

Comparing overexcitabilities of gifted and non-gifted 10th grade students in Turkey

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The study compares overexcitability scores of Turkish 10th graders who are grouped in terms of their intellectual abilities, motivation, creativity and leadership as well as gender. 711 students who were administered Raven Advanced Progressive Matrices Test (APM) were divided into three intellectual ability categories. From this pool, 105 subjects were selected as the sample of the study. Teacher Observation and Evaluation Form (TOEF) was used for categorizing students in terms of motivation, creativity and leadership. On the other hand, Overexcitability Questionnaire (OEQ) was administered to the sample for assessing their overexcitabilities. According to the findings of the study, overexcitability scores of highly intelligent, motivated, creative and leader students in some overexcitability areas are significantly greater than those of their lower counterparts. No gender differences are found in regard to overexcitabilities.

Keywords: Overexcitability, Dabrowski's Theory of Positive Disintegration, Characteristics of Turkish gifted students

Overexcitability, a term introduced by Kazimierz Dabrowski, is the translation of a Polish word 'nadpobudliwosc', which means 'superstimulatability' in English (Falk *et al.*, 1994). Overexcitabilities describe an intensified manner of experiencing and responding to the stimuli in the psychomotor, sensual, intellectual, imaginational and emotional areas. The prefix 'over' in the word is used to emphasize that this is a special kind of responding, experiencing and acting, one that is enhanced and distinguished by some characteristic forms of expression (Piechowski & Colangelo, 1984). Piechowski and Cunningham (1985, p. 154) summarize characteristic forms of expressions for each overexcitability in the following way:

Psychomotor overexcitability is 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. *Sensual*

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overexcitability is expressed in the heightened experience of sensual pleasure, the seeking of sensual outlets for inner tension. Beyond desires for comfort, luxury, stereotyped or refined beauty, the pleasure in being admired and being in the limelight, sensual overexcitability 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, for instance the smell of gasoline, in short, it is a capacity for sensual enjoyment. *Intellectual overexcitability* is to be distinguished from intelligence. It 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. *Imaginational overexcitability* is recognized through rich association of images and impressions, inventiveness, vivid and often animated visualization, use of image and metaphor in verbal expression. Dreams are vivid and can be retold in detail. Intense living in the world of fantasy, predilection for fairy and magic tales, poetic creations and dramatizing to escape boredom are also observed. *Emotional overexcitability* is recognized in the way emotional relationships are experienced, and in the great intensity of feeling and awareness of its whole range. Characteristic expressions are: 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. Emotional overexcitability is the basis of one's relation to self through self-evaluation and self-judgement, sense of responsibility, compassion and responsiveness to others.

Piechowski (1975) resembles the forms of overexcitability to channels through which information is flowing and states that size and diversity of these channels determine to what stimuli and in what way an individual is capable of responding. When combined with talents, abilities, intelligence and capacity for inner transformation, overexcitabilities form an individual's developmental potential, which is another important concept of Dabrowski's theory of positive disintegration (TPD). According to this theory, developmental potential is the original endowment which determines what level of development a person may reach if the physical and environmental conditions are optimal (Piechowski, 1975). 'Overexcitabilities contribute to the individual's psychological development, and so their strength is taken as a measure of developmental potential' (Piechowski, 1986, p. 191).

As a developmental personality theory, TPD points out five levels of development (Ackerman, 1997b). 'Central to the theory is the concept of the breakdown (disintegration) of lower level, egocentric concerns, in the service of the formation of higher level, altruistic values' (Miller & Silverman, 1987, p. 221). Unlike many other theories of personality development, in Dabrowski's theory, 'the emergence of a higher level requires the dissolution of a lower level, so development from one level to another represents a whole internal reorganization of the personality' (Miller & Silverman, 1987, p. 222). If more than one channel (overexcitabilities) are widely open, the abundance and diversity of information leads an individual to dissonance, conflict and tension. According to Piechowski (1975, p. 256), 'these (dissonance, conflict and tension) are the substrates of the developmental process of positive disintegration'.

