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(Volume 23, Number 2, December, 2008); and (Volume 24, Number 1, August, 2009).

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Submit all manuscripts in quadruplicate, double spaced, accompanied by a short abstract (approximately 100 to 150 words), and with citations and references, following the guidelines set forth in the Publication Manual of the American Psychological Association, 6th Edition.

Include author's full mailing address, phone and fax numbers, as well as an e-Mail address.

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From the Editor's Desk

Taisir Subhi Yamin

In this year's issue of Gifted and Talented International (GTI) we welcome our newly elected members of the WCGTC's Executive Committee, including: Taisir Subhi Yamin, *President* (ICIE ; Université Paris Descartes/ France); Edna McMillan, *Vice President* (Stoney Creek, Ontario/ Canada); Leslie S. Graves, *Secretary* (Educational consultant/ Dublin, Ireland); Julia Link Roberts, *Treasurer* (The Center for Gifted Studies, Western Kentucky University/ Kentucky, USA); Ngarmmars Kasemset, *Member* (Director, The Gifted and Talented Foundation (TGT)/ Bangkok, Thailand); Leonie Kronborg, *Member* (Monash University/ Clayton, Victoria, Australia); Klaus K. Urban, *Member* (Leibniz University/ Hannover, Germany); and Cathrine Froese Klassen, *Executive Administrator* (University of Winnipeg/ Canada).

Upon the completion of their term in the executive committee, I have the honor and pleasure to thank my friends and colleagues who served the WCGTC for several years. My warmest thanks go to Den-Mo Tsai for his contributions as a member of executive committee and the president of the council.

Many thanks also go to Sandra Kaplan for her contribution. "Your support over the past four years has been remarkable."

With the new administration, we trust we can secure a blend of continuity, improvement, and change, which will benefit the journals readers as much as its makers and contributors.

As I began my fourth year as the editor-in-chief of GTI few weeks ago, I realized how much GTI has changed since 2006. Our design and layout is more contemporary and more visually exciting. The number of articles and professional reviews of books per issue/ volume has doubled since December 2005. The GTI has gained increasing recognition and has established itself among the internationally acknowledged and accredited peer-reviewed international journals. As a result a number of internationally recognized abstracting and indexing lists will include all the articles published in the GTI since 2005.

Many thanks go to the team of Associate-Editors: Todd Lubart; Ken McCluskey; Peter Merrotsy; Trevor J. Tebbs; Heinz Neber; and Sandra K. Linke. I am honored to work with you, and would like to make use of this opportunity to welcome Dorothy A. Sisk as a new member of the editorial board. In addition, I welcome Hava Vidergor as a new member of the editorial team of the book review section.

This issue appears two months after the 18th Biennial World Conference: Promoting the dream which took place in Vancouver, Canada (August 3-7, 2009). This conference was an excellent opportunity for teachers, researchers, parents, and students from around the world who shared the most up-to-date information and the latest developments in gifted education. The 18th conference has provided the participants with the universal opportunity for interactions with lead speakers, delegates, and participants from different parts of the world.

Welcome to this special issue (Volume 23, Number 2 (December 31, 2008), and Volume 24, Number 1 (August 8, 2009)) of Gifted and Talented International.

The current issue comprises (13) interesting articles and (2) book reviews, all of which broaden our view of this field and its assumptions. I am grateful to the

originators of this material for the diligence and insight with which they so richly benefit this journal.

This issue's first paper, "*Intellectually Gifted Individuals' Career Choices and Work Satisfaction: A Descriptive Study*" by Roland S. Persson, investigates investigate which career path a

group of intellectually gifted individuals chose, if any. This study attempted to answer a number of questions, including two major ones: How did the intellectually gifted individuals actually like their work, and what were the reasons for satisfaction or dissatisfaction with their chosen career? The outcomes of this interesting study reveal that intellectually gifted individuals tended to pursue careers mainly in technology, science and social work and to a lesser degree in practical and aesthetic work. In addition, the results show that work satisfaction for all these fields was shown to be average.

The contribution to the discussion of learning styles and the implications of understanding the factors that influence the teaching learning process are very important. In *"A Multilevel Analysis of Gifted Korean American Students' Characteristics and School Context Effects on Learning Style Preferences"*, Mi-Soon Lee and Del Siegle studied school factors related to the learning style preferences of gifted Korean American students. The results revealed differences in learning style preferences between gifted Korean American and non-gifted Korean American students on preferences for direct instruction, technology, simulations, projects, and games. In the light of this study, learning styles play a major role in any attempt to maximize the potential of the potential of the gifted and talented students.

In the third article, *"Student Teachers in Special Education and their Readiness to Work with Gifted and Talented Children"* Zofia Palak; Janusz Kirenko; Piotr Gindrich; Zdzislaw Kazanowski; and Andrzej Pielecki attempt to evaluate the competences (knowledge, skills, and experience) of student teachers', and investigated if they are qualified enough to get involved in the screening and identification process and then developing gifted programmes to meet the special needs of the gifted and talented. This study points out the importance of capacity building and the strong impact of public

awareness on the success of gifted programmes.

In the next article, *"General Anxiety in Gifted Female Pupils in The Kingdom of Saudi Arabia"*, Abdullah Aljughaiman, and Mei Tan examine the extent to which gifted female pupils in Saudi Arabia suffer from general anxiety and how much this anxiety varies according to the pupil's educational stage, class level, and age group.

In the fifth article, *"Perceptions of Parents with Gifted Children about Gifted Education in Turkey"*, Bahar Eris; Ramazan Seyfi; and Suna Hanoz investigate the perceptions and experiences of Turkish parents with children identified as gifted based on their performance on IQ testing. This study attempts to shed light on current practices in gifted education and institutions in this country.

Quality education is a prerequisite for the modernization of society and economy. In the next article, *"The talented Arab Girl: Between Tradition and Modernism"*, Hanna David; and Mahmood Khalil discuss the history of education in Palestine and Israel, and investigate the impact of educational policies employed during the last 60 years on the outcomes of the existing educational systems and the current status of women education. This article examines a few areas where Arab girls excel, e.g., in school, in the professions and in social achievements. Also included is an analysis of their hardships and suggestions regarding potential ways to overcome or partially overcome these hardships.

In Canada, classrooms become more culturally diverse and Canadian schools receive increasing numbers of newcomers escaping conflict and war from different parts of the world. Consequently, it is necessary to re-examine the conceptions of intelligence, giftedness, creativity, and talent within this changing cultural context. In her qualitative study, *"Expanding Conceptions of Intelligence: Lessons*

Learned from Refugees and Newcomers to Canada", Karen Magro examines dimensions of emotional intelligence and, more specifically, the growth of resilience through the experiences and challenges of ten refugee and newcomer adult learners who were either children or teenagers during times of conflict and war. According to this study, it is recommended to employ effectively the Enrichment Triad Model and Renzulli Learning System to make learning more meaningful for both youth and adults from war affected backgrounds.

There is a need for novel ways of instruction to motivate students and to be more committed. With this in mind, Anies Al-Hroub offers his article entitled "*Charting Self-Concept, Beliefs and Attitudes towards Mathematics among Mathematically Gifted Pupils with Learning Difficulties*". He examines the impact of different teaching methods on mathematically gifted students' self-conception, attitudes, and beliefs.

In 2007, a new project for talent development took place in Belfast, Northern Ireland. In their article, "*Raising Expectations – Talent Development in Belfast*", David Ryan; and Joanne Wilson described this project aimed at developing 60 young students from ten diverse schools. In addition, the authors reported the outcomes of a study which was undertaken in parallel with the project to quantify the young people's self-image, abilities and belief in achievement before, during and after the project.

