

## Comparing overexcitabilities of gifted and non-gifted school children in Hong Kong: does culture make a difference?

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*(Received 7 April 2009; accepted 10 June 2009)*

Overexcitabilities (OEs) are ways that an individual experiences the world and can be understood as channels of information flow. The current study examined the profile of OEs among a group of Hong Kong children. Participants included 229 non-gifted and 217 gifted children. OEs were measured using the Overexcitability Questionnaire II. Results indicated that there were differences between the gifted and the non-gifted groups in all OE subscales. Gender differences were also identified. Females, in both gifted and non-gifted groups, have a significantly higher score in *Emotional* OE when compared to males. In addition, gifted females also scored significantly higher than their male counterparts in *Sensual* OE. Results of this study were compared to a group of American children (based on C.L. Tieso's work on overexcitabilities in 2007). The implications and limitations of this study are presented.

**Keywords:** overexcitabilities; giftedness; Hong Kong

### Introduction

The definition of “giftedness” has always been of interest to researchers and educators. Giftedness can be defined narrowly as the ability to master academic subjects. Children can be identified as gifted if they demonstrate academic achievement on either achievement tests or ability tests that require academic achievement. On the other hand, giftedness can also be defined in a broader way by looking at the ramifications of high intelligence on potential achievements, not only in terms of academic aptitude but also in terms of “insight and innovation, creative behaviour, and/or interpersonal skill, or visual and performing arts” (Clark, 1997, p. 26). Psychologists and theorists have identified some background traits that distinguish gifted individuals from others (e.g., high alertness, high motivation, active imagination, high energy and intense frustrations). Most inventories related to giftedness have one trait in common – intensity (Piirto, 1992, 2004; Silverman, 1997) – which may be explained in terms of overexcitabilities (Piechowski, 1979; Silverman, 1993).

### *Giftedness in the construct of overexcitabilities*

Dabrowski's Theory of Positive Disintegration offers a promising framework for examining the components and developmental dynamics of giftedness. This theory considers the genetic and biological roots of giftedness, as does Clark's (1997) definition of giftedness.

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Dabrowski (1964, 1967) described several kinds of intensities that are seen in gifted and creative individuals, and these are referred to as forms of psychic overexcitability (OE).

Dabrowski attempted to understand why some very bright and creative people attained higher levels of emotional development and self-actualization than others, and he looked at the life spans of gifted people. His theory explores the personal characteristics and events that are indicators of the potential for higher levels of development. According to Dabrowski's Theory of Positive Disintegration (Dabrowski & Piechowski, 1977; Piechowski & Cunningham, 1985; Silverman, 1993), human development can be seen as a five-level hierarchy where the higher levels of development are reached by people who possess, together with a capacity for inner transformation, high levels of emotional, intellectual and imaginal OE. In fact, OEs are ways that an individual experiences the world and can be understood as channels of information flow (Piechowski, 1979). It allows a person "to take in and process larger than usual amounts of stimuli from the environment" (Gallagher, 1986, p. 115). The term *overexcitability*, as introduced by Dabrowski (1964, 1967), is the translation of a Polish word "*nadpobudliwosc*" (superstimulatability, in English) (Falk, Piechowski, & Lind, 1994).

According to Dabrowski, there are five forms of OE: psychomotor, sensual, intellectual, imaginal, and emotional. When combined with talents, abilities, intelligence and capacity for inner transformation, OEs form an individual's developmental potential (Bouchet & Falk, 2001; Gross, Rinn, & Jamieson, 2007; Piechowski, 1979). "To varying degrees, these five dimensions give talent its power" (Piechowski, 1977, p. 366). Unfortunately, the term "overexcitability" is sometimes misunderstood to refer to hyperactivity. It also carries negative connotation of meaning "too much". In fact, an individual with strong OE will experience life more richly and has more complexity than those who have less or no OE and those who are exposed to the same life experiences. However, Dabrowskian theory states that, although strong psychic reactions can be potentially negative (and may result in neuroses and existential crisis), they are part of the necessary conditions that can lead to positive disintegration, which is the developmental process of moving from lower to higher levels of emotional development.