In contrast to general theories of human development, this theory is more applicable to the study of gifted partly because it was based on biographical, clinical and empirical research with the gifted, creative and eminent individuals (Miller *et al.*, 1994).

In the literature, there are studies comparing overexcitabilities of gifted and non-gifted individuals (Piechowski & Colangelo, 1984; Piechowski *et al.*, 1985; Schiever, 1985; Breard, 1994; Domroese, 1994; Miller *et al.*, 1994; Ackerman, 1997a), and others comparing overexcitabilities of creative and non-creative individuals (Silverman & Elsworth, 1981; Gallagher, 1985; Piechowski & Cunningham, 1985; Piechowski *et al.*, 1985; Ely, 1995; Falk *et al.*, 1997). There is no reported study, up to date, comparing overexcitability scores of people who were grouped in terms of their motivation and leadership.

According to the literature, overexcitability scores in some areas are greater for the gifted than the non-gifted (Piechowski & Colangelo, 1984; Piechowski *et al.*, 1985; Schiever, 1985; Miller *et al.*, 1994; Ackerman, 1997a). On the other hand, some overexcitability scores of more creative individuals are greater than those of less creative ones (Silverman & Elsworth, 1981; Gallagher, 1985; Piechowski & Cunningham, 1985; Piechowski *et al.*, 1985; Falk *et al.*, 1997). Although, it is not clear from the available literature whether overexcitabilities consistently differentiate gifted from non-gifted or creative from non-creative, there is an accumulated evidence that higher scores on especially emotional, intellectual and imaginal overexcitability areas are obtained by gifted and creative subjects as compared with non-gifted and non-creative counterparts (Ackerman, 1997a). In most of these aforementioned studies, Overexcitability Questionnaire (OEQ) developed by Lysy and Piechowski (1983) is used to assess overexcitabilities. A new Likert type instrument (OEQ II) assessing overexcitabilities is also available and in use (Falk *et al.*, 1999).

Method

Sample

Raven Advanced Progressive Matrices Test (APM) was administered to 711 10th graders who were later divided into three categories according to the scores they received from APM Set II. All 38 students who scored below 9 points (low intellectual ability group) and all 41 students who scored above 27 points (high intellectual ability group) were directly included in the sample. Among the remaining 632 students only 121 who obtained 16, 17 and 18 points (the scores approximating to 50th percentile) constituted the pool from which 35 students were randomly selected and labeled as the middle group. Nine students did not return the given OEQ and so 105 students formed the sample of this study (Table 1).

A total of 53 girls and 52 boys between the ages of 15.5 and 19.5 in the sample came from 25 different classes in 13 schools. The distribution of students in the pool and in the sample according to variables of the study is given in Table 2.

Table 1. The sample selection

		APM		Set II	Scores
		Low (Score<9)	Middle (8<Score<28)	High (Score>27)	
No. of students in the pool	711	38		121	41
No. of students included in the sample	114	38		35	41
No. of students responding to OEQ	105	37		33	35

Instruments

Three measuring devices are used to collect data throughout the study.

Raven Advanced Progressive Matrices Test. The APM test, developed by Raven, Court and Raven, is used in order to group students in terms of their intellectual abilities. The APM was originally drafted in 1943. This test, consisting of two sets, intends to assess Spearman's idea of general intelligence (g) and when 'used by itself, yields better information on people's ability to forge new, largely non-verbal, insights (i.e. educative ability) than do the relevant sub-scales of multi-component tests' (Raven *et al.*, 1994, p. 4). Set I comprises a short set of 12 items covering all the intellectual processes sampled on the Set II which contains 36 items. In the present study, both sets of APM (Set I and Set II) were administered to the sample. Set I was used as an exercise for Set II in this study, only scores in APM Set II were taken into consideration in data analyses. Since this test contains items with figures, it can be regarded as a culture-fair test. Both sets of APM were administered to 711 10th

Table 2. Distribution of students according to variables

		No. of students in the pool ($n=711$)	No. of students in the sample ($n=105$)
Gender	Male	418	53
	Female	293	52
	Low	40	37
Int. abl.	Middle	629	33
	High	42	35
	Low	159	23
Motv.	Middle	300	36
	High	213	36
	Low	162	22
Crtv.	Middle	345	46
	High	145	22
Lead.	Leader	390	53
	Non-leader	253	34

graders in the first phase of the study. Set I and Set II were administered in 15 and 40 min respectively. The researcher read aloud the 'instructions for administration of APM' (Raven, 1994, p. 50) in all classrooms that the sample received the APM.