The impact of the educational environment on students' academic performance, creativity and future career is a matter of constant debate. In the next article, "*Creative Abilities and Styles as Predictors of School Success*", Maciej Karwowski; Izabela Lebuda; and Ewa Wisniewska attempt to answer a number of questions, including: What ways individuals find most effective and dependable as they function in a school; and how some students accomplish good grades while others only manage failing grades. These questions considered by the authors of this article as the most important ones; because school achievement is one of the most

important predictors of professional career and success in life. This article reports the outcomes of research study conducted in Poland, and employed a large study sample.

In the next article, "*Child prodigy in Astronomy: A Biographical Study from the Sudan*", Omar Khaleefa offers the outcomes of his qualitative follow-up study (from birth to the age of 10 years). It is based on the general identification approach adopted by the Sudanese project entitled "Simbir". The author argued that "in Western cultures a number of studies have been conducted with respect to such children. Although child prodigies were found in domains such as music, chess, mathematics, visual arts and writing, none were found in the domain of natural sciences, generally, or physics specifically". In contrast, in the Sudanese Arab culture, a child prodigy has been found in the domain of astronomy.

The Chinese literature and language are rich with proverbs concerned with wisdom and success in life. In the context of the Chinese culture, task commitment and hardworking are very important requirements for potential development. For that reason, the teaching learning process, in China, is considered as associated with effort. In the 13th article, "*Parenting the Chinese Way in America*", Echo H. Wu; and Holly Hertberg-Davis report the outcomes of their case study that employed in-depth interviews with two Chinese American families with gifted children. This case study focuses on the influence of parenting beliefs and practices on children's talent development. In addition, this article offers implications which draws attention to the interesting mixed strategy of the Chinese American parenting which combines traditional Chinese parental expectations with an adopted Western notion of respect for a child's own decision-making.

From Hong Kong, the GTI has received a paper entitled "*Associations Among Measures of Perfectionism, Self-Concept and Academic Achievement Identified in Primary School Students in Hong Kong*". In this paper, Ricci W. Fong

and Mantak Yuen reported the outcomes of their study. The study revealed that high achievers were associated with adaptive perfectionism and high academic self-concept. Perfectionism, when it is under control, could be considered as an energy employed by the gifted and talented to achieve excellence and high levels of performance. This study stresses that we must value the positive aspects of perfectionism.

In this issue of Gifted and Talented International, the editors of this section have reviewed two books. Including: (1) *“Living with Intensity: Understanding the Sensitivity, Excitability, and the Emotional Development of Gifted Children,*

Adolescents, and Adults” edited by: Susan Daniels and Michael M. Piechowski; and (2) *“Debating Single-Sex Education: Separate and Equal?”* edited by Frances R. Spielhagen.

In agreement with Susan Daniels and Michael M. Piechowski (2009), “psychology, in its origin, based its models on physics as an ideal”, we have contacted a physicist to discuss with psychologists the conception of scientific creativity. The outcomes of this initiative will be published in the GTI (Volume 25, Number 1, June 30, 2010).

I hope you will find the contents of Gifted and Talented International (2008, 23(2); 2009, 24(1)) interesting, fascinating, useful and informative. As always, should you have any comments or suggestions, please feel free to forward them to me. Additional intriguing works are already on the horizon, so stay tuned to Gifted and Talented International.

Intellectually Gifted Individuals' Career Choices and Work Satisfaction: A Descriptive Study

Roland S. Persson

Abstract

This study set out to investigate which career path a group of intellectually gifted individuals chose, if any. How did they actually like their work, and what were the reasons for satisfaction or dissatisfaction with their chosen career? In all, 287 Mensa members (216 men and 71 women) constituted the research group. Their average age was 34.4 years ($SD = 8.8$) and all had obtained IQ scores equal to or higher than the 98th percentile. The study was designed as a survey operationalized as an Internet-based questionnaire using the SPSS Dimensions software. A shortened version of the *Work and Life Attitudes Survey* (Warr, Cook & Wall, 1979) was included as part of the questionnaire. Quantitative data were analyzed as dispersions within the research group whereas qualitative data were content-analyzed using the so-called VSAIEEDC Model. Results show that participants tended to pursue careers mainly in Technology, Science and Social Work and to a lesser degree in Practical and Aesthetic work. Work satisfaction for all these fields was shown to be average. However, for individuals choosing to start their own company and, or assume leading managerial positions, satisfaction with work and career is very high. This article focuses on possible reasons for differences between subgroups in the sample and discusses a possible way forward to improve work satisfaction for intellectually gifted individuals at work, where needed.

Keywords: Giftedness, Social Fit, Human Resource Management, Mismanagement, Intellectual Capital.

Introduction

Research (e.g., Schlosser, 2001; Yewchuk, Äystö & Schlosser, 2001) and literature more or less anecdotal in nature (e.g., Lewis, 1997) focuses increasing amounts of time and effort explaining success or the lack thereof, not only in the field of high ability studies but perhaps even more so in general management and human resource studies. Prompting such research is, of course, a desire to find factors, which, a) could more or less predict success or expertise, and b) are assumed to facilitate or even cause it (van der Heijden, 2000).

However, while the somewhat nebulous meaning of “success” is not necessarily tied to giftedness, it is more often associated with marketability (Adler, 1985; Hamlen, 1991). As such it is not unusual to argue that developing gifted education and special provision for the gifted and talented population is important for success or alternatively continued societal welfare and development (e.g., Wilms, 1986).

Singapore researchers Teo and Quah (1999) make the following observation:

The Gifted Education Program (GEP) in

Singapore has been in existence ... [since 1984] ... for more than a decade. But few of its graduates have made exceptional contributions to self or the nation; a nation with hardly any natural resources and which relies a great deal on its human resources for surviving in a competitive world. (p. 24, with author's clarification in brackets)

It would seem the equation between desired success and giftedness is not simple and straightforward, even if there are examples of such endeavors that are more successful (Arnold, 1995). To my knowledge, there are no studies published in English thus far on how intellectually gifted individuals experience their place of work and why they experience it in some particular way. A database search using Google Scholar and Academic Search Elite search engines on key words “gifted, work, job, management” gave no useful results (search performed on July 27th, 2008). However, a single article by Nauta and Corten (2002) has been published in Dutch. Their article is more of a discussion rather than a proper study relying only on observations and a few case studies.

They conclude, however, that high intelligence certainly may cause problems at work, and they assign to occupational health professionals to bring such potential problems “out into the open” (p. 332). The researchers also remark that no research to date has been carried out in this particular field.

There is therefore reason to believe intellectually gifted individuals do not fit readily into the rigid organizational cultures or routine work so typical of modern rationalistic society (Ritzer, 1992), and their feeling of satisfaction—and by implication their productivity (or success), is closely tied to experiencing challenge, freedom and variety (cf. Locke, 1984; Streznewski, 1999). Shaughnessy and Manz (1991), for example, observed “typically, artists,

musicians and writers find their life's work outside bureaucratic institutions, which may hamper their creativity and originality” (p. 98). Furthermore, David Willings, a personnel management expert and scholar, offers a few typical statements by senior managers in reference to intellectually gifted individuals who were part of the workforce: “Why do we hire these intellectuals? They're no damned use. They don't fit in. They cause trouble”, and further “We had a very gifted young chap. He came up with two ideas which we have unashamedly stolen. But he never learned to follow normal procedure. Couldn't fill out a PY34 form to save his life. He left us after seven months and I think it was for the best” (as quoted in Streznewski, 1999; p. 132).

The Study Questions

This study seeks answers to the following questions:

- In a group of intellectually gifted individuals, which career path did they choose, if any?
- How did this intellectually gifted group of individuals actually like their work?
- What were their reasons for satisfaction or dissatisfaction with their chosen profession?

