in a given subject area (Renzulli, 1977).

The focus of this model is on practical applications of creative investigation, inquiry, and productivity. Renzulli (1977) proposed that there is a predisposition among the gifted for this type of work that is not found in the average population. The emphasis on creative productivity has at least one limitation: "Such a definition legislates the underachiever out of the gifted category" (Gallagher, 1991, p.16). This is a criticism that has been made in much of the literature (Barbe, 1963). Underachievers show a discrepancy between ability and performance, and the focus on performance in Renzulli's model ignores this discrepancy. Even though Renzulli does include the words "capable of developing" in his definition with regard to his three rings of trait clusters, Gagné (1991) appears to remain unconvinced of Renzulli's intention to include underachievers because there is no further mention of this portion of the definition in any other part of the text.

There are a few other issues of concern regarding Renzulli et al.'s identification procedure. First, the subjectivity of determining adequate task commitment and potentially valuable areas of interest is disturbing. If a child's interests go undetected or are not considered potentially valuable, or if their task commitment seems under par, he or she will not be revolved into the program. Second is the problem of procedural implementation. "...Programs that espouse the Renzulli approach generally use cut-off scores on standardised tests of achievement and intelligence" (Kirschenbaum, 1986, p. 54) to determine whether or not a child will receive advanced level enrichment services, which goes against the multiple criteria approach Renzulli supports. As such tests are considered to accumulate status information, they should be used only to establish the talent pool. Finally, Renzulli (1977) points out two areas within his model that need further definition: a) experiences in the arts for primary children and b) students who are not turned on by investigative activity.

#### *Proposed Method of Identification - The Overexcitability Questionnaire*

Kazmierz Dabrowski's Theory of Positive Disintegration led to the development of a questionnaire, designed by Piechowski (1979), to assess the intensity and forms of overexcitabilities an individual possesses. The instrument is called the Overexcitability Questionnaire (OEQ). Levels of overexcitability are indicative of developmental potential (Piechowski, 1975), and by determining the levels of overexcitability (OE) one can measure an individual's developmental potential.

The Overexcitability Questionnaire is a 21 question free-response instrument that has developed over time. The following information about the development of the OEQ is taken from Lysy and Piechowski (1983): Overexcitability ratings were originally done on autobiographical material. "The rated statements (totalling 433) were then examined, a table set up of categories of OE, and the OEQ developed from this table" (p. 286). The original questionnaire consisted of 41 questions grouped according to overexcitability. Each response was scored for all five overexcitabilities; if an OE was present the response received a score of one, and if it was not present the score was zero. Therefore, each answer could receive a possible score of five if all OEs were present.

Lysy and Piechowski (1983) decreased the number of questions because they found that 20 of the 41 were not particularly discriminating. They then rearranged the order so that the questions were no longer grouped according to OE so that the subjects' attention would last longer. The most recent change in the questionnaire was in the rating procedure; the original scale of zero or one was changed to zero through three (Piechowski et al., 1985). The original scale was considered to be conservative in that minimally adequate responses would receive the same score as extremely rich responses (Piechowski & Colangelo, 1984). The four point scale (0 - 3) allows for discrimination of overexcitability intensity that was not possible using the previous scoring method. The format that is currently used in the research is a 21 question free-response questionnaire that is scored on a scale of 0 to 3.

Piechowski and Cunningham (1985) asserted that "his [Dabrowski's] theory offers a promising framework for examining the components and developmental dynamics of giftedness..." (p.153). Dirks and Quarfoth (1981) investigated the efficiency of breadth vs. depth methods of gifted identification and discovered that depth methods excluded fewer gifted students. The Overexcitability Questionnaire incorporates both approaches. It examines OE intensity (depth) across five areas of mental functioning (breadth), increasing the chances of accurate identification.

Unfortunately, there is limited research available that has used the OEQ because it has not been around for very long. The comparative studies that have been conducted are quite varied. The five overexcitabilities, or dimensions of developmental potential, were found to be stronger in the gifted than in the non-gifted for adults ( Miller et al., 1991; Piechowski & Cunningham, 1985; Silverman & Ellsworth, 1981) and children and adolescents (Gallagher, 1985; Piechowski & Colangelo, 1984). Some OEs were found (a) to be strongest in artists when compared with the gifted (Piechowski & Cunningham, 1985; Piechowski et al., 1985), (b) to have greater strength in more creative gifted adolescents than less creative ones (Schiever, 1985), and (c) to correlate with developmental level (Lysy & Piechowski). The following paragraphs will be more detailed summaries of some selected research articles that focused on Dabrowski's theory and the

### Overexcitability Questionnaire.

Piechowski et al. (1985) compared OE profiles of three groups of adults; a) artists, b) intellectually gifted, and c) university graduate students. The researchers wanted to explore the usefulness of the OEQ for the study of various forms of talent. The subjects included 23 artists (11M, 12F, mean age = 36.2), 37 intellectually gifted (11M, 26F, mean age = 35.6), and 42 graduate students (12M, 30F, mean age = 29) taken from a study by Lysy and Piechowski (1983). The 21 question form of the OEQ was used and it was scored on the 0 - 3 point scale. The subjects answered the questionnaire at their leisure. The responses were scored by two independent raters. When a difference occurred between raters a consensus procedure was used to reach the final score; when an agreement could not be reached a more experienced rater was called in for arbitration. The interrater reliability was .75 before consensus.

The results were that the artists had significantly higher scores than the graduate students on all five OEs and significantly higher scores than the intellectually gifted on emotional and imaginal OEs. The intellectually gifted subjects had significantly higher emotional, intellectual, and imaginal OE scores than the graduate students. It was also noted that 14 of the 42 graduate students had an OE profile like that of the intellectually gifted group. Piechowski et al. (1985) provided a great deal of literature on the characteristics of the three groups of subjects to support the OE profiles established through the subjects' responses. The final conclusion of this article was that "the model of developmental potential integrates five dimensions of mental functioning...[and] facilitates a comparative assessment of these five dimensions and hence an assessment of how they contribute to the expression and realisation of different kinds of talent" (p. 547); the model is well suited for the study of individual differences.

Scheiver (1985) examined OE profiles of the gifted as well as the relationship between OE profiles and creative personality characteristics. The subjects were 21 seventh and eighth grade students (13M, 8F, mean age = 12.8). The instruments used were the Something About Myself part of the Khatena Torrance Creative Perception Inventory (SAM) and the OEQ in its 21 question form. Some of the items of the OEQ were modified

to make understanding easier for the subjects of this age group. Scoring was done by two independent raters followed by consensus between them and arbitration when necessary. Reliability between individual scores and the final scores resulting from consensus was .82.

The OEQ was presented as a descriptive writing assignment that was given a portion of class time throughout one week with the following instructions: The assignment was not graded or timed, there were no wrong answers, and the answers needed thought and reflection. The SAM scores were used to determine which subjects would be placed in the high and low creative groups; the top and bottom thirds were used for analysis. The researchers included information to support a relationship between OE profiles and creativity.

The main finding was that imaginal, intellectual, and emotional OEs were significantly higher in the high creative group as compared with the low creative group of Scheiver's gifted sample. Also worth noting is the OE profile of the low creative group since all of Scheiver's subjects were gifted; the top three overexcitabilities were intellectual, imaginal, and *psychomotor*, which is different than the three reported as significant in most other studies. The only other exception to the emotional, intellectual, imaginal OE rule was found in Gallagher's (1985) study. In a group of gifted and non-gifted sixth graders, the resulting profile for the non-gifted group was the same as the one for Scheiver's (1985) less creative group, intellectual, imaginal, and *psychomotor*.

The major conclusion of Scheiver's (1985) study was that imaginal, intellectual, and emotional OEs appeared to be related to the creative personality. Scheiver (1985) also suggested that "perhaps the most exciting promise of OEs lies in the realisation that there is a way to conceptualise, to measure, and to describe the qualitative differences of the gifted" (p. 225).

The final article to be summarised is Miller et al. (1991). They were interested in investigating the relationship between developmental potential and actual developmental level. They had three major research questions; a) was developmental potential higher in a group of intellectually gifted subjects vs. graduate students and were there any gender



differences, b) was overall developmental level higher in the intellectually gifted group and were there any gender differences, and c) could OEs be used to predict level of emotional development in the gifted sample.