Overexcitability Questionnaire. The OEQ developed by Lysy and Piechowski is the main data collection instrument of the study. This questionnaire consists of 21 open-ended questions such as 'What do you like to concentrate on the most?', 'Do you ever think about your own thinking? Describe', 'When do you feel the most energy and what do you do with it?', 'Do you ever catch yourself seeing, hearing, or imagining things that aren't really there? Give examples'. All questions lead students to think deep about themselves and to give their personal responses. Although each question was developed initially to uncover a specific overexcitability, it was observed that the questions elicited whichever overexcitability/ies are stronger in an individual. Test-retest reliability for the OEQ completed three to six weeks apart by a group of adults ($n=60$) was .65 (Ammirato, 1987) and internal consistency for total OE scores averaged .77 for gifted adults (Miller *et al.*, 1994).

The OEQ was translated into Turkish by the researcher and five bilingual people independently. Three of the translators were familiar with the Dabrowski's theory and overexcitabilities, whereas the others were not. Then translations were examined and discussed by three of the translators. After modifications, the final OEQ Turkish form was ready to use. The OEQ requires a content analysis procedure while scoring given responses. A booklet was prepared by the researcher which includes definitions of overexcitabilities, examples about levels of overexcitabilities, rules for scoring responses and a sample scoring form. While preparing this booklet, the researcher benefited mainly from the manuscript 'Criteria for rating the intensity of overexcitabilities' written by Falk *et al.* (1994) and also a number of research articles and books written by other researchers in the field. In this scoring procedure, each written answer can get points between 0 and 3 in one or more overexcitability areas. Here 0 means no overexcitability and 3 means a stronger overexcitability. So, the highest possible score for a specific overexcitability dimension is 63 (3×21). In this study, the OEQ was given to each student in sealed envelopes. Subjects responded to the OEQ at home and brought back the completed forms to their teachers in a week.

Teacher Observation and Evaluation Form (TOEF). Another instrument used in this study is the TOEF developed by the researcher. The perceptions of home room teachers ($n=25$) about standing of students in terms of motivation, creativity and leadership were intended to be determined with this measuring device. In order to achieve this aim, the researcher explained to teachers what each variable means, then asked them to rate students with respect to these variables. The following definitions were given to the teachers:

MOTIVATION: 'energy brought to bear on a particular problem (task) or specific performance area' (Renzulli, 1978, pp. 180-184).

CREATIVITY: 'the ability to produce new ideas by bringing together elements usually thought of as independent or dissimilar and the aptitude for developing new meanings that have social value' (Marland, 1972, p. 2).

LEADERSHIP: 'the ability to direct individuals or groups to a common decision or action' (Marland, 1972, p. 2).

The researcher requested teachers not to evaluate students if they do not have adequate observations about them.

Data analysis

According to the scoring procedures and steps explained in the prepared booklet, OEQ responses were coded by the researcher. Another person, who was trained by the researcher according to the prepared booklet, coded 36 randomly chosen OEQ forms completed by the students independently from the researcher. When 36 double-coded forms were analyzed in terms of inter-scorer consistency by using Pearson product moment correlation coefficient, high correlations were found (P-OE: .84; S-OE: .87; M-OE: .89; T-OE: .94; E-OE: .86). Since all (105) forms were not coded by the second scorer, only codings of the researcher were taken into consideration in data analyses. Data were analyzed by performing one-way ANOVA and *t*-tests.