Method

A survey design operationalized by an Internet-based questionnaire seemed the most efficient way to access participants. The Swedish branch of Mensa volunteered to participate in the study. In discussing administration with their local representative as well as with the national Mensa Directorate, it was decided that, for members, a web-administered questionnaire was the most convenient and appealing way to answer questions. Therefore, a questionnaire was made available on-line for a little more than a month (mid-May until beginning of July 2007) which was constructed using SPSS Dimensions (Statistical Package for the Social Sciences, 2007).

Mensa members were invited to participate by a brief article in *Legatus Mensae* (Mensa's newsletter for members only) outlining the research and providing the URL for finding the questionnaire. The Mensa Directorate also sent electronic mail to all members as a reminder.

Research sample

The advantage in engaging Mensa is that an authorized IQ-test (most often the Stanford-Binet) with a lowest resulting score of IQ131 (98th percentile or higher) is a membership requirement. This research took place in Sweden where there is neither a standard identification procedure for giftedness nor official recognition of giftedness or gifted education at the present time, therefore the Mensa group represents both an interesting and opportune high-IQ group of intellectually gifted individuals for the study.

The criterion for participating is therefore the same as the criterion to become a member of Mensa, i.e., no participant has an IQ-test score lower than IQ131 (or lower than the 98th percentile), which in Gagné's (1993)

understanding renders members of the sample at least “moderately gifted”.

There are, however, distinctions made beyond this criterion, which is also reflected in the sample. While Gagné proposes to divide IQ-giftedness into the following levels: Basic (IQ115-117); Moderate (IQ125-130); Highly (IQ140-150) and Extremely (IQ155-160), the choice was made in this research to ask respondents to report percentile scores. Not everyone had been tested by the same test battery, and not all were able to report their IQ-scores. But all could report their percentile score. Hence, three levels were distinguishable; continuing to use Gagné's nomenclature: 35% of the group may be characterized as *moderately gifted* (98th percentile); 58% as *highly gifted* (99th percentile) and 7% as *extremely gifted* (100th percentile).

In all, 614 individuals decided to respond to the questionnaire. However, 321 of these left the questionnaire unfinished. The reason for this, I believe, is that a large number (52%) of the original participants were frustrated with the questions.

Some feedback was received from a few of these individuals, the reason mainly being one where respondents felt constrained by the format. They had more to say, but could not! Thus, 293 individuals remained and of these, a further six respondents showing little serious intent were eliminated as extreme cases.

Ultimately, the sample of intellectually gifted population numbered 287 participants. The age range between the youngest (18 years old) and the oldest (68 years) is 50 years and the mean age of the group is 34.4 years ($SD = 8.8$). The sample is heavily skewed with 216 or 75% participants being men and 71 or 25% being women.

This is a weakness in the design since men and women, as well as boys and girls, tend to exist under somewhat different conditions in regard to their giftedness and have somewhat different experiences (Freeman, 1998; Kerr, 1994).

Also, no control group was considered for this particular study, mainly due to its descriptive nature, but also for logistical reasons. A control group would have been an advantage for comparison, but was deemed unnecessary.

Instrumentation

The survey questions pertaining to education and type of work were straightforward and exploratory in nature. There were three kinds (See: Appendix 1): a) multiple choice per variable, b) scaled statements, and c) free qualitative responses.

Included in the questionnaire was an adapted and shortened version (11 items) of the *Work and Life Attitudes Survey* (Warr, Cook & Wall, 1979).

This version functioned well in the current research context and displayed high internal consistency: Alpha = .90; Spearman-Brown Unequal Length = .88 and Guttman Split-Half Coefficient = .88. A principle component analysis was also employed testing the validity of the construct in a Swedish setting.

This analysis showed the scale to be fairly uniform in its construction. Only one factor – most likely interpreted as work satisfaction – could be extracted explaining 51% of the total variance. The questionnaire was administered in Swedish. However, for the purpose of communicating results, everything pertaining to the study, including qualitative data, has been translated into English.

The questionnaire was also customarily subjected to a peer evaluation to check feasibility, appropriateness—both ethical and methodological—and content. Two reviewers were asked to comment: one fellow scientist and one exceedingly gifted individual representing the sample population.

Remarks and comments were few, but wishes were expressed by the gifted representative that the questionnaire should include space for individual written comments. This request was needed and a question allowing for free verbal response was added.

Data security and research ethics

Questions of data security and the protection of sensitive information were raised and settled. The resulting database was hosted at a designated secure and approved server. Only the researcher and system administrators had access to the database by password. However, in fulfillment of (Swedish) legal stipulations governing the handling of sensitive data the most important aspect of research ethics in this study is that the questionnaires are in fact truly *anonymous*.

Personal information such as names, codes, social security numbers or addresses were not requested or in any way recorded. Therefore, the database, as such, contains untraceable anonymous data, which only make sense if analyzed in context and as trends.

Manner of analyses

Quantitative data were submitted to a simple, descriptive, frequency analysis focusing generally on dispersions within the researched group. The qualitative data, as derived from respondents' free responses, were submitted to a traditional content analysis stringently following the so-called VSAIEEDC Model (A thorough outline of this procedure can be found in Persson, 2006).

Results

Educational and professional background

The research group is in general a highly educated group with an emphasis on traditional academic training: 74.2% have degrees and, or training from tertiary education, compared with 25.8% who either have no training beyond secondary school or have obtained some other kind of training (Table 1). Of these 62 (21.6%) have multiple degrees and, or several types of training (Table 2). This should be compared with the entire Swedish general population of which approximately 19% went on to some kind of tertiary education after secondary school (Statistics Sweden, 2007).

Table 1: Educational Background of the Mensa Research Group (N = 287).

Type of training	%
University degree (Ph.D. or equivalent)	4.9%
University degree (Masters degree)	28.9%
University degree (Bachelor degree)	17.4%
Professional training program, e.g., engineer, economist, psychologist, teacher)	19.9%
Artistic training (theatre, music, arts, dance)	3.1%
Other kind of training (undefined)	10.5%
No training beyond secondary school	15.3%

Table 2: Educational Background of the Mensa Research Group: Individuals with Multiple Degrees and, or Several Types of Training (N = 62).

Type of training	Frequency
PhD or equivalent + Masters degree	3
PhD or equivalent + Professional training	3
PhD or equivalent + Artistic training + Other	1
PhD or equivalent + Masters degree + Bachelor degree + Professional training + Artistic training + Other	1
Master's degree + Bachelor degree	9
Master's degree + Professional training	14
Master's degree + Bachelor degree + Professional training	4
Master's degree + Bachelor degree + Artistic training	1
Master's degree + Bachelor degree + Professional training + Other	2
Bachelor degree + Professional training	9
Bachelor degree + Artistic training	3
Bachelor degree + Professional training + Other	1
Bachelor degree + Other	2
Professional training + Artistic training	1
Professional training + Other	6
Professional training + Artistic training + Other	1
Artistic training + Other	1

Respondents were also asked to divulge their current full-time occupation. Professions were categorized into related fields for a better overview (Table 3). Categories were broadly defined but considered sufficient to demonstrate an approximate distribution of professions among the sample.

The participants are often involved in running, actively leading in various situations, and, or managing companies, some of which they may have started themselves (25%). However, technological professions are also well represented (23%) as are Science and Social professions (14%).

By no means does the research group contain only traditionally intellectual professions but also more practical and aesthetic ones are represented (13%). A portion of the sample is represented by students (14%) as well as retired and unemployed participants (10%). One percent of the sample had multiple professions.

Table 3: Types of Professions or Full-time Occupations in the Mensa Group (N = 287).