The subjects were 41 intellectually gifted adults (11M, 30F, age range of 19 -54) and 42 graduate students (12M, 30F, age range of 22 - 50) taken from Lysy and Piechowski's (1983) study. Two instruments were used, the OEQ and the Definition Response Instrument (DRI) created by Gage, Morse, and Piechowski (1981), which measures level of emotional development according to Dabrowski's theory. Content analysis was used to score both instruments. Each questionnaire was scored by two independent raters and followed by a consensus procedure. The reliability between the individual raters and the consensus score averaged .80 for the OEQ and .87 for the DRI.

The results included significantly higher emotional and intellectual OE scores in the intellectually gifted group. Gender differences for OEs consisted of higher emotional scores for females and higher intellectual scores for males. There were no significant differences between the two groups for level of emotional development, however, females scored significantly higher than males. Miller et al. (1991) determined that predicting developmental level from OE scores was possible to some degree. Imaginational and emotional OEs had the most predictive value for the gifted sample while intellectual and emotional were most significant for the graduate student sample. The main point brought out in this study was that there is an unfortunate discrepancy between the developmental potential of the gifted subjects and their actual level of emotional development. This has serious implications for the education of these individuals.

Some findings regarding overexcitability profiles, a few of which are similar to those in the articles outlined above, are as follows: All of the studies comparing gifted with non-gifted subjects resulted in significantly higher imaginational, intellectual, and emotional OE scores for the gifted samples (Gallagher, 1985; Miller et al., 1991; Piechowski & Colangelo, 1984; Piechowski et al., 1985). Silverman and Ellsworth (1981) found sensual overexcitability to be significantly higher for the intellectually gifted group as well as imaginational (M), intellectual (T); and emotional (E).

Piechowski and Cunningham (1985) found that groups of professional artists had significantly higher imaginal (M) and emotional (E) OE scores as compared with adult gifted samples. Gender differences were also discussed in some of the studies; Lysy and Piechowski (1983) noted that males had significantly higher psychomotor scores. Piechowski (1990) and Piechowski and Cunningham (1985) reported higher emotional OE scores for female subjects.

It is clear from the available literature that overexcitability profiles can distinguish between groups of gifted and of non-gifted individuals. There is an indication of a relationship between giftedness and intensity of OEs; the literature generally points to significantly higher scores on imaginal, intellectual, and emotional OEs. Piechowski and Colangelo (1984) also provide support that developmental potential is an individual's original endowment when they report a constancy of scores across age groups.

The OEQ has numerous advantages, however, there are some issues regarding the OEQ that should be taken into consideration when putting it to use that center around its linguistic and written nature. Piechowski (unpublished) stated that the OEQ should not be used with children younger than 12 years of age because for many students of that age, writing itself can be a problem. Gallagher (1985) reported a possible bias of the instrument toward responses based on semantic representations; those people with poor semantic ability may perform worse on the OEQ than those with good semantic abilities. This could have implications for individuals whose first language is not English or who are fluent in several languages. However, to date, no studies have investigated this. Another issue of the OEQ that has not been dealt with yet is the possibility of cultural bias. Therefore, until these concerns are properly investigated, they should serve as guidelines when determining the appropriateness of the OEQ for any given individual, as well as in the interpretation of responses.

The Overexcitability Questionnaire has possibilities as an alternative identification instrument for gifted individuals beyond those that already exist. A stronger OE profile indicates stronger talent (Piechowski & Cunningham, 1985). "OEQ responses indicate the extent to which giftedness permeates every fibre of the gifted person's being....[his or her]

differences in perceptions, reactions, and modes of processing” (Scheiver, 1985, p. 226). “As a free-response instrument the Overexcitability Questionnaire can, through content analysis, give...quantitative and qualitative data” (Piechowski et al., 1985, p. 544). The OEQ could be a valuable addition to the field as there is currently no instrument that measures these five areas of personality simultaneously (Gallagher, 1985).

“The model facilitates a comparative assessment of these five dimensions and hence an assessment of how they contribute to the expression and realisation of different kinds of talent” (Piechowski et al., 1985, p. 547). Gallagher (1985) suggested that the most promising aspect of this theory is that it could help determine the underlying commonalities among the different areas of giftedness. “By identifying how intellect, creativity, leadership, and other kinds of giftedness are alike, rather than dissimilar, perhaps we can find how these avenues can be linked...” (Gallagher, 1985 p. 119). Scheiver (1985) thought that, “those who are concerned with the academic, social, or affective needs of the gifted may be helped to define and to deal with those needs through measuring the presence, type, and intensity of OE” (p. 225).

### *Summary and Conclusions*

This chapter has outlined several conceptual models and definitions of giftedness including Sternberg, Gardner, Roeper, and Renzulli. This was followed by an overview of identification procedures that have at some time been used in gifted education and also included a critique of each definition discussed. An alternative method of identification was then presented that is based on Dabrowski’s Theory of Positive Disintegration. It provided a useful procedure for gifted identification and offered a new and distinct approach to the field.

The new identification method introduced was the Overexcitability Questionnaire. Studies have shown this instrument capable of differentiating between groups of gifted and non-gifted individuals, that an elevated OE profile is a sign of giftedness, and that profiles of the gifted correlate with measures of developmental potential. In a comparative study, it is expected that gifted students will have an OE profile indicative of high DP and non-gifted subjects will not.

There are several issues that have surfaced in the line of research dealing with Dabrowski's theory of positive disintegration and the OEQ, some of which deserve further investigation. For example, the OEQ has great potential as a method for identifying gifted individuals. Therefore, it is crucial to determine an OE profile capable of distinguishing between gifted and non-gifted people; that is, which OEs are most significant. It is also necessary to explore the characteristics of the OEQ that have not already been investigated, such as the influences of language and culture on questionnaire responses. Finally, in the collection of literature on this subjects, there is only one study to date that has compared gifted and non-gifted youngsters (Gallagher, 1986); all other comparative studies have used adult subjects. It seems imperative that further research be performed on younger subjects as the best time to identify the gifted is early on in their development.

#### *Purpose of the Study and Research Questions*

The purpose of this study was to examine the Overexcitability Questionnaire's potential as a method of identifying gifted adolescents. It primarily investigated which overexcitabilities best distinguish between gifted and non-gifted adolescents in order to determine a "gifted-profile" to be used as an identification procedure. An OE pattern has been noted among gifted samples; that is elevated emotional (E), intellectual (T), and imaginal (M) scores over sensual (S) and psychomotor (P), however, because of the limited data, we cannot be certain that this pattern will appear in our sample. There were also other topics investigated in this exploratory study that are outlined in the following research questions:

- 1) Can the profiles gathered using the OEQ be used to discriminate between gifted and non-gifted students, and were there any gender effects?
- 2) Were there any unidentified students with a similar OE profile to that of the gifted students, and were there any gender effects ?
- 3) The last purpose of this study was to investigate possible limitations of the OEQ: Did speaking more than one language fluently influence responses? Was cultural influence responsible for differences in OEQ scores?

## CHAPTER 3

### Methodology

#### *Subjects*

The subjects were 79 grade ten and eleven students from two Senior High Schools in the Roman Catholic Separate School System in Calgary, Alberta. Thirty-six participants were enrolled in the gifted program and 43 were part of the student body not participating in the gifted program. Five students in the general student body were selected for the gifted program but chose not to participate. These students were included in the gifted group for the purposes of this study. Therefore, there were 42 gifted subjects and 37 non-gifted subjects.

The gifted students were identified using a multi-criteria approach based on Renzulli's (1977) model and assessed academic achievement and intellectual ability, creativity, and task commitment. Teacher and parent nominations were also considered. The contributing information was compiled on a "personal profile sheet" and used to decide whether a student should be included in the gifted program. A minimum score of 120 on a standardised intelligence test was required for placement, however, allowances for lower scores were occasionally made if a student's overall profile was strong. At the high school level identification procedures also included specific criteria for each subject area. Additionally, student self-selection was possible; if a student was interested in participating in the gifted program, but had not been recommended, he or she had the option to voice an interest and be considered.