Piechowski and Cunningham (1985) summarized the characteristics of each form of OE:

- (i) *Psychomotor Overexcitability* – an organic excess of energy or heightened excitability of the neuromuscular system. It may manifest itself as a love of movement for its own sake, rapid speech, violent or impulsive activity, restlessness, pressure for action and drivenness. It may be viewed as a capacity for being active and energetic;
- (ii) *Sensual Overexcitability* – an individual's heightened experiences of sensual pleasure, the seeking of sensual outlets for inner tension. It may be expressed in the simple pleasure derived from touching things, such as texture of a tree bark or the pleasure of taste and smell, e.g., the smell of gasoline, in short, it is a capacity for sensual enjoyment;
- (iii) *Intellectual Overexcitability* – the pursuit of knowledge and search for truth, manifests itself as persistence in asking probing questions, avidity for knowledge and analysis, preoccupation with theoretical problems. Other expressions are: a sharp sense of observation, independence of thought (often expressed in criticism), symbolic thinking, development of new concepts, striving for synthesis of knowledge and searching for truth;
- (iv) *Imaginational Overexcitability* – the domains of fantasy, dreams, dramatizations, inventions, and a desire for the unusual. It is recognized through rich association of image and metaphor in verbal expression. Intense living in the world of fantasy, predilection for fairy and magic tales, poetic creations and dramatizing to escape boredom are observed, and
- (v) *Emotional Overexcitability* – the strength of sensations and emotional experiences expressed through feelings, attachments, and compassion for others. Characteristic expressions include: inhibition (timidity and shyness) and excitation

(enthusiasm), strong affective recall of past experiences or concern with death, fears, anxieties or depressions. There may be intense loneliness, an intense desire to offer love, a concern for others. There is a high degree of differentiation of interpersonal feeling. It is the basis of one's relation to self through self-evaluation and self-judgment, sense of responsibility, compassion and responsiveness to others. (p. 154)

These OEs are referred to as “the difference in intensity, sensitivity, and acuity not only greater than normal, but also a difference in the very quality of experiencing” (Piechowski, 1999, p. 325). These have also been referred to as sensitivities and intensities (Piechowski, 2006). When combined with talents, abilities and intelligences, OEs contribute to the developmental potential of gifted children. All these, in turn, contribute to adult creativity.

There are advantages to understanding giftedness from the perspective of OEs. First, OEs include five innate characteristics that describe the nature of a person's giftedness and talents. The concept of OE is more than looking into a single factor of generalized intelligence (Guilford, 1979). It allows educators to consider other important behavioural and affective components (apart from cognitive variables) in understanding gifted children. Second, gifted individuals are also characterized by their highly sensitive and emotional nature, as well as their high energy levels (Torrance, 1965; Webb, Meckstroth, & Tolan, 1982). OEs are not abilities; rather, they are modes of experiencing the world (Piechowski & Colangelo, 1984). OEs can be seen as indicators of the potential for higher levels of development (Bouchard, 2004). Ackerman (1997) illustrated strong theoretical relationships between OEs and giftedness based on her work on gifted and non-gifted groups, and suggested promising results in using OE to identify gifted children. Along similar lines, Mendaglio and Tillier (2006), in their review of OE research, noted that Dabrowski's theory and the concept of developmental potential in particular, have played a significant role in research attempting to understand giftedness.

### ***Studying overexcitabilities***

Originally, OE was studied using the Overexcitability Questionnaire (OEQ), a 41-item open-ended questionnaire designed to elicit responses indicating the responder's relative intensities in each of the five OEs. Each question was scored on a range from 0 (*no evidence*) to 3 (*high intensity*) across all five OEs. Raters received intensive training until their inter-reliability reached 90%. Studies using the OEQ did help to identify the gifted and the talented. For example, Piiro, Beach, Rogers, and Fraas (2000) reported that higher levels of intellectual OEs were found in gifted adolescents in comparison with adolescents who attended vocational schools. However, the scoring of this OEQ was difficult and complex.