Professional field	%		%
<i>Technology</i>			
Information Technology	15		
Engineering	8	⇒	23
<i>Science and social work</i>			
Healthcare/Medicine	3		
Academic/Science	10		
Social work /Communication	1	⇒	14
<i>Running, starting and managing companies</i>			
Entrepreneurs	4		
Administration/Management	21	⇒	25
<i>Practical and aesthetic work</i>			
Manual labour	11		
Artistic professions	2	⇒	13
<i>Multiple professions</i>			
Studying	1	⇒	1
Student + entrepreneur	2		
Students	12	⇒	14
<i>Retired or unemployed</i>			
	10	⇒	10

Work satisfaction

Of the entire sample (N=287), 225 rated the items of the *Work and Life Attitudes Survey* (Warr, Cook & Wall, 1979). Students, retired individuals and those currently unemployed appropriately ignored the inventory.

The average score for all 11 items of $M = 4.8$, must be regarded as a fairly bland score suggesting that participants were moderately satisfied with their job. There are no extreme average scores for any of the items (Table 4). The three items rated lowest (= 4.3) included: salary, employers' use of their full abilities, and chance of promotion. The three items rated highest (= 5.2) include: having freedom at work, the quality of their co-workers, and the amount of responsibility given by the employer.

While overall results show that, as a group, the participants appear somewhat indifferent towards their current job, there is differentiation in the research group. Some participants had really found their haven and could think of no better job for the time being. Group differentiation became obvious when having content-analyzed the additional qualitative data (see Table 5).

Table 4: The Mean Ratings of Participants (N = 225) on the Work and Life Attitudes Survey (Warr, Cook & Wall, 1979).

Items	Mean	Median	SD
1. The freedom to choose your own method of working	5.2	6	1.4
2. Your fellow workers	5.2	6	1.1
3. The recognition you get for good work	4.7	5	1.5
4. Your immediate boss	4.8	5	1.5
5. The amount of responsibility you are given	5.2	6	1.4
6. Your rate of pay	4.3	5	1.5
7. Your opportunity to use your abilities	4.3	5	1.6
8. Your chance of promotion	4.3	5	1.6
9. The attention paid to suggestions you make	4.8	5	1.5
10. The amount of variety in your job	4.8	5	1.6
11. Considering everything-how do you feel about your job?	5.0	5	1.3

Note: Items were scaled from 1 (I am extremely dissatisfied) to 7 (I am extremely satisfied) with 4 being the middle choice (I am not sure).

Table 5: Resulting Categories and Typical Statements as Resulting from a Content Analysis of Qualitative Comments Made by Participants in Relation to Work Satisfaction.

I. Complete satisfaction

- My job is as if it was made for me. I love it!
- I am given freedom under responsibility. There is acceptance to many alternative solutions.
- I do what I am good at and what I which to do.
- I have considerable influence at my work and am in a position to decide my own tasks.
- I am listened to, and my suggestions are taken seriously more so than others.

II. Limited work satisfaction because of unsuitable or non-challenging tasks

- My work requires no skill and leaves room for no independence. I am resigning.
- I cannot stand routine-like work which demands no effort on my behalf.
- There is not enough to do.
- Simple and tedious tasks. Improvement is not allowed.
- Bored. And no possibility to influence my situation at work.
- The employer has no demand on achievement.
- I am not developing enough at my job.
- I feel I need more challenge in my job.
- I am only partly engaged in my work situation, more detached, It has been long since I used my brain at work.
- I like it but there is not enough for me to do.

III. Limited work satisfaction because of unsuitable management

- Bureaucracy can destroy any sunny day.
- My boss should not be a boss. He is incompetent.
- I don't like the job because they force me to do unpaid overtime.
- I enjoy my work, but my ideas are never taken seriously.
- The work is good, but the organization is so inflexible. It is so frustrating.
- In spite of having a job in the technological field, it is all politics. It is frustrating.
- I feel hindered to use my potential. Probably I am considered too young.
- I have a job in which my entire technical skill is not taken advantage of.
- My competence is not used here.
- To be a medical doctor means you are the slave of your employer.

IV. The unequal competence conflict

- Colleagues are nice, but often somewhat incompetent.
- I am happy with my job, but not so much with my colleagues.
- You are dependent on others understanding what you say. Sadly that limits the possibilities.

- I really enjoy working with other smart colleagues, not with the not so smart ones.
- My boss' is not so competent.
- Working as civil servant is not always easy since the politicians in charge often lack the insight.

V. Resignation and alienation at work

- I enjoy my work if I get my four cups of coffee a day.
- I have no understanding that something should be perfect, therefore I can stand most things.
- I am looking for another job.
- The only reason I am still here is not the job as such, but my colleagues whom I like.
- I'm OK with my work. Intellectual stimulation I find outside of work.

One professional group seems particularly satisfied with their work. This appears to be the participants who run, have started a company, or managed a company (see Table 3 above). They account for about 25% of the sample. Position endows them with considerable influence on decisions made, outcomes, level and direction of effort and in what direction to develop. The fact that such members of the workforce, irrespective of giftedness, are generally satisfied with their job is consistent with the literature. The further one is away from being able to influence your situation and position the more likely alienation develops (cf. Locke, 1984). So, not everyone in the group was dismayed, felt unchallenged or alienated. Some did indeed state enthusiastically: "My job is as if it was made for me. I love it!" or "I am listened to, and my suggestions are taken seriously more so than others".

However, for the remaining participants work was not as self-fulfilling. It was either acceptable at best or, at worst, something which slowly undermined their self-worth and in the end was forcing them to seek another job. *Limited work satisfaction because of limited or unsuitable tasks* haunted them. The speed and efficiency with which intellectually gifted individuals are able to solve problems and manage given tasks became a problem: "I am only partly engaged in my work situation, more detached. It has been long since I used my brain at work." and "Simple and tedious tasks ... improvement is not allowed." No use is found for their considerable capacity, or alternatively, entirely ignored: "The employer has no demand on achievement." The lack of any kind of challenge is a problem for this group.

Limited work satisfaction because of unsuitable management also presents a problem to intellectually gifted individuals. Their type of work may well suit them, but if

management regards them as quite different compared to others in the workforce and does not know how to "get the best out of his/her employee", the gifted employee runs into trouble. "I have a job in which my entire technical skill is not taken advantage of" and "I feel hindered to use my potential. Probably I am considered too young". It may also be, however, that the organizational structure, perhaps formal and bureaucratic in nature, becomes an obstacle to flexible and creative minds: "The work is good, but the organization is so inflexible. It is so frustrating" and "Bureaucracy can destroy any sunny day."

A related problem is being forced into teams of co-workers where there is a difference in capacity to understand, process tasks and identifying and solving problems. The intellectually gifted individual understands cause and effect much better than most and can often also see solutions to problems yet undetected by others: "You are dependent on others understanding what you say. Sadly that limits the possibilities" and "Working as a civil servant is not always easy since the politicians in charge often lack the insight".

No one likes to stand out as less competent, especially not the management: "My boss is not so competent". In short, a lower level of competence and ability in co-workers and management becomes a problem for the intellectually gifted individual – as it no doubt does for his or her management and co-workers.

Some of the researched group had more or less resigned psychologically from their current job but stayed on for various reasons anyway: "The only reason I am still here is not the job as such, but my colleagues whom I like" and "I'm OK with my work. Intellectual stimulation I find outside of work".

Discussion

While the intellectually gifted participants of this study tended to be highly educated and for the most part have chosen to pursue careers in Technology, Science and Social Work, Practical and Aesthetic work, their enthusiasm as defined by work satisfaction (Warr, Cook & Wall, 1979), is anything but overwhelming. In most cases, they appear accepting but also indifferent.