The subjects ranged from 14 - 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*

The Overexcitability Questionnaire (OEQ) consists of 21 open-ended questions to be answered in written form. Content analysis is used to score the OEQ and provides a

separate index for each of the five overexcitabilities its questions are designed to elicit: psychomotor (P), sensual (S), imaginal (M), intellectual (T), and emotional (E). The OEQ's completion time varies from person to person depending on how much information he or she writes and the amount of effort put forth. The scoring is done on the written material and each response is rated on the five areas of overexcitability. 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 questionnaires were rated by a group of 10 raters who attended a special seminar led by qualified raters. All 10 novices who attended the seminar were trained to score with an agreement of above 90% with the experts. All questionnaires were scored independently by two raters. The pairs of raters were shuffled several times in order to decrease the risk of scorer bias. There were never more than eight subjects scored by the same two raters. To ensure that the quality of rating remained consistent, the expert raters oversaw the scoring. The raters remained consistent; their quality remained at the level of their training.

In past studies, reaching consensus between the two raters was the method used. However, in a study using a similar instrument, it was found that averaging the scores of the raters and reaching consensus resulted in comparable scores (Miller, 1985). Given that the raters were spread throughout the United States and Canada, averaging scores was deemed a more time effective method and was therefore chosen. There is no information available regarding reliability or validity of the instrument. Reliability between individual ratings and the final ratings, as measured by Pearson's Product Moment correlation, averaged .89 overall and ranged from .82 for sensual overexcitability to .92 for emotional overexcitability. Inter-rater reliability for each of the OEs was; .61 for psychomotor, .42 for sensual, .74 for imaginal, .58 for intellectual, and .66 for emotional. All of these reliability scores were calculated based on the scores of the individuals considered to be "rater 1" and "rater 2" for a given subject; because the pairs of raters were frequently shuffled, no one was consistently "rater 1" or "rater 2."

The following is a more detailed outline of the criteria used in the content analysis

scoring procedure of OEQ responses. This information is taken from the manuscript Criteria for Rating Levels of Intensity of Overexcitabilities (Falk & Piechowski, 1991). These guidelines include a list of expressions of psychic overexcitability that is organised according to the five forms. An extremely important issue in scoring OEQ responses is that no inferences or personal interpretations can be made. The rater must be able to point to the words in the response and point to the list of criteria.

If there is no mention whatsoever of any of the criteria listed, then a response is scored a zero. A response is scored a one if there is a *definite mention* of at least one criteria indicating a possibility of an OE but is lacking sufficient information. A score of one is used when a response has no elaboration or adjectives and appears to be *uncharacteristic* of the persons behavior.

A response is scored two if it appears to be *characteristic* of the person's behavior and is accompanied by *elaboration* or *scope* or *modifiers*. Typographical accents such as underlining, exclamation marks, bold letters, and capitalisation also meet the criteria of a score of two. For a response to receive a score of three it must be *close to a perfect example* of an overexcitability. It must be *very elaborate* indicating that the OE is manifested in several areas. There must be *frequent use of modifiers* and strong verbs or phrases.

Some examples of responses gathered in this study and explanations of how they were scored follow:

Example 1: "When I get excited I jump up and down a lot, I usually talk in a half screaming voice, and I laugh my head off." (gifted female, age 15.2 yrs.) This response received a score of three for psychomotor OE and zero for the other four OEs. The score of three was given because of the consistent response of physical activity (i.e. jumping, talking, laughing), the modifiers used, and the characteristic nature of this person's behavior.

Example 2: "I am like a tiny tiny grain of sand! I am alone. Sometimes i drift and sometimes i attach on to other things and sometimes i have to let go. I'm just being stepped on by giants or brushed aside. Thats who i am!!" (gifted female, age 15.3) This response

was scored three for imaginal OE and two for emotional OE. The imaginal OE score of three was given because of the extreme use of individualistic imagery and metaphor throughout the response. The emotional OE score of two was given because of the focus on feelings, specifically towards self. The breadth of these feelings indicated that they are characteristic of the individual, but, there was insufficient elaboration to receive a score of three.

Example 3: “This is a very good question. I in fact do think about my own thinking. I think ‘Why am I thinking this?’ or ‘how could I be more efficient in thinking this.’ Sometimes I ‘cross-reference’ my thinking & compare it to that of an equal or superior.” (gifted male, age 15.3) This response was given a score of three for intellectual OE and zero for the rest. The response focused solely on the individual’s thinking processes, was elaborate, and gave several specific examples of what goes on inside of his head.

Example 4: “I have two such experiences that were basically the same. Last year I won 1st in the A-event in a curling bonspiel....I led my team to victory over all the other 40 teams. This year I won 1st in the A-event with one of my friends and her parents. I felt so good because I was the best. I did not want either of those days to end. There were about 60-100 people cheering us on shouting our names. Everybody was congratulating me for the next week. I really had a sense of accomplishment. My pride was boosted, my self esteem and self confidence increased. I really felt great.” (gifted male, age 15.3) This response was given a score of two for sensual OE and two for emotional OE. The sensual OE score was given because of the definite mention of the importance of being in the “limelight” (the name shouting and congratulating). All of the positive feelings this individual noted were evidence of characteristic behavior.

### *Demographic Questionnaire*

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



### *Procedure*

Two methods of questionnaire administration were used in this study. The intended method proved to be ineffective for recruiting subjects and did not provide a sufficient number for strong statistical analyses. Therefore, a second method was used to recruit the remaining subjects for the study.

The following was the intended procedure for the study. Teachers were given the responsibility of distributing and collecting all pertinent paperwork from the subjects. The teachers were given consent forms (see Appendix A) and questionnaire packages for each student. The teachers were also given forms to complete about class size and the number of forms distributed and returned. A letter of thanks was also included requesting that they themselves read the directions for the questionnaire package and emphasise specific important points that were outlined for them. The administration procedure was as follows.

1. Briefly explain the study, hand out consent forms to those interested students, and fill out the information sheet regarding class size and form distribution.
2. Collect the consent forms a few days later and distribute questionnaire packages to those students who returned them signed; the students were to sign the consent form in addition to their parent or guardian in order to increase the students' ownership feelings of participation and a sense of control.
3. Collect the completed questionnaire packages five days later.

This portion of the data collection resulted in participants totalling 14 gifted (9F, 5M) and 15 non-gifted (9F, 6M), which was not a sufficient number. Many students had signed consent forms but did not complete the questionnaire package. So, the researcher contacted the gifted program coordinator and asked if it was possible to talk with the students. The purpose was to see if any would now be willing to complete a questionnaire package and if any other students were interested in participating in the study. The coordinator asked those teachers who had participated if they could allot approximately ten minutes of class time to the researcher for follow-up procedures. Only one of the gifted class teachers consented.

Coded packages were prepared that included consent forms, questionnaire packages and a coded envelope for the confidential return of students' information to be distributed in class to those interested students. The researcher also prepared an outline of issues to present to the class which dealt with the purpose of the study, requirements for participation and time commitments, confidentiality issues, and benefits to the students. A short amount of time was allowed for the students to ask questions. A total of nine coded packages were then distributed to those students who expressed an interest. An appropriate return date was then discussed with the students. All completed packages were to be returned in their envelopes to the researcher care of the coordinator, however, none of them were returned.

Because the previously outlined procedure failed to recruit a sufficient number of subjects, a different procedure was followed for the remainder of students who participated in the study. The gifted program coordinator arranged for two more non-gifted classes to participate in the study. At the beginning of each class the researcher presented a brief explanation of the study that included information about its purpose, time commitment and confidentiality issues, and basic instructions. The questionnaire's non-threatening, non-judgemental nature was emphasised. 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, however, all of the students finished by the end of the class. The packages were to be returned the following day with the signed consent forms.

A total of 48 questionnaire packages were distributed between the two classes; five students did not receive one because they had participated in the study the previous semester. Twenty-eight packages were returned, 15 males and 13 females. Data collection was not complete at this point because there was still an insufficient number of gifted

subjects.