In response to the issue of labour-intensiveness of the original OEQ, the Overexcitability Questionnaire II (OEQ-II) was developed with improved administration and scoring (Falk, Lind, Miller, Piechowski, & Silverman, 1999; Falk, Piechowski, & Piiro, 2000). This is a 50-item Likert scale, with 10 items for each OE. It takes about 10 minutes to administer and another 10 minutes to score.

A growing number of studies have examined giftedness and OEs using the OEQ-II. Bouchet and Falk (2001) examined gender differences between college students who were gifted and those who were not. Results showed that gifted students had higher scores on intellectual and emotional OEs when compared to the non-gifted group. There were also gender differences identified among the gifted group. Males scored higher on intellectual, imaginal and psychomotor OEs while females scored higher on emotional and sensual OEs. Tieso (2007a) further examined the OE patterns among gifted and non-gifted students. Results showed that there were significant differences between these two groups

of students on all OEs. Post-hoc analysis further indicated the mean intellectual and imaginal OE scores represent a majority of the difference. Gender differences were identified in the emotional and sensual OEs for the gifted group. The OEQ-II was also tried out in different countries. Moon and Montgomery (2005) studied OEs among Korean adolescents attending special high schools for science, foreign language, and the arts. The findings showed differences by gender and talent area. Students from the arts schools were higher in sensual and imaginal scores than students in the other schools; the foreign language school had higher scores for psychomotor and intellectual for male students. No gender difference on any of the OE scales was identified for students in the science school. Yakmaci-Guzel and Akarsu (2006) conducted a study on Turkish children using the OEQ-II. Results showed that gifted children scored significantly higher than average-ability children in imaginal and intellectual OE. Piirto, Montgomery, and May (2008) compared OE by gender for American and South Korean high school gifted students. The findings suggest that Korean students have significantly higher psychomotor OE whereas students from America score significantly higher in imaginal OE. Despite the variations in results of previous studies, gifted children, in general, possess characteristics exemplified by the OEs.

### *Hong Kong situation*

In the development of gifted education in Hong Kong, there has been a call to move away from relying solely on conventional IQ measures to identify giftedness, to taking a broader view on assessing giftedness that includes aspects not tapped by traditional intellectual assessment measures (see Hong Kong Education Department, 2000). Specifically, the Hong Kong Commission (1990), in its fourth report, defined giftedness as those with exceptional achievement and/or potential in one or more areas, including general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual and performance arts, and also psychomotor ability. In addition to identification of gifted children, educators and teachers are concerned with the social and emotional needs of these children, and the provision of preventive interventions to help gifted children with adjustment problems (Chan, 2004). Despite the need for developing early screening of giftedness as well as exploring different aspects of giftedness in children in order to facilitate guidance and interventions, there have been very few attempts to explore characteristics of giftedness among Chinese students in Hong Kong (Chan, 2008). There is evidence that OEs are characteristic of gifted children in the Western world. Given that OEs are tied to the roots of giftedness, and to behaviours that are indicative of “an advanced and accelerated development of functions within the brain [that] may express itself in high levels of cognitive, affective, physical sensing, and/or intuitive abilities” (Clark, 1997, p. 26), it may be helpful to the Hong Kong education field to capture the multifaceted characteristics of gifted individuals using the concept of OEs. Would the profile of OEs among Hong Kong children be different from that of Western children given that the Hong Kong education system has long been focusing on academic learning and on producing an intellectually elite group? How might the profile of OEs be different in different cultures?

### *The present study*

The present study aimed to investigate the characteristics of OEs among students in Hong Kong, and to compare the profiles of OEs among gifted children across cultures.

Specifically, the following hypotheses were tested for the Hong Kong sample: 1) there is a difference in OE scores between gifted and non-gifted students; and 2) there is a difference in OE scores between males and females. The results of this study were compared to Tieso's (2007a) sample so as to provide further comparison across cultures (the United States and Hong Kong) in exploring the profiles of OE.