The question as to why this is so is answered by additional qualitative analysis of the free responses, i.e., they recognized the need to do things they find meaningless and challenging, but they were ignored or misunderstood and their employers did not know how to manage someone gifted. In addition, they were often forced to work with others who were less competent and insightful. This slowed everything down and limited the possibilities as seen by the gifted individual.

Only one subgroup stood out as entirely contrary. The entrepreneurs and the managers in leading positions in various types of organizations were very satisfied, feeling fulfilled and productive.

It is not difficult to understand what constitutes the main difference between those who are barely satisfied and merely accept their circumstances and those who are very satisfied and embrace their job: it is the degree to which challenge, freedom and variety is experienced. These three are unavoidably related to the so-called Job Characteristics Model (Oldham, 1996). Differences are likely to be substantial depending on where they work in a hierarchical organization. Aspects of work known to make possible a positive, productive and satisfying work situation include: a) skill variety; b) task identity; c) task significance; d) task autonomy and e) task feedback. This comparison strongly suggests that the problem is not likely to be the gifted individual as such but rather one which lies within the organizational cultures.

Unlike Teo and Quah (1999), who suggest that the key to professional success in the future for especially intellectually gifted individuals lies in their training and preparation for a career, I suggest that factors determining success, however defined, lie with others, e.g., future employers. You need to be *allowed* to be gifted in order to excel.

Further, if working and staying in an organization is the intent, then only management can provide the freedom, challenge and variety for the intellectually gifted

to contribute fully to productivity. Managers who make remarks like “Why do we hire these intellectuals? They're no damned use. They don't fit in. They cause trouble” (Streznewski, 1999; p. 132), are more likely to demonstrate ignorance than informed managerial leadership.

The world of Science, perhaps a quite natural career choice for many intellectually gifted individuals, is by no means devoid of mismanagement (Bennich-Björkman, 1997). Shekerjian (1990) concludes that the scientific world certainly shows no exception in terms of ignoring or even harassing its own highly talented members. Especially susceptible are those who distance themselves from mainstream research and knowledge, perhaps even criticizing it because they suspect or have found alternative explanations are better than those already established. Attracting attention and acceptance for new, probably better, ideas and testable theories, is notoriously difficult (Segerstråle, 2000).

The resistance of scientists to change their minds from the old to the new, even in the face of convincing evidence contrary to their convictions, has been termed *cognitive conservatism* by Greenwald (1980) who understands it as a true defense mechanism. Although some are more prone to resist change than others (Johnson, *et al.*, 1988), there will always exist an inherent resistance to anyone who might have the potential to outdo others (see Persson, in press).

A practical proposition suggests itself as a result of this study, i.e., a new and additional development of the Gifted Education agenda. While Gifted Education has been almost entirely devoted to school systems thus far, it is perhaps paramount to also enlighten leadership and management in the corporate world on giftedness by offering education on how to manage gifted employees.

Note how the world of management now realizes the important role expertise (giftedness/talent) plays in development and how that world is becoming increasingly more dependent on knowledge. The term *intellectual capital* has even been coined defining knowledge as a commodity (Stewart, 1999).

However, those who recognize the value of quantifiable “know-how” seem little interested in the socio-emotional determinants of the work environment which would allow the expert to excel. No individual fares well in a rationalized society when treated as

“commodity”, but the gifted are perhaps more sensitive to it than most others (cf. Persson, 2007).

I am therefore convinced that management will need to examine how best to

take special responsibility for providing for their gifted and talented workforce. The investment in time and money to do this would surely benefit the company, the organization as well as the intellectually gifted individual.

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Appendix 1: Questionnaire

Demographics

1. Which is your gender?

Male

Female

2. Which is your age? _____ years

3. Which is your intelligence level (the score you received when tested for the Mensa membership). If tested with Stanford-Binet please provide your IQ score. If tested with any other test, please provide your percentile.

(Stanford-Binet) IQ _____

(Percentile) % _____

4. What kind of education or training do you have (you may tick more than one if appropriate)?

University degrees (Ph.D.)

(MA, Med, MSc)

(BA, Bed, BSc)

Professional academic training
(Engineer, Economist, Medical Doctor)

Professional artistic training (Drama,
Music, Visual Arts)

Other training, describe which _____

No training or education beyond
the compulsory school and high school

5. Which is your profession?

I work as ... (provide your work title) _____

Currently unemployed

None

I am a currently a student

Work satisfaction

1. The freedom to choose your own method of working (tick only one box)

I am extremely dissatisfied

I am very dissatisfied

I am moderately dissatisfied

I am not sure

I am moderately satisfied

I am very satisfied

I am extremely satisfied

2. Your fellow workers (tick only one box)

I am extremely dissatisfied

I am very dissatisfied

I am moderately dissatisfied

I am not sure

I am moderately satisfied

I am very satisfied

- I am extremely satisfied
3. The recognition you get for good work (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied
- I am extremely satisfied
4. Your immediate boss (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied
- I am extremely satisfied
5. The amount of responsibility you are given (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied
- I am extremely satisfied
6. Your rate of pay (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied
- I am extremely satisfied
7. Your opportunity to use your abilities (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied
- I am extremely satisfied
8. Your chance of promotion (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied

- I am extremely satisfied
9. The attention paid to suggestions you make (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied
- I am extremely satisfied
10. The amount of variety in your job (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied
- I am extremely satisfied
11. Considering everything – how do you feel about your job? (tick only one box)
- I am extremely dissatisfied
- I am very dissatisfied
- I am moderately dissatisfied
- I am not sure
- I am moderately satisfied
- I am very satisfied
- I am extremely satisfied
12. Comment briefly and generally on how you experience your job/profession.

A Multilevel Analysis of Gifted Korean American Students' Characteristics and School Context Effects on Learning Style Preferences

Mi-Soon Lee and Del Siegle

Abstract

This study examined school factors related to the learning style preferences of gifted Korean American students. The *Learning Styles Inventory-III (LSI)* (Renzulli, Rizza, & Smith, 2002) and the *Ethnic Orientation Scale (EOS)* were administered to 407 Korean American students in 30 schools. A Hierarchical Linear Model (HLM) with student and school-level variables indicated differences in learning style preferences between gifted Korean American and non-gifted Korean American students on preferences for direct instruction, technology, simulations, projects, and games. School context mediated these learning style differences between students' giftedness and learning styles. Learning is based on students' experiences, culture, gender, genetic codes, and neurological wiring (Tomlinson, 1999). Students may have preferred ways of taking in, processing, internalizing, and retaining information and skills. These are typically referred to as students' learning styles (Dunn & Milgram, 1993). Students' learning styles can dictate how they approach and process tasks. Understanding how students learn is important in planning instructions to assist them to achieve their fullest potential.

Keywords: Asian American, learning style, ethnic orientation, instructional methods.

Introduction

Some special populations have unique learning style preferences (Dunn & Milgram, 1993). For example, gifted students tend to demonstrate independence, internal locus of control, persistence, perceptual strengths, non-conformity, task commitment, and high self-motivation (Dunn & Griggs, 1985). Gifted students have been found to prefer independent study and discussion while non-gifted peers prefer lectures and class projects (Ristow, Edeburn, & Ristow, 1986; Stewart, 1981; Wasson, 1981).

A student's socialization into a value system will reward some styles more than others. Rewarding students for using preferred styles on tasks is likely to lead to a greater display of the rewarded styles (Sternberg & Grigorenko, 1997). For example, many Asian American students are strongly influenced by Confucianism, which emphasizes hierarchical relationships, collectivism, obedience to authority, and emotional control (Lee & Rong, 1988; Maker & Schiever, 1989; Mizokawa & Ryckman, 1988). This hierarchical relationship

dictates that children must listen and not question the authority of their parents or teachers. The public expression of thoughts or strong feelings (e.g., pain, anger, love) is considered arrogant and defiant (Park, 1997a, 1997b).