The researcher contacted another high school, from the same school system, and requested access to students enrolled in their gifted program. Two teachers were willing to participate in the study. Between the two classes there were a total of 23 students. The modified procedure was followed for these classes: The researcher made a short presentation to the class and the rest of the period was allotted to answering the questionnaire package. Most of the students in this group did not complete their questionnaires by the end of class. A total of 21 completed packages were returned within the following week, 4 males and 17 females.

### *Data Analysis*

#### *Discriminant Function Analyses*

Using an SPSS program a stepwise discriminant function analysis was performed. The five OE scores and gender were used as independent variables in the analysis. This was done to determine which of these variables had the greatest discriminating power between the gifted and non-gifted students. Pyryt (1986) discussed the use of this statistical technique for exactly this purpose. He explained that, "discriminant analysis is a multiple regression technique that seeks to find....variables that contribute most to the prediction of group membership in relation to other variables..."(p. 233). Several other sources on statistical analysis procedures supplied a similar explanation of the technique and its uses (Kerlinger, 1986; Pyryt & Heck, 1991; Tabachnic & Fidell, 1989). In this study the METHOD = WILKS card was used to specify how variables were chosen to be included in the discriminant analysis. "This procedure enters in a stepwise fashion the variables that maximise the overall multivariate  $F$  ratio for the test of differences among the groups" (Pyryt, 1986, p. 235). Those variables that maximise the  $F$  ratio, and minimise *Wilks' lambda*, have the greatest discriminating power between the gifted and non-gifted groups.

A second discriminant analysis was performed using the five OEs, without gender, as the independent variables following the same procedure outlined above. Then, the samples were divided into separate male and female subsamples and analysed using discriminant

analysis with only the OEs included. Each of these discriminant analyses was followed by a classificatory analysis.

A classificatory analysis, which usually accompanies discriminant analyses, was performed to ascertain the number of students in the non-identified group that had similar OE profiles to those in the gifted group. Tabachnic and Fidell (1989) outline this as an appropriate application of this technique of analysis.

#### *Descriptive and Correlation analyses*

Descriptive statistics were used to see if any noticeable and meaningful patterns were present in the sample regarding scores for the OEs, age, presence of cultural influence, generation Canadian, and word count of responses, and spoken language information, with respect to classification and gender. Additionally, using an SPSS program, Spearman's Rho ranked order correlations were performed between all of the variables and each OE to determine if any statistically significant relationships existed.

## CHAPTER 4

### Results

This chapter begins with a report of the demographic characteristics of the sample used in the study. It is followed by the results of the statistical analyses employed in answering each of the research questions posed at the end of chapter two.

#### *Descriptive Statistics*

The sample was composed of 79 high school students in grades ten and eleven with some students in grade twelve. There were 30 males and 49 females. The mean age and standard deviations for the total sample, the gifted and non-gifted groups, and the groups separated by gender are reported in Table 4 - 1. There do not appear to be any large differences in age for the gifted and non-gifted groups nor for the two genders.

Table 4 -1: Mean Ages of Participants for the Total Sample,  
by Classification, and by Gender

<u>Group</u>	<u>N</u>	<u>Mean Age</u>	<u>S.D.</u>
Gifted	42	15.54	0.46
Males	10	15.51	0.29
Females	32	15.55	0.51
Non-gifted	36	15.91	0.74
Males	20	16.02	0.74
Females	16*	15.55	0.51
Total	79	15.66	0.61
* one subject did not report her age			

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 countries subjects identified were: Argentina, Australia, Britain, Canada, China, Croatia, Czechoslovakia, Egypt, France, Germany, Greece, Holland, Hungary, India, Indonesia, Ireland, Italy, Jamaica, Japan, Lebanon, Malaysia, Norway, New Zealand, the Phillipenes, Poland, Portugal, Rumania, Russia, Spain, the Ukraine, and Vietnam. Generational information was collected (i.e. what generation Canadian each

subject is). The range of generations was from zero, immigrant status, to fifth generation. Table 4 - 2 provides the frequency distributions of this variable for the total sample as well as for the gifted and non-gifted groups. The mode for both the gifted and non-gifted groups was first generation and the distributions appear to be quite similar.

Table 4 - 2: Frequencies of Cultural Influence for All Subjects and by Classification

<u>Generation Canadian*</u>	<u>Total*</u> n = 79	<u>Gifted</u> n = 42	<u>Non-gifted*</u> n = 37
0	5	4	1
1	33	20	13
2	16	9	7
3	13	4	9
4	6	4	3
5	2	2	0
* four subjects missing			

Information on spoken language ability was collected and the variety of spoken languages was extensive. Some spoke only one language, English, while others spoke two to five languages. The assortment of spoken languages included Arabic, Chinese, Croatian, Czechoslovakian, Dutch, Filipino, French, Inuit, Italian, Lebanese, Polish, Portuguese, Russian, Spanish, and Vietnamese. Distributions of the number of spoken languages for the total sample and the gifted and non-gifted groups are provided in Table 4 - 3. Grouping subjects into single language speakers and multiple language speakers,

Table 4 - 3: Frequencies of Spoken Language for All Subjects and by Classification

<u>Languages Spoken</u>	<u>Total</u> n = 79	<u>Gifted</u> n = 42	<u>Non-gifted*</u> n = 37
1	45	22	23
2	19	9	10
3	12	9	3
4	2	2	0
* one subject missing			

showed that 52.4% of the gifted group speak one language and 47.6% speak more than one. In the non-gifted group 63.9% speak one language while 36.1% speak more than one language.

Table 4 - 4: Mean Overexcitability Scores for All Subjects,  
by Classification, and Gender

		<u>Psychomotor</u>	<u>Sensual</u>	<u>Imaginational</u>	<u>Intellectual</u>	<u>Emotional</u>
<u>Gifted</u> n = 42	Mean sd	7.93 3.26	2.71 1.99	6.79 3.84	8.39 4.19	11.94 6.26
<u>Male</u> n = 10	Mean sd	7.85 2.02	3.40 2.82	5.85 3.40	9.30 5.61	6.90 3.06
<u>Female</u> n = 32	Mean sd	7.92 3.59	2.50 1.65	7.08 3.97	8.11 3.70	13.52 6.20
<u>Non-gifted</u> n = 37	Mean sd	5.08 2.32	2.09 1.95	4.64 2.64	5.77 3.26	9.15 4.36
<u>Male</u> n = 20	Mean sd	5.33 2.59	2.25 2.04	4.05 2.44	5.93 3.91	7.38 3.83
<u>Female</u> n = 17	Mean sd	4.79 2.00	1.91 1.88	5.32 2.78	5.59 2.40	11.24 4.09
<u>Total</u> n = 79	Mean sd	6.59 3.18	2.42 1.98	5.78 3.48	7.16 3.98	10.63 5.60

The mean OE scores and their standard deviations for the total sample, the gifted and non-gifted groups, and the groups separated by gender are presented in Table 4 - 4.

Figures 4 - 1 and 4 - 2 provide bar-plots of the mean OE scores. Figure 4 - 1 shows these scores for the total sample and the gifted and non-gifted groups. Figure 4 - 2 presents the mean scores based on group as well as gender.