## Method

### Participants

Four hundred forty-six (446) primary and secondary school students participated in this study. In this sample, there were 221 males and 225 females. With reference to giftedness, 217 of them were gifted students and 229 were non-gifted. For the purpose of this study, the gifted children came from two sources. The majority of them ( $n = 196$ ) came from a gifted centre located in a local university. These students were classified as gifted based on a battery of assessment measures, which included standardized tests on intellectual abilities. The remaining ones ( $n = 21$ ) were reported by the schools based on individual students' psychological reports.

### Measures

#### *Test of Nonverbal Intelligence-III (TONI-III)*

TONI-III (Brown, Sherbenou, & Johnsen, 1997) is a language-free measure of abstract/figural problem solving. The individual was asked to solve each question by identifying relationships among the figures and selecting the correct response from among an array of either four or six response alternatives. TONI-III is especially useful in screening the intellectual functioning of children when traditional IQ tests of intelligence are not available (Salvia & Ysseldyke, 1995). For the purpose of this study, TONI-III was used as a tool to confirm whether participants were in the correct group, that is, gifted and non-gifted groups. (Refer to section on *Procedures* for details.)

#### *Overexcitability Questionnaire II (OEQ-II)*

The OEQ-II (Falk, Lind, Miller, Piechowski, & Silverman, 1999) consists of 50 Likert-type items that measure each of the five OEs: *Psychomotor* (e.g., "When I have a lot of energy, I want to do something physical"), *Intellectual* (e.g., "I observe and analyse everything"), *Imaginational* (e.g., "Things I picture in my mind are so vivid that they seem real to me"), *Sensual* (e.g., "I delight in colours, shapes, and textures of things"), and *Emotional* (e.g., "I can feel a mixture of different emotions all at once") (Bouchet & Falk, 2001). It was adapted based on responses by children and adults to an earlier questionnaire (the OEQ; Piechowski & Miller, 1995). Means (and SDs) for the five subscales of OEs from the original OEQ pilot study ( $n = 563$ , aged 15–62) were 3.35 (0.79) for *Psychomotor*, 3.28 (0.87) for *Sensual*, 2.86 (0.83), for *Imaginational*, 3.50 (0.79) for *Intellectual*, and 3.72 (0.77) for *Emotional*. The pilot study was repeated with an additional sample of 324 students, 49% of whom were 17 years old or younger. Alpha reliability estimates using the original OEQ were 0.86 for *Psychomotor*, 0.89 for *Intellectual*, 0.89 for *Sensual*, 0.84 for *Emotional*, and 0.85 for *Imaginational* OEs (Falk et al., 1999). Permission was granted by the author of the OEQ-II to translate it into Chinese. The translation was done by the researcher and five bilingual people independently.

The translations were examined and discussed by three of the translators. The final version of the OEQ-II Chinese form was confirmed after modifications.

### Procedures

Gifted students were mainly recruited at a gifted and talented centre under a local university. These students had already gone through a series of standardized tests of achievements, ability and creativity. The OEQ-II was distributed to those who attended the courses in that centre. As for the sample in the non-gifted group, students from regular primary and secondary schools were invited to participate in this study. Apart from the OEQ-II, all students were asked to complete the TONI-III as a screening tool to cross-check students' level of intelligence. Students whose scores were at the borderline range or below in their intellectual level, according to TONI-III, were excluded from this study. Those who scored at the gifted range (with estimated non-verbal IQ score at or above 130) were asked whether they had been diagnosed as gifted or not. Students who had formal assessment reports stating that they were within the gifted range in their intellectual abilities were included in the gifted group. All participants were informed that their participation was voluntary and that they could withdraw if they decided not to participate.