Asian American students generally tend to be field-dependent learners (Peterson, 1983; Yao, 1985). In the classroom, teachers easily notice their conservative, conforming, inhibited behaviors. These students prefer reinforcement from teachers and they work efficiently in a well-structured, quiet learning environment where definite goals have been established for them. They seldom reveal their opinions or their abilities voluntarily or dare to challenge their instructors. Even when they know the answer to the teacher's question, they may not respond by raising their hands, choosing instead to sit quietly (Caplan, Choy, & Whitmore, 1992; Chan, 1986; Maker & Schiever, 1989; Mizokawa & Ryckman, 1988; Peng, Owing, & Feters, 1984; Sue, 1989).

Because Asian American students are taught to value correctness and conformity in their family, they may be more comfortable performing tasks requiring convergent thinking or solving problems that have a single correct answer rather than participating in critical and divergent thinking. Asian American students seem to perform well in rote memorization and mathematics operations but seem to do poorly in creative writing and analytical commentary. Asian American students tend to feel more comfortable in structured school situations than those that are ambiguous (Caplan et al., 1992; Chan, 1986; Lee & Rong, 1988; Maker & Schiever, 1989; Mizokawa & Ryckman, 1988; Peng et al., 1984; Sue, 1989).

In a comparison study between Korean students and Korean American students, Hong and Suh (1995) found Korean American students preferred a user-friendly environment more than Korean students. Korean students preferred a more formal design and auditory learning than Korean American students. Korean American students showed a preference for more mobility than did Korean students.

In two comparative studies of basic perceptual learning style preferences among Korean, Mexican, Armenian, and Anglo students in secondary schools (Park, 1997a) and among Korean, Chinese, Filipino, Vietnamese, and Anglo students in secondary schools (Park, 1997b), Park found Korean American secondary students showed minor preferences for auditory, tactile, and individual learning. Korean American students preferred kinesthetic learning, but not group learning. Park's findings indicate that teachers who incorporate more visual materials (e.g., charts, graphs, semantic maps, graphic organizers, and character webs) in instructional activities will most likely enhance learning for Korean American students (Park, 1997a; 1997b).

Confucianism places great importance on education, which is one reason for immigration. Because Korean Americans place a high value on educational achievement and perceive education as the major avenue for upward mobility in a society (Ho, 1994; Lee & Cynn, 1991), parents want and expect their children to have a good education and good grades in school (Caplan et al., 1992; Chan, 1986; Maker & Schiever, 1989; Mizokawa & Ryckman, 1988; Peng et al., 1984; Sue, 1989). Specifically, parental expectations are evident in the way parents socially compare their children with other students who are doing well in school.

Asian American students are also influenced by the mainstream cultural norm (LaFromboise, Coleman, & Gerton, 1993; Lung & Sue, 1997). Asian cultural values, emphasizing restraint of strong feelings, obedience, dependence upon the family, and formality in interpersonal relations are in contrast to mainstream's emphasis on spontaneity, assertiveness, and informality (Sue & Sue, 1971). Consequently, their socializations into both cultures may result in a somewhat more complex learning preference.

Cultural values of the mainstream group can have an impact on school programs and the instructional practices of teachers (Kitano, 1991). For example, schools use the behaviors of white students as the norm by which to compare Asian American students and other culturally diverse students (Clifton, Perry, Parsonson, & Hryniuk, 1986; de Kanter & Frankiewicz, 1981; Demetrulias, 1990; Matute-Bianchi, 1986). Teachers unprepared to work with Asian American students may retain stereotypes (e.g., model minority) and misperceptions that undermine their ability to recognize strengths in students whose behavior is different to that expected. Moreover, if teachers were to force Asian American students to relinquish their cultural roots and become "Americanized," the students might face internal conflict and confusion between loyalty to the cultural traditions of their heritage and the pressure for conformity to the mainstream group (VanTassel-Baska, Olszewski-Kubilius, & Kulieke, 1994). A mismatch between the cultural norms of school/teachers and the homes/communities of Asian American students may jeopardize the teaching-learning process because learning occurs in specific socio-cultural contexts.

Despite calls by multicultural educators to create new ways to measure and monitor the differences in culturally diverse students while maintaining their origin culture (Tannenbaum, 1990), little new knowledge has been generated about indicators of school contexts, which is the socialization institution after the family, that mediate and predict the learning styles of students, especially culturally diverse students. Therefore, the premise central to this study is that changing the reciprocal relations between students and the school contexts within which students live enhances the learning process. Based on this idea, the purposes of this study included: a) analyzing the differences of the learning styles of gifted and non-gifted Korean American students by using multilevel modeling (student-level and school-level), b) examining

the effects of school factors on Korean American student learning style differences, and c) providing implications for teaching Korean American students.

Often Asian American research participants are grouped together for data analysis. They were not separated into Chinese, Korean, Japanese, and Vietnamese, although each group has different characteristics because of unique immigration pattern to the United States. As a result, past researchers overlook the differences in learning characteristics within and across Asian American subgroups. In this study, the

differences existing among Korean Americans were investigated.

Korean Americans were chosen as subjects in this study for a number of reasons. They are one of the fastest growing ethnic groups in the school age population (Chan & Kitano, 1986; Plucker, 1994), yet they have been excluded from several recent major works on Eastern Asian Americans. In addition, because of Korean American parents' high education level, immigration reasons, and a relatively short immigrant history, information about their learning style preferences may have broader teaching and learning implications.

Method

Sampling Procedures

A two-step sampling design incorporating student and school data was used for this study. The first step of sampling involved the selection of 21 Korean American churches from the New York City ($n = 17$) and Chicago areas ($n = 4$), from which student data (student-level) were collected. The second step was to collect school data (school-level) for the schools attended by these Korean American students. This data was collected from GreatSchools.net. This online website is a nonprofit online guide to K-12 schools that provides parents with the information they need to guide their children's education. The website obtains basic information from the National Center for Education Statistics (NCES).

At the student-level, the focus was on effects of ethnic orientations (Korean and other group), gender, GPA, and giftedness on learning style preferences (direct instruction, technology, simulations, independent study, projects, peer teaching, games, and discussion). At the school-level, the focus was on the effects of school contexts on the relation between the student-level variables and learning style preferences. The school contexts included school program (middle school or high school), student-teacher ratio, and the percentage of Asian students in a school.

The total number of Korean American students and schools was 466 and 79, respectively. However, only schools that had more than 11 student participants were chosen. This improves the precision of the statistical model estimation. This resulted in 407 Korean American students (206 males and 201 females) spread across 30 schools. Students ranged in age from 10 to 19 years with a mean age of

15.05 years. Ninety-five students (23.3%) of 407 students attended a gifted program (e.g., Bronx Science High School, Hunter College High School, Stuyvesant High School) or were nominated by themselves, parents, or teachers as gifted (e.g., "Do you believe that your student should be placed in the gifted program? If yes, write down the behaviors that you have observed.").

Twelve of the 95 students only attended a gifted program. Thirty-five students attended gifted programs and were nominated by themselves, parents, or teachers as gifted. Forty of the 95 students were just nominated by themselves, parents, or teachers as gifted but did not attend a program. In order to determine whether there were differences among students who attended gifted programs and those who were nominated by themselves, teachers, and parents, the researchers administered *t* tests with GPA and learning style preference scores. No significant differences in GPAs and learning style preferences were found between students attending gifted programs and those not attending such a program.