Some interesting trends appear in the mean OE scores for the two groups (see Figure 4 - 1). There is a similarity across groups for emotional OE scores. The means for emotional OE scores are the highest of the five OEs. Another trend is the extremely low

Figure 4 - 1: Mean Overexcitability Scores for All Subjects and by Classification

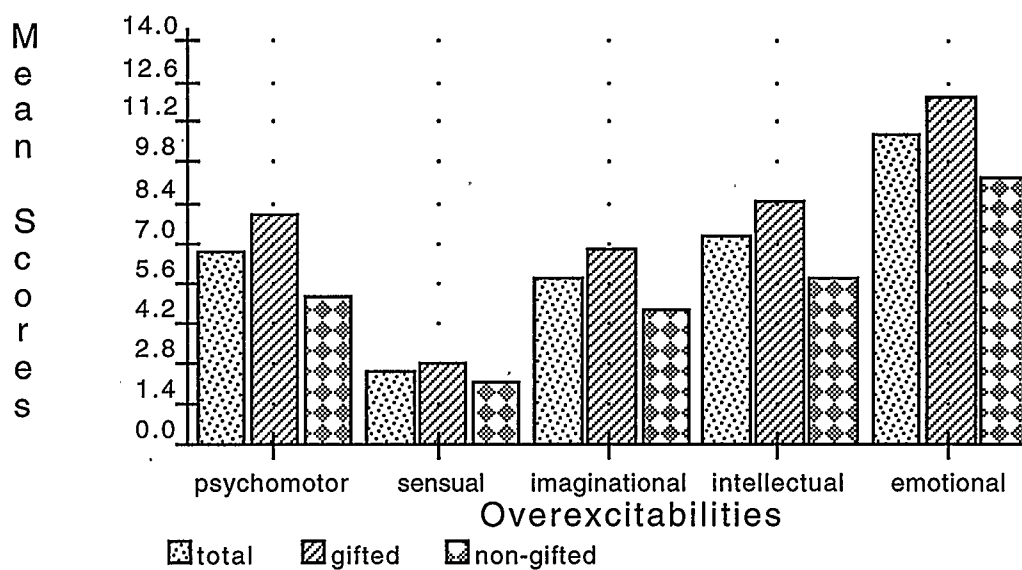
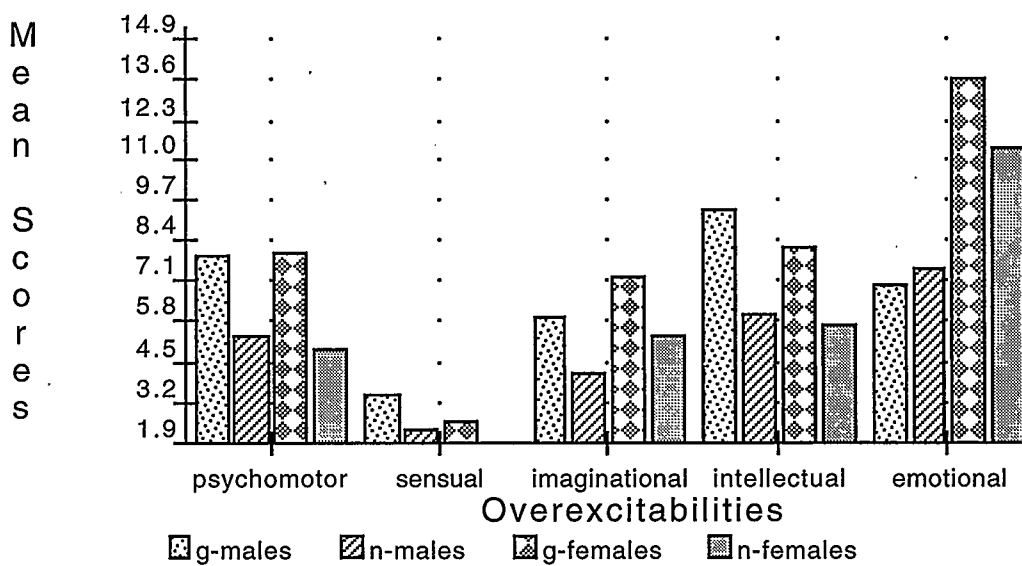


Figure 4 - 2: Mean Overexcitability Scores for All Subjects, by Classification, and Gender





mean scores for both groups on sensual OE. Figure 4 - 2 highlights further trends for the sample. The females of both gifted and non-gifted groups had higher emotional OE scores than the males. Also of interest is that the mean scores for the gifted subjects are higher than those for the non-gifted subjects, except in one instance. The single exception is that the non-gifted males had, on average, slightly higher emotional OE scores than the gifted males, 7.38 as compared to 6.90.

### *Research Question Results*

The first question asked in this study was: Can the profiles gathered using the OEQ be used to discriminate between gifted and non-gifted students and were there any gender effects? The statistics used to answer this question were a series of Stepwise Discriminant Function Analyses performed on the subjects' overexcitability scores. The independent variables for the first discriminant analysis performed were the five overexcitabilities and gender. The results indicated that the three variables that contributed to discrimination between the gifted and non-gifted groups in a stepwise manner were psychomotor OE, gender, and intellectual OE. However, because of the extremely large number of females in the gifted group, as compared to the number of males, it was decided that gender was possibly included merely because of the biased group make-up.

A second discriminant analysis was therefore performed using only the five OEs as independent variables. Three OEs were identified as discriminating between the two groups; psychomotor, emotional, and intellectual. Wilks' Lambda, a measure of group discrimination was minimised from .80 in Step 1 to .71 in Step 3. The optimal prediction equation in standardised form was:  $D = .79487z + .43760z + .35468z$  for psychomotor, emotional, and intellectual OEs respectively. The mean discriminant function scores were .59045 for the gifted group, and -.67024 for the non-gifted 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 structure coefficients (correlations between the discriminant function and the predictor variables, see Table 4 - 5) indicated that subjects who scored high on the discriminant function were characterised 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.

Table 4 - 5: Structure Coefficients for All Subjects and by Gender

<u>Discriminator</u>	<u>Total</u>	<u>Females</u>	<u>Males</u>
Psychomotor	0.7893	0.7728	0.6884
Intellectual	0.5499	0.5902	0.4737
Imaginational			0.4109
Emotional	0.4058	0.3176	- .0838

To investigate gender differences in the sample two other discriminant analyses were performed on the data; one for just the females and one for the males. Again, the independent variables were the five OEs. In the analysis of females only, the variables identified as discriminating between the gifted and non-gifted groups were, psychomotor, emotional, and intellectual. Wilks' Lambda, was minimised from .81 in Step 1 to .72 in Step 3. The optimal prediction equation in standardised form was:  $D = .83602z + .43954z + .36313z$  for psychomotor, emotional, and intellectual OEs respectively. The mean discriminant function scores were .45 for the gifted group, and -.84 for the non-gifted group. The result of a Bartlett's Chi Square Test indicated that the females were significantly separated by the discriminant function,  $x^2 = 15.06$ ,  $p < .002$ . The structure coefficients indicated that subjects who scored high on the discriminant function were characterised by higher ratings of psychomotor, intellectual, and emotional OE. The best discriminating variable was psychomotor OE followed by intellectual and emotional OEs.

In the male analysis, four variables were identified as discriminating between the gifted and non-gifted groups; psychomotor, intellectual, emotional, and imaginational. Wilks' Lambda was minimised from .78 in Step 1 to .63 in Step 4. The optimal prediction equation in standardised form was:  $D = .72666z + .49829z + .48798z - .76229z$  for

psychomotor, imaginal, intellectual, and emotional OEs respectively. The mean discriminant function scores were 1.05 for the gifted group, and -.52 for the non-gifted group. The result of a Bartlett's Chi Square Test indicated that males were significantly separated by the discriminant function,  $\chi^2 = 12.05$ ,  $p < .02$ . Examination of the structure coefficients indicated that subjects who score high on the discriminant function were characterised by higher ratings of psychomotor, intellectual and imaginal OEs; and slightly lower ratings on emotional OE. Psychomotor scores were the best at discriminating between the gifted and non-gifted groups followed by intellectual, imaginal and emotional OE scores.

The second question asked in this study was: Were there any non-gifted gifted students who had a similar OE profile to that of the gifted students? Were there any gender effects? Classificatory analyses were performed at the end of each discriminant analysis to determine the number of subjects that were classified incorrectly using the OE scores identified as discriminating between the two groups. In classificatory analysis, the discriminant function coefficients are used to predict group membership. The analysis that included all of the subjects resulted in 13 of the 37 (35.1%) non-gifted subjects being classified as gifted and 10 of the 42 (23.8%) gifted subjects being classified as non-gifted. A total of 70.9% of all subjects were correctly classified; that is, into the groups the schools had placed them.

When only females were included in the analysis, the results were as follows: Five of the 17 (29.4%) of the non-gifted subjects were classified as gifted and eight of the 32 (25.0%) gifted girls were classified as non-gifted. Of the females, 73.5% were classified correctly. Finally, in the analysis of males only there were five of the 20 (25.0%) of the non-gifted boys classified as gifted and two of the 10 (20.0%) of the gifted classified as non-gifted. A total of 76.7% of the boys were classified correctly. In all three analyses a number of non-gifted subjects were classified as gifted. With regard to gender, there was a 3.2% greater correct classification rate for the males.