### Results

#### *Psychometric properties of OEQ-II for this study*

Correlation coefficients between subscales of the OEQ-II showed moderate correlations. The results are summarized in Table 1. Prior to conducting further analyses, confirmatory factor analysis (CFA) was conducted and Cronbach's alpha reliability coefficient was calculated to further establish construct validity and reliability for this study. Results of the CFA showed that the  $\chi^2$  test statistics, 733.88 ( $df = 1165$ ) was significant at the  $p < .01$  level. Although this model is significant, it is less than two times the model degrees of freedom. Moderate fit was indicated by *RMSEA* (.05), *GFI* (.93), and *CFI* (.89). Thus, it can be generally concluded that the five-factor model fits well for the present sample. Alpha reliability estimates, using Cronbach's alphas, for the five subscales were 0.81 for *Psychomotor*, 0.85 for *Sensual*, 0.77 for *Imaginational*, 0.90 for *Intellectual* and 0.70 for *Emotional*.

#### *Descriptive statistics*

Mean scores in the gifted group, for both males and females, were higher compared to those in the non-gifted group. Among the five mean scores for the gifted children, both males and females scored highest in the *Intellectual* OE and scored lowest in *Imaginational* OE. (Refer to Table 2 for means and standard deviations by gender and giftedness.)

Table 1. Correlations among the five subscales of overexcitabilities (OEs).

Measure	1	2	3	4	5
1. Psychomotor OE	–	.33**	.39**	.23**	.34**
2. Sensual OE		–	.32**	.37**	.31**
3. Imaginational OE			–	.35**	.33**
4. Intellectual OE				–	.27**
5. Emotional OE					–

\*\* $p < .01$

Table 2. Means and SDs by gender and giftedness.

	Non-gifted		Gifted	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
	Male			
Psychomotor OE	2.84	.79	3.04	.73
Sensual OE	2.71	.79	3.04	.76
Imaginational OE	2.68	.70	2.91	.73
Intellectual OE	3.07	.84	3.51	.80
Emotional OE	2.83	.54	3.11	.65
	Female			
Psychomotor OE	2.76	.68	3.07	.69
Sensual OE	2.87	.71	3.36	.74
Imaginational OE	2.81	.68	2.90	.67
Intellectual OE	2.84	.73	3.54	.75
Emotional OE	3.07	.61	3.28	.53

### Gender

The univariate analyses as shown in Table 3 revealed unique relationships of gender to *Sensual* OE [ $F(1, 444) = 8.613, p < .05$ ] and *Emotional* OE [ $F(1, 444) = 11.337, p < .05$ ]; while no significance was identified in *Psychomotor* OE [ $F(1, 444) = 0.312, ns$ ], *Imaginational* OE [ $F(1, 444) = 0.621, ns$ ], and *Intellectual* OE [ $F(1, 444) = 3.104, ns$ ]. The effect sizes for these results were found to be quite small for *Sensual* OE (partial eta squared = .019), and *Emotional* OE (partial eta squared = .025).

### Giftedness

The univariate analyses, as shown in Table 3, revealed unique relationships of giftedness by each of the five OEs: *Psychomotor* OE [ $F(1, 444) = 14.272, p < .01$ ], *Sensual* OE [ $F(1, 444) = 30.902, p < .01$ ], *Imaginational* OE [ $F(1, 444) = 5.321, p < .01$ ], *Intellectual* OE [ $F(1, 444) = 60.654, p < .01$ ], and *Emotional* OE [ $F(1, 444) = 16.973, p < .01$ ]. The effect sizes for these results were found to be small for *Psychomotor* OE (partial eta squared = .031), *Sensual* OE (partial eta squared = .065), *Imaginational* OE (partial eta squared = .012), and *Emotional* OE (partial eta squared = .037); however, the effect size for the contribution of *Intellectual* OE was better (partial eta squared = .120).

A two-way ANOVA was conducted to explore the interaction effect of gender and giftedness on the dependent measures (the different types of OEs). The analysis, as shown in Table 3, indicated non-significant results.