Two hundred sixty-eight students (57.5%) reported being born in the United States; 108 students were between the ages of 0-11 years (23%) when they immigrated to the United States; and 88 (19%) were more than 12 years on arrival. Overall, students showed moderate Korean orientation ($M = 3.87$) and other-group orientation ($M = 3.87$). These orientations reflect the participants' knowledge of a group (Korean or other) and their value and emotional attachment to that group.

The ethnic orientation variable is described in the next section. With respect to

grade level, 118 students (29.0%) attended middle school and 289 students (71.0%) attended high school. The number of students

attending public schools was 382 (93.9%) and 25 students (6.1%) attended private schools. Descriptive statistics are found in Table 1.

Table 1: Descriptive Statistics for Two-Level Model.

Student-Level Descriptive Statistics						
Independent Variable		<i>N</i>	Mean	<i>SD</i>	Minimum	Maximum
Age		407	15.05	1.85	10.00	19.00
Korean orientation		407	3.87	.61	2.10	5.00
Other-group orientation		407	3.87	.73	1.00	5.00
GPA		407	84.44	8.70	48.90	100.00
Dependent Variable		<i>N</i>	Mean	<i>SD</i>	Minimum	Maximum
Learning Style	Direct instruction	407	3.49	.70	1.00	5.00
	Technology	407	3.38	.71	1.00	5.00
	Simulations	407	3.13	.76	1.00	5.00
	Independent study	407	3.31	.74	1.00	5.00
	Projects	407	3.41	.81	1.00	5.00
	Peer teaching	407	3.53	.81	1.00	5.00
	Games	407	3.46	.82	1.00	5.00
	Discussion	407	3.30	.86	1.00	5.00
School-Level Descriptive Statistics						
Variable		<i>N</i>	Mean	<i>SD</i>	Minimum	Maximum
School program		30	.70	.47	.00	1.00
Student-teacher ratio		30	17.80	3.60	11.10	22.80
Asian student enrollment percentage		30	29.77	14.41	4.00	52.00

Measures

The *Learning Styles Inventory, Version III (LSI-III)*, Renzulli, Rizza, & Smith, (2002) was designed to measure student preferences for instructional strategies commonly found in elementary and middle school classrooms. In this study, the *LSI* for middle school students (*LSI-III/MS*) was used. It contained 62 items and required approximately 15 minutes to complete. Dimensions and internal reliabilities of the *LSI-III/MS* in this study are as followings:

- *Direct Instruction* (10 items, Cronbach's $\alpha = .89$) – comprised of items involving direct teacher input. As the name implies, the direct instruction method includes having the teacher present a lesson, explain new information, and present various viewpoints.
- *Instruction through Technology* (10 items, Cronbach's $\alpha = .86$) – all items on this dimension relate to computer use as well as video and television broadcast.
- *Simulation* (8 items, Cronbach's $\alpha = .84$) – contains items describing activities containing role playing, acting, and real-world tasks.
- *Projects* (8 items, Cronbach's $\alpha = .91$) – the project method invites students to work on school-related group activities either student initiated or teacher directed.
- *Independent Study* (8 items, Cronbach's $\alpha = .86$) – items describe activities in which students work alone having chosen an area of study, developed their own approach to gather information, and compiled the results in a presentation or product.
- *Peer Teaching* (6 items, Cronbach's $\alpha = .88$) – items describe activities in which students work together with classmates and friends to learn information from each other, gather.

new information or review material.

- *Teaching Games* (6 items, Cronbach's $\alpha = .89$) – students are invited to acquire and transfer knowledge within the context of games which are purposeful in nature and intended to support learning in some manner.
- *Discussion* (6 items, Cronbach's $\alpha = .86$) – characterized by a two-way interaction between teacher and students or among students, i.e., ideas and opinions are shared.

The *Ethnic Orientation Scale* (EOS, Lee, 2003) was used to address the cultural orientations of Korean Americans students. With this sample, as well as with previous samples, the EOS consisted of two factors, a) Korean orientation (10 items, Cronbach's $\alpha = .87$) and b) Other-group orientation (5 items, Cronbach's $\alpha = .84$).

These orientations were derived from Korean Americans' knowledge of membership in groups (e.g., I try to learn about the culture and history of Korea / I understand how I behave as a Korean), together with their value and emotional attachment to that group membership (e.g., I feel comfortable being with people other than Koreans / I spend time with people other than Koreans).

Each item was followed by a 5-point-Likert-type scale by which the respondents rated how much they agreed or disagreed with the item. Low scores meant strong disagreement and high scores meant strong agreement with the item.

Data analysis

This study had two hypotheses: a) The learning styles of Korean American students would be associated with ethnic orientations, gender, GPA, and giftedness, which were

School-level variables were examined in three of the eight learning styles because significant differences in learning style preference (direct instruction, technology, and peer teaching) existed among the 30 school means.

student-level variables; and b) Differential effects of school-level variables might affect outcomes, after adjusting for the individual student characteristics in the student-level model.

The three analytical steps used followed the analytical strategy of Raudenbush and Bryk (2002). A one-way analysis of variance (ANOVA) with random effects was conducted, which provided useful preliminary information about how much variation existed in learning style preferences within and between schools. A random-coefficient model was employed to determine how much of the variance was explained at the student-level.

Finally, when assuming that regression coefficients were to be different among schools, an intercepts-and slopes-as-outcomes model was employed to determine why some schools had higher averages than others in learning style preferences and whether some associations between student variable(s) and the dependent variable(s) were stronger. The dependent variables were self-reported preference for learning through direct instruction, technology, simulations, independent study, projects, peer teaching, games, and discussion.

This study analyzed 407 students attending 30 schools using HLM with two levels (student and school). HLM is a computer program designed to analyze Hierarchical Linear Models (Raudenbush & Bryk, 2002). Because of multicollinearity among intercepts and slope variances, a larger error variance was expected even though more parameters were added to the model. Therefore, the researcher centered student's ethnic orientations and GPA around the school mean to avoid this limitation.

Results

This results section is organized by the eight dependent variables measured with the *Learning Style Inventory* (Renzulli et al., 2002). The fixed effect estimates for the eight dependent variables are presented in Table 2, and the variance components for those analyses are presented in Table 3.

Direct Instruction Learning Style Preference at the Student-level and the School-level

Relative to the random-coefficient model, 17.9% of the variability in the mean for

Direct Instruction Learning Style between schools could be attributed to school-level variables. However, a considerable amount of variability remained to be explained by between school differences in the mean for Direct Instruction Learning Style and in the effect of gender on Direct Instruction Learning Style by school-level variables ($\chi^2_{18} = 29.70, p = .040$, and $\chi^2_{18} = 30.66, p = .031$).

After controlling for the student-teacher ratio and the percentage of Asian students in

school, the mean for Direct Instruction Learning Style in middle schools was 2.847 ($t_{26} = 8.16, p < .001$). The mean for Direct Instruction Learning Style in high schools was 3.338 ($= 2.847 + .491$) with $t_{26} = 3.57, p = .002$. Therefore, high school students showed a stronger preference for direct instruction than middle school students.

The effect of other-group orientation on Direct Instruction Learning Style (-.268) decreased from middle schools to high schools with an average student-teacher ratio and average percentage of Asian students ($t_{26} = -2.30, p = .030$). Within the same school, high school students more oriented to other-groups were less likely to prefer direct instruction than high school students less oriented to other-groups.

The GPA effect on Direct Instruction Learning Style (.032) increased slightly from middle school to high school, after controlling for student-teacher ratio and the percentage of Asian students in school ($t_{26} = 4.16, p < .001$). The higher GPA that high school students reported, the more these students preferred direct instruction.