The final question asked in this study was: Are there specific limitations of the OEQ: Was there a relationship between speaking multiple languages fluently, as compared to only

one, and OEQ responses? Was cultural influence related to differences in OEQ scores? Was there a relationship between the word count for the responses and the scores received? For these analyses, lingualism was defined as the number of languages a subject reported speaking fluently. Those who spoke only one language were grouped together and those speaking more than one were grouped together. The measure used for cultural influence was generation Canadian; those subjects whose families were newer to the country were considered more culturally influenced than those whose families had been in Canada for a longer period of time. The total number of words, or word count, from all 21 responses was used as the unit of measurement for length of response.

Spearman's Rho ranked order correlations, using the SPSS statistical package, were performed between scores on the five OEs and lingualism, cultural influence, and word count. Of all of these correlations, only a few were statistically significant for OE scores and lingualism and cultural influence, while there were several significant correlations between word count and the OE scores. Table 4 - 6 presents the results of all of the correlations that were performed.

In the total sample there were two statistically significant relationships between lingualism and the OE scores. The following correlations were significant: lingualism and emotional OE was  $r = .249$ ,  $p < .01$ ; cultural influence and emotional OE was  $r = -.245$ ,  $p < .05$ . Word count, when correlated with the OEs was significant for all five OEs: with psychomotor -  $r = .308$ ,  $p < .01$ ; sensual -  $r = .230$ ,  $p < .05$ ; imaginal -  $r = .510$ ,  $p < .001$ ; intellectual -  $r = .594$ ,  $p < .001$ ; and emotional -  $r = .689$ ,  $p < .001$ .

When only the non-gifted group was analysed, there were no statistically significant correlations between the five OEs and lingualism or cultural influence. There were four OEs significantly correlated with word count. They were as follows: with psychomotor -  $r = .361$ ,  $p < .01$ ; imaginal -  $r = .517$ ,  $p < .001$ ; intellectual -  $r = .548$ ,  $p < .001$ ; and emotional -  $r = .802$ ,  $p < .001$ .

When only the gifted subjects were considered three correlations were statistically significant for lingualism and cultural influence: lingualism and intellectual OE was  $r = .262$ ,  $p < .05$ ; lingualism and emotional OE was  $r = .380$ ,  $p < .01$ ; and cultural influence

Table 4 - 6: Correlation of Overexcitability Scores with Lingualism,  
Cultural Influence, and Word Content

	<u>Psychomotor</u>	<u>Sensual</u>	<u>Imaginational</u>	<u>Intellectual</u>	<u>Emotional</u>
<u>LINGUALISM</u>					
Total	-0.089	0.004	-0.001	0.163	0.249 <sup>#</sup>
Gifted	-0.154	0.079	0.059	0.262 <sup>†</sup>	0.380 <sup>#</sup>
Non-gifted	-0.147	-0.174	-0.157	-0.008	0.053
<u>CULTURAL INFLUENCE</u>					
Total	-0.098	0.168	-0.098	0.082	-0.245 <sup>†</sup>
Gifted	-0.177	0.079	0.057	0.262 <sup>†</sup>	-0.347 <sup>#</sup>
Non-gifted	-0.214	0.127	-0.135	-0.077	0.168
<u>WORD COUNT</u>					
Total	0.308 <sup>#</sup>	0.230 <sup>†</sup>	0.510 <sup>*</sup>	0.594 <sup>*</sup>	0.689 <sup>*</sup>
Gifted	0.110	0.160	0.392 <sup>#</sup>	0.494 <sup>*</sup>	0.621 <sup>*</sup>
Non-gifted	0.361 <sup>#</sup>	0.259	0.517 <sup>*</sup>	0.548 <sup>*</sup>	0.802 <sup>*</sup>
†: p<.05, #: p<.01, *: p<.001					

and emotional OE was  $r = -.347$ ,  $p < .01$ . The correlations between word count and the OEs for the gifted subjects resulted in three that were statistically significant: imaginal -  $r = .392$ ,  $p < .01$ ; intellectual -  $r = .494$ ,  $p < .001$ , and emotional -  $r = .621$ ,  $p < .001$ .

## CHAPTER 5

### Discussion

This chapter will include an interpretation of the results; whether the findings agree or disagree with previous findings, as well as, issues that may not have been addressed in the literature thus far. A discussion of the limitations of the current study and the effects these limitations may have had on the results will follow. This chapter will conclude with suggestions for future research based on the results of this study.

Research Question 1: Were the profiles gathered using the OEQ able to discriminate between gifted and non-gifted students and were there any gender effects?

The Discriminant Function Analysis performed on the total sample indicated that three forms of overexcitability were able to discriminate between gifted subjects and non-identified subjects. Psychomotor, intellectual, and emotional, OEs were identified as discriminating variables. For all three OEs, scores were higher for the gifted group. Psychomotor OE contributed most strongly to differentiating 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 consistent with what the literature suggests (Dabrowski, 1972; Dabrowski & Piechowski, 1977a); that is, higher scores on emotional, intellectual, and imaginal OEs in gifted samples as compared to non-gifted ones. Each of the following studies, Gallagher (1985), Lysy and Piechowski (1983), Piechowski (1991), Piechowski & Colangelo (1984), and Silverman and Ellsworth (1981), found emotional, intellectual, and imaginal OEs, in some order, to be the highest three OEs for their gifted subjects. Therefore, even though emotional and intellectual OEs were identified as discriminating between the two groups in the current study, psychomotor OE, which is considered to be indicative of lower developmental potential, was identified as the OE that most differentiated between the gifted and non-gifted samples. "According to this study, emotional and intellectual OEs are more similar between the gifted and the non-identified subjects than psychomotor OE" (Ackerman, 1993, p. 2).

The discriminating influence of psychomotor OE might be understood in light of a

theoretical point that receives little attention: Psychomotor and sensual OEs alone are not indicative of high developmental potential. “[Dabrowski] saw no possibility for multilevel development when P [psychomotor] OE and S [sensual] OE are stronger than the other three OE’s in a given personality, since he regarded such a constellation as acting to inhibit inner growth” (Lysy & Piechowski, 1983, p. 293). However, the results indicate that while psychomotor OE is the best discriminator between the gifted and non-identified groups, it has the third highest mean score for the total sample after emotional and intellectual. This point is important because when psychomotor OE combines with high emotional, intellectual, and imaginal OE, its possible contributions to higher development are enhanced (Dabrowski, 1972). Additionally, Piechowski (1975) indicates that emotional OE is the essential overexcitability necessary to reach high levels of developmental potential. Therefore, the findings of this study remain consistent with the theory, and at the same time, are unique to the current body of research.

Two additional points regarding this issue must be made to broaden the understanding of the important part psychomotor OE played in this study. First, Lysy and Piechowski (1983) expressed a different view of psychomotor OE than did Dabrowski. They investigated which overexcitabilities correlated with developmental level and found that psychomotor, while it correlated only mildly with developmental level, it did so in a positive manner. Gallagher (1985) also noted a possible relationship between psychomotor OE and giftedness. She asserted that “...high levels of activity and energy...may be connected with giftedness” (p. 118). Therefore, it is not surprising to find that an overexcitability that correlates with developmental level would also be related to giftedness, as was found in this study.

Second, the importance of psychomotor OE in this study may be the result of the age of the sample used. There were two studies done that found a profile for their subjects that included intellectual, imaginal, and psychomotor OEs. Gallagher’s (1985) non-gifted subjects and Scheiver’s (1985) low creative subjects exhibited this OE profile. Both groups were between the ages of 12 and 14. Based on these two studies, perhaps psychomotor OE is more important in adolescence. However, there were two other studies

done using adolescent subjects in which psychomotor OE was not one of the top three in the overexcitability profile (Piechowski, 1991; Piechowski & Colangelo, 1984). Because the results across studies are inconsistent, it is difficult to draw any conclusions. Further research is necessary.

The Discriminant Function Analyses performed on the groups separated by gender were different. Female subjects were differentiated by psychomotor, intellectual, and emotional OEs, in order of contribution. Male subjects were differentiated by psychomotor, intellectual, imaginal, and emotional OEs, in order of contribution. Both genders were most differentiated by psychomotor and intellectual OEs. However, the third discriminating variable for the females was emotional OE, while for the males it was imaginal OE. Additionally, a fourth variable was included in discriminating between gifted and non-identified males, emotional OE, but, it made an extremely small contribution to the discriminant function coefficient.