Results

Intellectual ability and overexcitabilities

In all overexcitability dimensions, high intellectual ability students scored higher than low intellectual ability students, but only in imaginational ($f=5.902, p<.005$) and intellectual ($f=10.735, p<.001$) overexcitability areas, differences were statistically significant (Table 3). This means that these students respond to stimuli in an intensified manner in terms of imaginational and intellectual areas. In other words, these students have a high capacity to visualize events well, to create/invent original things, to make interesting connections and associations between situations

Table 3. Intellectual ability and overexcitabilities

<i>Intellectual Ability</i>		Overexcitabilities				
		<i>Psychomotor</i>	<i>Sensual</i>	<i>Imaginational</i>	<i>Intellectual</i>	<i>Emotional</i>
Low ($n=37$)	Mean	3.49	1.92	2.81	4.24	4.68
	SD	2.08	2.91	2.69	4.97	4.53
Median ($n=33$)	Mean	3.30	3.00	2.82	4.27	5.30
	SD	2.35	2.87	2.28	5.55	3.56
High ($n=35$)	Mean	4.86	3.23	5.31	10.09	6.09
	SD	2.85	3.90	4.95	7.45	5.38

which characterize imaginal overexcitability. They also show the typical expressions of intellectual overexcitability such as asking probing questions, thinking analytically, solving difficult and complex problems and concentrating densely in a longer period of time.

Motivation and overexcitabilities

Imaginational ($f=4.485$, $p<.05$) and intellectual ($f=4.559$, $p<.05$) overexcitability scores of students who have high motivation are significantly greater than the scores of those who have low motivation (Table 4). This finding is very similar to the results obtained from the analysis of previous variable.

Leadership and overexcitabilities

Imaginational and intellectual overexcitability scores of students who are categorized as leaders by their home room teachers are significantly greater than those who are classified as non-leaders (Table 5). This again is very similar with the previous two variables.

Table 4. Motivation and overexcitabilities

<i>Motivation</i>		<i>Overexcitabilities</i>				
		<i>Psychomotor</i>	<i>Sensual</i>	<i>Imaginational</i>	<i>Intellectual</i>	<i>Emotional</i>
Low ($n=23$)	Mean	2.70	1.61	1.74	3.00	3.52
	SD	1.77	1.50	1.86	2.97	2.54
Average ($n=36$)	Mean	3.75	2.44	3.69	5.86	6.56
	SD	2.62	2.89	2.77	5.68	5.73
High ($n=36$)	Mean	4.22	3.11	4.61	8.25	5.25
	SD	2.55	4.15	4.94	8.63	3.95

Table 5. Leadership and overexcitabilities ($n=87$)

		<i>Mean</i>	<i>SD</i>	<i>T</i>	<i>df</i>	<i>Sig. (2-tailed)</i>
Psychomotor	Leader	4.15	2.90	1.859	85	0.069
	Non-leader	3.09	1.96			
Sensual	Leader	3.18	4.11	1.429	85	0.159
	Non-leader	2.06	2.50			
Imaginational	Leader	4.74	5.11	2.141	85	0.038
	Non-leader	2.72	2.52			
Intellectual	Leader	7.59	7.56	2.262	85	0.026
	Non-leader	4.34	5.79			
Emotional	Leader	5.29	3.78	0.357	85	0.722
	Non-leader	4.98	4.13			

Creativity and overexcitabilities

Psychomotor ($f=4.551, p<.05$), sensual ($f=4.021, p<.05$), imaginal ($f=5.155, p<.01$), intellectual ($f=8.357, p<.001$) and emotional ($f=3.983, p<.05$) overexcitability scores of students who have high creativity are significantly greater than those of low creativity. Highly creative students, in addition to imaginal and intellectual overexcitabilities, have higher overexcitability scores also on the other three (psychomotor, sensual and emotional) overexcitability areas. That is to say, they experience high levels of physical activity and a surplus of energy which are demonstrated through rapid movement (psychomotor expressions); expanded and enriched sensual perception such as having great pleasure from simple tasting, seeing, smelling (sensual expressions); more intense and complex feelings toward self and others (emotional expressions) (Table 6).

Gender and overexcitabilities

No gender differences were found in regard to overexcitabilities. In other words, boys and girls do not display any significant differences in terms of none of the overexcitability scores (Table 7).