When the gifted and non-gifted samples were analysed separately, significant differences between males and females were found in both samples (see Table 4). With respect to the non-gifted group, the differences on the composite OE subscales between males and females were significantly different, Wilks'  $\Lambda = .84, F(5, 223) = 8.24, p < .01$ . Significant differences were indicated by *Intellectual* OE [ $F(1, 227) = 5.232, p < .05$ ] and *Emotional* OE [ $F(1, 227) = 9.491, p < .01$ ]. Males scored higher than females in *Intellectual* OE whereas females scored higher than males on *Emotional* OE. The effect sizes for these results were found to be small, with partial eta squared as .023 (for *Intellectual* OE) and .040 for (*Emotional* OE). For the gifted sample, the results suggested that the difference between genders on the OE subscales were significant, Wilks'  $\Lambda = .91, F(5, 211) = 4.12, p < .01$ . Significant differences were found in *Sensual*

Table 3. Summary table for multiple analysis of variance.

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial eta squared
Gender (G)						
PM-OE	0.169	1	0.169	0.312	.577ns	.001
SEN- OE	5.178	1	5.178	8.613	<b>.004*</b>	<b>.019</b>
IM-OE	0.302	1	0.302	0.621	.431ns	.001
INT-OE	2.115	1	2.115	3.104	.079ns	.007
EMO-OE	4.052	1	4.052	11.337	<b>.001*</b>	<b>.025</b>
Giftedness (GF)						
PM-OE	7.517	1	7.517	14.272	<b>.000*</b>	<b>.031</b>
SEN- OE	17.706	1	17.706	30.902	<b>.000*</b>	<b>.065</b>
IM-OE	2.56	1	2.56	5.321	<b>.022*</b>	<b>.012</b>
INT-OE	36.609	1	36.609	60.654	<b>.000*</b>	<b>.120</b>
EMO-OE	5.992	1	5.992	16.973	<b>.000*</b>	<b>.037</b>
G x GF						
PM-OE	0.360	1	0.360	0.681	.410ns	.002
SEN- OE	0.727	1	0.727	1.299	.255ns	.003
IM-OE	0.520	1	0.520	1.081	.299ns	.002
INT-OE	1.196	1	1.196	3.197	.074ns	.007
EMO-OE	0.113	1	0.113	0.330	.566ns	.001

PM = Psychomotor; SEN = Sensual; IM = Imaginational; INT = Intellectual; EMO = Emotional

\* = <.05

OE [ $F(1, 215) = 10.040, p < .01$ ] and *Emotional* OE [ $F(1, 215) = 4.523, p < .05$ ]. Females scored higher than males on these two OEs. The effect sizes for these results were also found to be small, with partial eta squared as .045 (for *Sensual* OE) and .021 (for *Emotional* OE).

### Cultural difference

The OE profile of this study was compared to that of Tieso's (2007a) to explore possible cultural differences. For giftedness, there were significant differences between gifted and

Table 4. Gender differences between the gifted and the non-gifted groups for all OEs.

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial eta squared
For the gifted group ( $n = 227$ )						
PM-OE	0.064	1	0.064	0.125	.724ns	.001
SEN- OE	5.627	1	5.627	10.040	<b>.002*</b>	<b>.045</b>
IM-OE	0.005	1	0.005	0.009	.923ns	.000
INT-OE	0.049	1	0.049	0.080	.778ns	.000
EMO-OE	1.601	1	1.601	4.523	<b>.035*</b>	<b>.021</b>
For the non-gifted group ( $n = 227$ )						
PM-OE	0.360	1	.360	.661	.417ns	.003
SEN- OE	1.472	1	1.472	2.634	.106ns	.001
IM-OE	0.930	1	.930	1.962	.163ns	.009
INT-OE	3.088	1	3.088	5.232	<b>.023*</b>	<b>.023</b>
EMO-OE	3.173	1	3.173	9.491	<b>.002*</b>	<b>.040</b>

PM = Psychomotor; SEN = Sensual; IM = Imaginational; INT = Intellectual; EMO = Emotional

\* = <.05

non-gifted students on the composite OE subscales for both samples, with  $F(4, 468) = 3.83$ ,  $p < .01$  in Tieso's study and  $F(4, 445) = 12.83$ ,  $p < .01$  in the present study. The difference between gifted and non-gifted students in the composite OE subscales was larger in the Hong Kong sample. Mean scores for gifted and non-gifted students in Tieso's study were significantly different on the *Intellectual* and *Imaginational* OE subscales, with gifted students scoring higher on each subscale. As for the present study, mean scores for gifted and non-gifted students were significantly different on all OE subscales (see Table 5 for details).