What this means statistically is the following: The overexcitability that makes the strongest unique contribution to discriminating the gifted and non-identified subjects for both genders is psychomotor. For the females, the discriminating power of psychomotor OE overlaps with imaginal and sensual OEs to such a great extent that the two make an insignificant contribution to discrimination, therefore they are not identified in the Discriminant Function Analysis. After psychomotor OE, emotional OE makes the strongest unique contribution to discrimination followed by intellectual OE for the females.

For the males, the same reasoning can be used. Sensual OE is not included in the analysis because it makes no significant contribution to discrimination. Emotional OE, the last overexcitability included in the analysis, makes an extremely small unique contribution because of the large amount of overlap it has with psychomotor, intellectual, and imagination OEs, the three strongest discriminators identified in the analysis.

While this explanation sheds light on why the statistical analysis turned out the way it did, it offers very little to the understanding of why, in practical terms, the results turned out the way they did. The gender differences found in this study are somewhat difficult to interpret because there have been no prior studies that made comparisons based on



classification as gifted and non-identified, as well as, gender.

The greater influence emotional OE played in discriminating between gifted and non-gifted female subjects, as compared to males, might be explained on the basis of socialisation combined with the nature of emotional OE (R. F. Falk, personal communication, April 18, 1993). It is well known that at an early age females are socialised to be more expressive and emotional than males. Males are given direct and indirect messages that display of emotions is not acceptable. Therefore, it is expected that females will have elevated emotional OE scores compared to their male counterparts. This is what has been found in the past (Gallagher, 1985; Miller et al., 1991). However, this in itself does not explain why there is a greater difference in emotional OE for gifted and non-gifted females compared with males. The nature of emotional OE, that is, an intense manner of experiencing the world in terms of emotions, may elucidate the problem. Perhaps the consistent socialisation of females to be emotional has a multiplicative effect when combined with emotional OE. It is possible that because gifted girls are emotionally overexcitable, that socialisation to be emotional manifests itself in a more intense manner for them, and not for the non-gifted subjects. This is not the case for the males. Emotionality is suppressed for males. Therefore, even if some males are emotionally overexcitable, they would not be as likely to express it. This could then explain why there is a small difference in emotional OE for the gifted and non-gifted males and a large difference among the females. There is no research currently to support this assertion. This explanation necessitates further attention.

One explanation can be offered regarding the importance of imaginational OE in discriminating between only the male subjects and not the female. The validity of this explanation rests partially on the fact that when humour is noted in an OEQ response, it is scored as imaginational OE. The differential importance of imaginational OE between males and females might be explained in terms of the inconsistent effects of socialisation on humour among males and females. Ziv (1990) found that the use of humour and joking is more prevalent and considered more socially acceptable among adolescent gifted boys than their female counterparts. Therefore, because of the girls' need to feel accepted and receive

social approval, they are less likely to express humour. Hence, the more frequent humour-oriented responses among male subjects in this study have added to the imaginal OE scores of the gifted boys. Further research will be necessary to establish this finding and explanation as truly valid.

Research question 2: Were there any non-gifted students who had a similar OE profile to that of the gifted students, and were there any gender effects ?

A number of non-gifted subjects were found to have similar profiles to those of the gifted subjects. The Classificatory Analysis of the whole sample, based on the discriminant function coefficient, indicated that 13 of the 37 non-gifted subjects were classified as gifted. This is 35.1% of the non-gifted subjects. This finding suggests that 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, have similar personality characteristics to those students identified as gifted based on the same criteria. Personality characteristics in this sense refer to the three OEs included in the discriminant function coefficient; psychomotor, intellectual, and emotional, which are elemental in Dabrowski's theory of Positive Disintegration. It is possible that approximately 35% of the non-gifted subjects were actually non-identified gifted students.

The classificatory analyses performed on the sample separated by gender showed that 29.4% (five of 17) of the non-gifted females were classified as gifted according to the discriminant function coefficient, and 25% (five of 20) of the non-gifted males were classified, based on the statistical analysis, as gifted. These five non-gifted females and five non-gifted males each had a similar overexcitability profile to the profile of their gifted counterparts. These percentages are similar enough to be considered essentially the same. Therefore, there appears to be no difference between the number of non-gifted males and females statistically misclassified as gifted in this sample.

The three classificatory analyses also indicated the number gifted subjects misclassified as non-gifted, that is, their OE profiles were more similar to the non-gifted profile than the gifted profile. This information is also important to address. For the total sample, 23.8% (10 of 42) of the gifted subjects were misclassified as non-identified.

Considering only the female subjects, 25.0% (eight of 32) gifted subjects were misclassified as non-gifted. For the males, 20.0% (two of 10) of the gifted subjects were misclassified as non-gifted. Again, there is very little difference in the percentage of gifted subjects misclassified as non-gifted for both the males and females in this sample.

Based on this information, some of the identified gifted subjects appear to have similar personality characteristics to those subjects not identified as gifted in this sample. When considering all of the categorisations together, 29.1% of all subjects in this sample were categorised incorrectly, approximately equal percentages in both directions. Therefore, while the scores 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, this would serve as a supplement and not a replacement. This is because there was a certain percentage of students identified as gifted in the school system that would not have been identified based on their OEQ scores.

Research question 3: Are there specific limitations of the OEQ: Was there a relationship between the amount written for the responses and the scores received? Was there a relationship between speaking multiple languages fluently, as compared to only one, and OEQ responses? Was cultural influence related to differences in OEQ scores?

The correlations performed to investigate these questions were done on the total sample and the sample separated by classification, gifted or non-gifted. For the total sample, word count was significantly correlated with all five forms of overexcitability. Among the gifted subjects, three OEs were significantly correlated with word count, imaginational, intellectual, and emotional. The significant correlations between word count and OE scores for the non-gifted group included psychomotor, imaginational, intellectual, and emotional. These findings clearly indicate that for this sample, the number of words written for responses is related to the OE scores received. Generally, those subjects who wrote lengthy responses to the OEQ questions had higher scores than those subjects who wrote short responses. There were exceptions to this among the subjects. Therefore, while long responses are more likely to result in higher OE scores than short responses, brief answers can also result in elevated OE scores although it is seen less frequently.

Additionally, a long response does not guarantee high OE scores.

The correlations between OE scores and spoken language ability were much different than those for word count. For the total sample, the only significant correlation was between emotional OE and language ability. Among the gifted group, there were two significant correlations with OEs, intellectual and emotional. There were no significant correlations between language ability and OE scores for the non-gifted group of subjects. In fact, the extremely low correlation for this group between emotional OE and language ability made no contribution to the correlation for the total sample. Therefore, it would be inappropriate to suggest that there is a meaningful relationship between these variables for the total sample. The only meaningful relationship is for the gifted group.

While the two correlations for the group are significant, they are rather small and their meaningfulness is questionable as well. However, it is important to remember that for these correlations one of the variables was dichotomous restricting the range of resulting values. Therefore, these correlation coefficients should be considered slightly higher than what was actually computed. The positive correlations would indicate that those subjects who were fluent in only one language received lower OE scores on average, than those subjects who spoke more than one language fluently.

It is worthwhile to examine the results of language ability correlations with those of cultural influence correlations because they are related. The more recently a family has left their country of origin, the more likely their children will be to speak that language. The results of correlations between cultural influence, generation Canadian, and OE scores was essentially the same as for those of language ability. The gifted group had significant correlations between cultural influence and intellectual and emotional OEs. The magnitude of the correlations was also approximately the same. The only difference lies in the direction of the correlation with emotional OE, it is negative. Therefore, the longer a gifted subject's family spent in Canada, the higher the intellectual OE score and the lower the emotional OE score.