Table 6. Creativity and overexcitabilities

<i>Creativity</i>		<i>Overexcitabilities</i>				
		<i>Psychomotor</i>	<i>Sensual</i>	<i>Imaginational</i>	<i>Intellectual</i>	<i>Emotional</i>
Low ($n=22$)	Mean	2.50	1.73	1.91	2.82	3.41
	SD	1.63	2.29	2.24	2.61	2.42
Median ($n=46$)	Mean	3.80	2.11	3.30	5.43	5.26
	SD	2.54	2.61	2.65	5.45	4.27
High ($n=22$)	Mean	4.64	4.18	5.36	10.50	7.23
	SD	2.63	4.65	5.80	9.94	6.20

Table 7. Gender and overexcitabilities ($n=105$)

		<i>Mean</i>	<i>SD</i>	<i>T</i>	<i>df</i>	<i>Sig. (2-tailed)</i>
Psychomotor	Female	4.13	2.46	1.013	103	0.313
	Male	3.63	2.57			
Sensual	Female	2.89	2.83	0.602	103	0.549
	Male	2.50	3.70			
Imaginational	Female	3.66	2.78	0.036	103	0.972
	Male	3.63	4.44			
Intellectual	Female	5.49	5.49	-1.106	103	0.271
	Male	6.92	7.59			
Emotional	Female	5.91	3.97	1.280	103	0.203
	Male	4.77	5.07			

Discussion

The major finding of the study is the indication of noteworthy differences in terms of imaginal and intellectual overexcitabilities of students when they are grouped according to their intellectual ability, motivation, creativity and leadership in favor of groupings labeled high. In other words, intellectual and imaginal overexcitability scores consistently differ among various groupings in terms of all variables examined, except gender. Another striking finding is that creativity displays an interesting variation between low and high groups in all overexcitability dimensions. Interestingly, highly creative students have higher overexcitability scores on psychomotor, sensual, imaginal, intellectual and emotional overexcitability areas. Both of these sets of findings are in line with the literature (Breard, 1994; Piechowski & Colangelo, 1984; Piechowski *et al.*, 1985; Schiever, 1985). What is not in line and rather unexpected is the lack of difference between high and low groupings in the emotional overexcitability, with the only exception of the creativity variable. A very common finding in the literature (Silverman & Elsworth, 1981; Piechowski & Colangelo, 1984; Gallagher, 1985; Piechowski *et al.*, 1985) which presents statistically higher scores in favor of emotional overexcitability as well as imaginal and intellectual overexcitabilities for high intellectual ability group was not observed in this study. Finally, consistent with the inconsistent literature, gender does not seem to indicate differences for none of the overexcitability areas. Table 8 summarizes these findings in a graphical representation.

Some of these findings are very much consistent with the Dabrowski’s theory (Piechowski, 1975, 1979) and literature (Silverman & Elsworth, 1981; Piechowski & Colangelo, 1984; Piechowski *et al.*, 1985; Schiever, 1985; Breard, 1994), but there are some important differences which might be explained by cultural differences between Turkey and the Western world where the majority of the findings have been obtained from.

Intellectual ability, motivation, leadership and overexcitabilities

When intellectual ability is concerned, the elevated overexcitability scores on imaginal and intellectual areas are frequently seen for highly intelligent group (Piechowski & Colangelo, 1984; Piechowski *et al.*, 1985; Schiever, 1985; Breard, 1994). For example, in the study of Piechowski *et al.*, the gifted individuals have significantly higher scores in these two overexcitability areas than graduate students.

Table 8. Overexcitability dimensions differing between variable groupings

Variables	P-OE	S-OE	M-OE	T-OE	E-OE
Intellectual ability			√	√	
Motivation			√	√	
Leadership			√	√	
Creativity	√	√	√	√	√
Gender					

The gifted subjects were adults identified as intellectually gifted by membership in MENSA or persons qualified on the basis of high GRE, SAT or IQ scores. The findings of the present study are another support to the relationship between intellectual ability and imaginal and intellectual overexcitabilities.