As for gender differences, Tieso's (2007a) study as well as the present study both suggested that there were significant differences on the composite OE subscales for males and females, with  $F(4, 468) = 23.20$ ,  $p < .01$  and  $F(4, 445) = 12.17$ ,  $p < .01$ . The results of the present study indicated that females scored significantly higher than males on *Sensual*,  $F(1, 444) = 8.61$ ,  $p < .01$ , and *Emotional*,  $F(1, 444) = 11.33$ ,  $p < .01$ . This pattern was comparable to that of Tieso's study, with females scored significantly higher than males on *Sensual*,  $F(1, 509) = 43.56$ ,  $p < .01$ , and *Emotional*,  $F(1, 509) = 71.60$ ,  $p < .01$ .

With reference to the gifted sample alone, both studies indicated significant difference between gender in both *Sensual* and *Emotional* OEs (with  $F(1, 509) = 16.87$ ,  $p < .01$  and  $F(1, 509) = 41.66$ ,  $p < .01$  respectively for Tieso's study, as well as  $F(1, 434) = 10.04$ ,  $p < .01$  and  $4.52$ ,  $p < .01$  for the present study). As for the non-gifted sample alone, results of the two studies differed. Tieso's study reported that females scored significantly higher than males on the *Emotional* and *Sensual* OE subscales, whereas for the present study, females scored significantly higher than males on the *Emotional* subscale while males scored significantly higher on *Intellectual*.

Table 5. Means and SDs of OE subscales as a function of gender by country.

	Hong Kong (current sample)				American (sample from Tieso's 2007 study)			
	Male ( $n = 114$ )		Female ( $n = 103$ )		Male ( $n = 127$ )		Female ( $n = 169$ )	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Psychomotor OE	3.04	.73	3.07	.69	3.51	.86	3.50	.72
Sensual OE	3.04	.76	3.36	.74	2.93	.86	3.37	.82
Imaginational OE	2.91	.73	2.90	.67	2.87	.86	3.05	.91
Intellectual OE	3.51	.80	3.54	.75	3.55	.82	3.40	.75
Emotional OE	3.11	.65	3.28	.53	3.02	.81	3.55	.71
	Male ( $n = 107$ )		Female ( $n = 122$ )		Male ( $n = 90$ )		Female ( $n = 94$ )	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Psychomotor OE	2.84	.79	2.76	.68	3.54	.83	3.43	.72
Sensual OE	2.71	.79	2.87	.71	2.82	.93	3.48	.79
Imaginational OE	2.68	.70	2.81	.68	2.71	.89	2.81	.88
Intellectual OE	3.07	.84	2.84	.73	3.20	.80	3.35	.64
Emotional OE	2.83	.54	3.07	.61	2.83	.80	3.49	.71

## Discussion

This is the first study introducing Dabrowski's theory and overexcitabilities into the Chinese literature and using the OEQ for Hong Kong students. Results of the present study provided further evidence that there are differences between OE subscales for gifted versus non-gifted children in Hong Kong. The gifted students had higher mean scores on all five of the OE subscales compared to their peers with average abilities. This result is in tune with previous studies (e.g., Chang, 2001; Gallagher, 1986; Tieso, 2007a; Yakmaci-Guzel & Akarsu, 2006) and may imply that the concept of overexcitability, and the theory of Dabrowski's theory of positive disintegration, is also a characteristic of gifted children in the Hong Kong Chinese population.