How can these results be interpreted? At first glance it could be said that there may be some bias in the overexcitability Questionnaire such that subjects who speak more than one

language receive higher scores on intellectual and emotional OEs as compared to subjects who speak only English. However, based on the limited information derived from the current study, it is impossible to say whether this difference is valid; that is, if language ability is truly related to OEs, and hence developmental potential, or if the relationship noted in these results denotes a problem in the questionnaire. This is also a problem in interpreting the results on cultural influence. Is there a true relationship between cultural influence and developmental potential, or are the current findings extraneous relationships based solely on inadequacies of the questionnaire? Further research is needed to determine which explanation is accurate.

### *Limitations of the Study*

The limitations of this study stem from a variety of sources. However, while these limitations may restrict the generalisability of the results, they do not negate their presence. The sample used in this study was not representative of society. The subjects were taken from two Roman Catholic high schools in a Western Canadian city with a population of approximately 750,000. Therefore, all religions were not represented according to their proportion in society. Additionally, the extremely large number of cultural backgrounds represented in the sample is not a common phenomenon.

Another sampling problem was that there was an unbalanced number of males and females in the gifted group. There were 25% males and 75% females. This was not the case for the non-gifted group which was fairly evenly split. The proportional difference in the gifted group had implications for the interpretation of the Discriminant Function Analysis (DFA) for the male subjects. There were too few subjects to consider the results strong and valid based on the number of variables included in the analysis. Therefore, these results must be handled with caution. A further problem arises from the uneven distribution of males and females in the gifted group. That is, it is possible that the DFA results are biased due to the excessive number of females in the gifted group. The DFA results of the total sample more closely resemble the results of the female only analysis, not the male only analysis. The gender bias also comes into play when interpreting the correlational analyses for the total sample.

The two different procedures used in the study to gather data also presents a problem. There is no way of knowing whether having two different procedures affected the results of the study. One noteworthy point is that both groups, gifted and non-gifted, were divided equally between the two procedures. Therefore, any procedural bias that may exist was equally distributed across the two groups. It might be worthwhile in the future to investigate the best procedure for gathering data.

Another set of limitations is derived from 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. These discussions focus on the validity of individual questions; whether they are tapping the OEs they were designed to. The OE receiving the most attention is sensual because of the extremely low scores seen in all studies. Therefore, if the test's validity is questionable, so are the results.

Even with the various types of limitations of the current study, there is still much valuable information that can be used as the starting point for further research. Although the results of this study cannot be considered conclusive, one of the main purposes of an exploratory study is to set the groundwork for future investigations.

### *Summary and Conclusions*

The results indicated that gifted subjects had higher psychomotor, intellectual, and emotional OE scores than their non-identified peers. While this was an unexpected finding, it clearly illustrates that scores on the OEQ can differentiate between gifted and non-gifted students.

Because of the central part psychomotor OE played in the analysis, which has never been noted in previous studies, it is important that further research be conducted to verify these findings. Could it be that different cultures will show different OE profiles? A series of independent studies performed on diverse cultures would elucidate this issue. Perhaps in the more typically expressive cultures, like Italian, there would be an elevated emotional OE score. Even with the diversity in the current sample, there were not enough subjects from any one cultural background to perform such analyses.

The differences in OE profiles found to discriminate between males and females were

also interesting and difficult to explain. The explanations offered are reasonable, but, that is insufficient. Further investigation will be needed to verify them.

There could be a variety of different explanations for the gender differences noted in this study. Perhaps there are simply different OEs that are important for developmental potential for the two sexes. Due to the small number of subjects it is essential that further research be initiated to investigate this issue. Research on this topic would help determine if we should be identifying gifted boys differently than gifted girls.

One of the most important findings in this study was that based on OEQ scores and profiles, 35% of the non-gifted subjects were misclassified as gifted based on the statistical analyses. This provides some support to the notion that an alternative method of identification is necessary, and that the Overexcitability Questionnaire could be a useful supplement to the usual identification procedures. While there were also 24% of the gifted subjects misclassified as non-identified, this point is not as important to the current study. The current study is an attempt to determine if a supplementary identification method would be useful, not to substitute the OEQ and use it in place of current methods. Therefore, the fact that some subjects were not identified as gifted based on the OEQ, when they should have been according to the methods used by the schools, means only that they would have been identified anyway. It is not these individuals who are in need of an alternate identification method. However, because this is the only study to report such information, it is necessary that additional studies be performed to validate the 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. If the length of responses is strongly related to OE scores, then the conditions for test administration must be made to inhibit brief responses. Emphasising the importance of writing as much as possible and imposing no time constraints would be helpful. It would be unfortunate for an individual to receive low OE scores purely because they thought brief responses were adequate.

The investigation of language ability and cultural influence biases in this study were

not very informative. While a few correlations were significant, their magnitudes were rather small. Future research should address these issues more systematically. It is of great importance to determine if there are any biases present in the OEQ so that the results can be interpreted more accurately.

The purpose of proposing the OEQ as an alternate method of identifying gifted individuals is to prevent students who are gifted from falling through the cracks of the educational system. All able students deserve the special services that are available to them. Therefore, it is crucial that the limitations of the OEQ be identified so that it is not misused.

In conclusion, the most important point that can be made as a result of this study is that it appears that the Overexcitability Questionnaire may be a viable alternate identification method for giftedness. Further research is necessary to determine the most appropriate uses for the instrument as well as the specific profiles that will be used for identification purposes. The extremely high psychomotor scores in this study would be one place to begin.



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## Appendix A - Consent Form

Dear Parent or Guardian,

We are interested in having your son or daughter participate in a research study we are conducting. We are primarily concerned with the way gifted students are being identified. Traditionally, one approach has been to rely on measures of intelligence. Our study will examine the usefulness of alternate procedures for this purpose. This study, and the measures we will be using, reflect the now-commonly accepted view that giftedness is multidimensional in nature. That is, an individual may be termed gifted in several areas other than intelligence.

In order to determine the usefulness of these other approaches for identification, we would require that the students fill out a questionnaire which would be completed as a "homework assignment." The amount of time required for this questionnaire varies from student to student. Additionally, your son or daughter's score on a previously administered group test will be retrieved.

We are concerned only with group information. Therefore, no names or other identifying information will be kept; the participants' anonymity will be protected. If you are interested, a summary of the study's results will be available at your child's school, St. Francis Senior High School.

In order to indicate a willingness to participate in this study, we require your signature as well as the signature of your son or daughter at the bottom of this consent form. Additionally, you should both be aware that participation in this study is completely voluntary. Your son or daughter will not be penalised for lack of participation in any part of this study.

Research such as this is essential for the improvement of our educational system. If you have any questions whatsoever, about any part of the study, please do not hesitate to contact Ms. Cheryl Ackerman at 220-9016. She will be more than happy to help you in any way possible.

Researchers:

Ms. Cheryl Ackerman

Dr. Sal Mendaglio

\_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Parent's signature \_\_\_\_\_ Date: \_\_\_\_\_

Student's signature \_\_\_\_\_ Date: \_\_\_\_\_

# Appendix B - Demographic Information Sheet

TEST DATE: D\_\_\_\_\_M\_\_\_\_\_Y\_\_\_\_\_

AGE: yrs. \_\_\_\_\_ mo. \_\_\_\_\_ SEX: M \_\_\_\_\_ F \_\_\_\_\_

LANGUAGES SPOKEN\*: English: \_\_\_\_\_ Chinese: \_\_\_\_\_  
 French: \_\_\_\_\_ Japanese: \_\_\_\_\_  
 Spanish: \_\_\_\_\_ Indian: \_\_\_\_\_  
 Italian: \_\_\_\_\_ Russian: \_\_\_\_\_  
 German: \_\_\_\_\_ Arabic: \_\_\_\_\_  
 Other (specify): \_\_\_\_\_

\* please star preferred language

Cultural Background\*: Canadian: \_\_\_\_\_ Jewish: \_\_\_\_\_  
 Indian: \_\_\_\_\_ German: \_\_\_\_\_  
 Chinese: \_\_\_\_\_ French: \_\_\_\_\_  
 Japanese: \_\_\_\_\_ Italian: \_\_\_\_\_  
 Ukrainian: \_\_\_\_\_ American: \_\_\_\_\_  
 Arab: \_\_\_\_\_ Russian: \_\_\_\_\_  
 Other (specify): \_\_\_\_\_

What generation Canadian are you? \_\_\_\_\_

\* choose all those you feel apply