In the present study, when the data were analyzed also in terms of motivation and leadership, it was again observed that imaginal and intellectual overexcitability scores of high and low groups differed significantly. In other words, the group having high motivation also had higher imaginal and intellectual overexcitability scores than the group having low motivation. Likewise students who have high leadership ability displayed higher imaginal and intellectual overexcitability scores when compared with those of low leadership ability. No research has been found in the literature comparing overexcitability scores of students who are divided into high and low subcategories in terms of motivation and leadership.

Creativity and overexcitabilities

Another striking finding is that creativity displays an interesting variation between low and high creative students for all overexcitability dimensions. Interestingly, highly creative students have higher overexcitability scores on psychomotor, sensual, imaginal, intellectual and emotional overexcitability areas than the lowly creative students. Although creativity was determined only by a teacher's evaluation without using any standardized test in this study, it was found that high and low creative groups differed significantly in all forms of overexcitabilities. The creativity factor differentiates students more than intellectual ability factor does according to the findings of this study. The study by Piechowski *et al.* (1985) reports similar results, namely artists who included writers, poets, musicians, fine artist people, film producers and dancers/choreographers scored significantly higher than the graduate students on all five forms of overexcitability. In another study (Falk *et al.*, 1997) artists exhibited high emotional, imaginal and intellectual overexcitability scores than the graduate students. In other studies, some creativity tests were used to group the samples in terms of their creativity (Gallagher, 1985; Schiever, 1985) and differences between some overexcitability scores of creative and non-creative groups were found.

According to Piechowski (1979), 'the overexcitabilities may be regarded as the actual psychological potential of the creative person' (p. 49) and 'the assessment of the strength and richness of these forms should allow a reliable qualitative assessment of creative giftedness' (p. 54). The results of the present study provides an additional support that creativity plays an important role in taking in and responding to larger amounts of stimuli from the environment in an intensified manner.

Gender and overexcitabilities

Another finding is that no gender differences were found in terms of overexcitability scores in this study. This finding indicates that gender-role socialization is not evident in overexcitability responses. Sociological research on gender socialization reports that

individuals exhibit or inhibit certain behaviours based on their gender appropriateness. For example, girls express emotional reactions more intensely than boys because they have been socialized to do so. On the other hand, boys are socialized to participate in highly competitive psychomotor activities such as rule-oriented sports with a large number of players (Bouchet & Falk, 2001). As paralleled with this sociological research, a few studies found that women had higher scores on emotional overexcitability (Piechowski & Cunningham, 1985; Ammirato, 1987; Miller *et al.*, 1994; Ackerman, 1997a) and men scored higher on psychomotor overexcitability (Breard, 1994; Lysy & Piechowski, 1983). According to Miller *et al.* (1994, p. 33), gender differences in overexcitabilities 'seems to be related to areas in which males and females have been differentiated by traditional socialization'. There are similar social roles for males and females in Turkish culture, but in this study it seems that these stereotypes did not affect the responses given to the OEQ. Likewise, there are studies which reported no gender differences in terms of overexcitability scores in the literature (Falk *et al.*, 1997; Piechowski & Miller, 1995; Gallagher, 1995).

Other interesting findings

In the literature, high intellectual ability group is frequently found to display high emotional overexcitability whereas it was not the case in the present study. Although emotional overexcitability was hypothesized as the most important dimension in terms of developmental potential, no significant difference between emotional overexcitability scores of high and low intellectual ability groups was found in this study. This is also valid for motivation and leadership variables. That is one of the most surprising and unexpected findings of the study.

Although emotional overexcitability scores of the highly intelligent group are greater than the lower group, the differences are not statistically significant. When compared with Ackerman's study (1997a), which uses a similar age group as sample, it is seen that emotional overexcitability scores are much greater than those found in the present study. For example, in Ackerman's study the mean emotional overexcitability score for the gifted group is 11.94 and for the non-gifted group is 9.15; the mean emotional overexcitability score for high intelligent group is 6.09 and for low intelligent group is 4.68 in this study. This difference shows that Turkish students have either lower emotional overexcitability or can not reflect their emotional overexcitability in their responses to this questionnaire. Some possible explanations might be offered. In Turkish culture, from earlier ages children learn to hide their feelings because exhibiting them is considered a sign of weakness. On the other hand, there is no formal training integrated in school curricula about increasing emotional awareness, making empathic relationships with others or overcoming negative and positive feelings. These might be factors for Turkish population for not being able to express overexcitability in emotional area.