A closer look at the scores among the five subscales in this study shows that the gifted sample had a relatively low score on *Imaginational* OE – a mean score of less than 3. The pattern of relatively low *Imaginational* OE is consistent with previous cross-cultural findings (as described in Falk, Yakmaci-Guzel, Chang, Pardo de Santayana Sanz, & Chavez-Eakle, 2008). In fact, a similar pattern occurs in Piirto, Montgomery, and May (2008) for the comparison of OE characteristics between American and Korean children. Teachers in Hong Kong (or perhaps in Korea or other Far Eastern countries) may not value the same creativity characteristics as American teachers. Chinese families, similar to those in Korea, place strong emphasis on academic knowledge in facilitating one's intellectual development. Chinese children are expected to learn as many academic subjects and skills as possible. The relatively low score on *Imaginational* OE may suggest that gifted students in Hong Kong are not geared towards fantasy, dreams, or desire for the unusual. Such could be related to the general learning environment whereby dramatization and association of images are not encouraged as much as in other places. Further cross-cultural work may be done to compare the differences of these OEs among students from different schooling systems in Hong Kong (e.g., international schools and schools that follow the traditional format).

There were also significant differences on OE subscales between genders. For both the gifted and the non-gifted groups, females scored higher in *Emotional* OE while males scored higher in *Intellectual* OE. This result, on one hand, supports the idea proposed by Miller, Silverman and Falk (1994) that the gender differences in overexcitabilities "seem to be related to areas in which males and females have been differentiated by traditional socialization" (p. 33). However, this may also suggest that OE characteristics may not be more prevalent in the gifted populations than in others. As research relating to OEs has been limited and some researchers still have concerns about whether OEs may not be more prevalent in the gifted population than in others (e.g., Tieso, 2007b), further work needs to be done to deal with these conceptual issues. In addition, gifted females also scored significantly higher in *Sensual* OE when compared to gifted males. Earlier studies using the OEQ-II found major differences between males and females on the OE subscales, with gifted females scoring significantly higher on the *Sensual* OE than gifted males (Chang, 2001; Miller, Silverman, & Falk, 1994; Tieso, 2007a). The result from this study supports these earlier results. Similar to the findings by Piirto, Montgomery, and May (2008), this present study also demonstrated a relatively small effect size for the OEs.

Looking into the cultural differences for the gifted groups (by comparing the present study with that of Tieso's (2007a) using an American sample), two points are worth noting. First, the finding that *Psychomotor* OE is higher in the American group echoes findings that Ackerman (1997) and Mendaglio and Tillier (2006) documented for studies

of gifted and non-gifted comparisons. The reasons for this might have more to do with culture than with ability. Second, in relation to *Sensual* OE, there is a difference between genders for both samples, where males scored much lower than females. Perhaps females are more open to sensual expression. Taking a closer look at the comparison between the two samples in the non-gifted group, it is interesting to note that the *Psychomotor* OE does not match previous findings from Ackerman (1997), who found that *Psychomotor* OE is considered the best predictor of giftedness among school children. The *Psychomotor* OE is much lower in the Hong Kong sample compared to that of the Canadian sample in North America. There is also not much difference between the gifted and non-gifted groups in the American sample on *Psychomotor* OE. Further cross-cultural research may help to clarify these points.

The sample size of the present study was relatively small. Gender differences suggested in this study should be further examined using larger samples. In addition, only one measure was used in this present study. Further work in examining the reliability and validity of this Likert-type instrument may be useful in examining the convergent validity of the OEQ-II for use with Hong Kong children. Perhaps a 7-point Likert scale would be more desirable in order to more finely discriminate the differences. Despite this methodological limitation, several implications may be drawn from this study. First, it provides evidence to support the notion that gifted Chinese children also possess OEs that are characteristic of their peers in other countries. Hence, measures relating to OE can be used in the local Hong Kong context as a tool for helping individual children understand and acknowledge their own distinctive characteristics demonstrated by their giftedness. Second, *Emotional* OE seems to be a characteristic among gifted children, especially in females. More work needs to be done to investigate the connection between *Emotional* OE and other factors (e.g., self-concept, achievement) that are commonly seen as correlated with gifted children. This may further help in nurturing the overall development of the gifted. Affective education programmes for gifted children can also address children's OE characteristics.

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