Actually, the lower scores in most of the overexcitability areas are observed in the present study when compared with many other research studies in the western literature (Gallagher, 1985; Schiever, 1985; Ackerman, 1997a). For example, in a

study by Ackerman (1997a), mean overexcitability scores of gifted students are 7.93, 2.71, 6.79, 8.39 and 11.94, whereas in the present study, the mean overexcitability scores of high intellectual ability group are 4.86, 3.23, 5.31, 10.09 and 6.09 for psychomotor, sensual, imaginal, intellectual and emotional overexcitabilities respectively. Only sensual overexcitability scores are slightly higher in this study than Ackerman's study. This may be because either researcher consistently scored responses in a lower scale or respondents thought that these will be read by their teachers and so they avoided giving their most heightened responses to the questionnaire.

Conclusions and implications

There are many studies in the literature emphasizing the relationship between overexcitabilities and giftedness. This study aims at seeking a cross-cultural supportive evidence for this position. If we consider the variables of the study (e.g. intellectual ability, motivation, creativity, leadership) as some personality characteristics which can contribute to one's giftedness, it can be concluded from the findings that there is positive relationship between overexcitabilities and giftedness. Especially highly creative students seem to be more overexcitable almost in all five areas. With a further data analysis, the mean overexcitability scores of overlapping high and low groups in terms of motivation, creativity and leadership were compared. This analysis showed that students who fell into high categories in terms of motivation, creativity and leadership at the same time had significantly greater overexcitability scores in psychomotor, sensual, intellectual and imaginal areas than students who fell into low categories in terms of these three variables.

The findings of the study imply that the overexcitability scores can be used, together with the other methods, for the identification of gifted students. So, examination of personality characteristics and overexcitabilities is important. The responses given to the OEQ provide rich data for counselors, administrators, teachers and also parents. These groups can utilize this information for understanding students and then developing appropriate differentiated lessons, programs and activities for them. To enable the use of this information, these groups should be informed about Dabrowski's overexcitabilities and TPD. When looked from this perspective, some reactive behaviours and intensive feelings can be understood better and are tolerable. Students who have overexcitabilities in some of these five areas should also be informed about overexcitabilities, so that their behaviours can be interpreted appropriately and their diversities and richness appreciated. If they know that these are necessary forces to reach higher levels of personality development, they will not try to suppress them, instead they realize their value.

Recommendations

This is the first study introducing Dabrowski's theory and overexcitabilities into Turkish literature and using OEQ in Turkey. It provides some evidence supporting

the construct validity of Turkish OEQ form especially for imaginal and intellectual overexcitability areas, because high intellectual ability group obtained better intellectual overexcitability scores than low intellectual ability group; and high creative group gained higher imaginal overexcitability scores than low creative group, as expected. Additional studies examining reliability and validity of Turkish OEQ might be recommended by future researchers in this field. The scoring procedures used in this study might be tested and revised if modifications are needed.

A new Likert form (OEQ II) of open-ended OEQ was developed by Falk *et al.* in 1999 and it was also adapted into Turkish by a researcher (Yakmaci-Guzel, unpublished manuscript 2001). OEQ II seems to be a more practical instrument especially for studies having larger sample sizes. There is a small number of research studies in the literature examining reliability and validity of this new Likert type instrument (Falk *et al.*, 2000; Bouchet & Falk, 2001; Yakmaci-Guzel, 2001). Further studies on these aspects of original OEQ II and Turkish OEQ II can be suggested for future researchers. There is a study examining convergent validity of OEQ II (Falk *et al.*, 2000), such analysis and comparison can be conducted for Turkish OEQs.

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