After controlling for student-teacher ratio and the percentage of Asian students in the school, the effect of giftedness on Direct Instruction Learning Style was .726 in middle schools ($t_{26} = 2.24, p = .034$). The effect of giftedness on Direct Instruction Learning Style was .236 in high school. Gifted middle school students preferred direct instruction learning more than gifted high school students from the same school contexts. Gifted middle and high school students preferred direct instruction more than non-gifted students, but this difference between gifted and non-gifted students was smaller in high school than middle school.

Moreover, the effect of giftedness on Direct Instruction Learning Style decreased by .017 points for each 1% increase in the percentage of Asian students in a school ($t_{26} = -3.75, p = .001$). Based on this result and after controlling for student-teacher ratio, gifted students in middle schools with a low percentage of Asian students seem to prefer direct instruction more than gifted student in middle schools with the high percentage of Asian students.

Technology Learning Style Preference at the Student-level and the School-level

After including student-level and school-level variables as predictors of Technology

Learning Style (see Table 3), the within school variability in Technology Learning Style was reduced to less than 1%. However, a considerable amount of variability remained to be explained by between school differences in the mean for Technology Learning Style by school-level variables ($\chi^2_{18} = 31.31, p = .026$). The variability of the effect of gender on technology between schools also was not explained by school-level variables ($\chi^2_{18} = 31.72, p = .024$), which indicated there were still considerable differences between schools in the effect of gender on technology that might be explained by other school-level variables. After controlling for student-teacher ratio and the percentage of Asian students in a school, the mean for Technology Learning Style in middle schools was 3.806 ($t_{26} = 9.91, p < .001$).

There was a significant effect of gender on Technology Learning Style influenced by school program. That is, the effect of gender on technology was decreased by .390 points from middle school to high schools ($t_{26} = -2.19, p = .038$). Within the same school contexts, female middle school students preferred technology learning more than did female high school students.

The effect of giftedness on the Technology Learning Style (.062) increased as student-teacher ratio increased in middle schools with an average percentage of Asian students ($t_{26} = 2.90, p = .008$). That is, gifted students attending middle schools with high student-teacher ratios preferred technology learning more than those students attending middle schools with low student-teacher ratios.

Since the percentage of Asian students enrolled in a school (-.016) had a negative effect on the impact of giftedness on Technology Learning Style in middle schools, after controlling for student-teacher ratio ($t_{26} = -2.67, p = .013$), gifted students who attended middle schools with lower percentages of Asian students preferred technology learning more than gifted students who attended middle schools with the higher percentages of Asian students.

Simulation Learning Style Preference at the Student-level

After including student-level variables as predictors of Simulation Learning Style (see Table 3), within school variability in Simulation Learning Style was reduced by 12.1%. The estimated variance among school means was .050 with $\chi^2_{21} = 24.87, p = .252$. This

indicates that significant differences did not exist among the 30 school means. Similarly, the relationships between each student-level variable and Simulation Learning Style did not vary significantly across schools, except the relationship between gender and Simulation Learning Style within schools ($\chi^2_{21} = 35.49, p = .025$). The overall mean Simulation Learning Style score across schools was 3.091 ($t_{29} = 47.94, p < .001$). On average across schools, the Korean orientation slope (-.117) was negatively related to Simulation Learning Style within schools ($t_{29} = -2.08, p = .046$). In other words, students who were less oriented to Korean culture preferred simulation learning more than students more oriented to Korean culture.

Since student's giftedness (.167) was positively related to preference for simulation learning within schools ($t_{29} = 2.06, p = .048$), after controlling for other student-level variables, gifted Korean American students preferred simulation learning more than non-gifted Korean American students.

Independent Study Learning Style Preference at the Student-level

After including student-level variables as predictors of Independent Study Learning Style within schools (see Table 3), within school variability in Independent Study Learning Style was reduced by 11.2%. Since the estimated variance among school means was .020 with $\chi^2_{21} = 23.98, p = .293$, significant differences among the 30 school means did not exist. Similarly, since the estimated variances of the slopes (e.g., gender) were not significant except for the GPA slope ($\chi^2_{21} = 37.15, p = .016$), the relationships between each student-level variable and Independent Study Learning Style did not vary across students on schools.

The overall mean for Independent Study Learning Style across schools was 3.273 ($t_{29} =$

55.43, $p < .001$), which was the only statistically significant value in the random-coefficient model, which had only students-level variables. No variable was able to predict students' preference for independent study.

Project Learning Style Preference at the Student-level

Within school variability in Project Learning Style was reduced by 8.3%, after including student-level variables as predictors within schools (see Table 3). Since the estimated variance among school means was .013 with $\chi^2_{21} = 20.55, p > .500$, the random-coefficient model appeared to explain the differences in this learning style.

The overall mean for Project Learning Style across schools was 3.316 ($t_{29} = 54.58, p < .001$). On average across schools, the GPA slope (.012) was positively related to Project Learning Style with schools ($t_{29} = 2.97, p = .006$). This indicated that the average effect across schools for student's GPA was represented as an increase of .012 points in preference for project learning for one point increase in student GPA. Therefore, students with high GPAs preferred project learning more than students with low GPAs, after controlling for other student-level variables (e.g., ethnic orientations, gender, and giftedness).

Since the average giftedness slope (.252) was positively related to Project Learning Style within schools ($t_{29} = 2.34, p = .027$), gifted Korean American students preferred project learning more than non-gifted Korean American students, after controlling for other student-level variables. High GPA gifted students preferred project learning most of all.

Table 2: HLM Results Explaining Variation in Learning Styles at the Microlevel and the Macrolevel.

Fixed Effects ¹	Direct instruction #		Technology #		Simulations		Independent study	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Model for mean school Learning style (B0)								
Intercept (γ 00)	2.847 **	.349	3.806 **	.384	3.091 **	.064	3.273 **	.059
School program (γ 01)	.491 **	.138	.143	.148				
Student-teacher ratio (γ 02)	.009	.017	-.026	.021				
Asian student percentage (γ 03)	.003	.005	-.001	.005				
Model for Korean orientation slope (B1)								
Intercept (γ 10)	.394	.221	.298	.347	-.117 *	.056	.034	.071
School program (γ 11)	-.087	.077	-.157	.131				
Student-teacher ratio (γ 12)	-.021	.012	-.016	.018				
Asian student percentage (γ 13)	.003	.003	-.001	.003				
Model for Other-group orientation slope (B2)								
Intercept (γ 20)	.473	.273	.221	.243	.023	.054	.019	.039
School program (γ 21)	-.268 *	.117	-.197	.143				
Student-teacher ratio (γ 22)	-.012	.013	.007	.011				
Asian student percentage (γ 23)	-.001	.004	-.006	.004				
Model for Gender slope (B3)								
Intercept (γ 30)	.393	.465	-.196	.444	.012	.094	.043	.080
School program (γ 31)	-.287	.179	-.390 *	.179				
Student-teacher ratio (γ 32)	-.007	.025	.020	.020				
Asian student percentage (γ 33)	.001	.006	.002	.004				
Model for GPA (B4)								
Intercept (γ 40)	-.026	.022	.001	.020	.005	.005	.006	.006
School program (γ 41)	.032 **	.008	-.017	.018				
Student-teacher ratio (γ 42)	-.001	.001	.001	.001				
Asian student percentage (γ 43)	.001	.001	.001	.001				
Model for Giftedness (B5)								
Intercept (γ 50)	.726 *	.324	-.548	.406	.167 *	.081	.111	.090
School program (γ 51)	-.490 **	.138	.139	.186				
Student-teacher ratio (γ 52)	.019	.016	.062 **	.023				
Asian student percentage (γ 53)	-.017 **	.005	-.016 *	.006				

Fixed Effects ¹	Projects		Peer teaching #		Games		Discussion	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Model for mean school Learning style (B0)								
Intercept (γ 00)	3.316 **	.061	3.322 **	.324	3.307 **	.062	3.151 **	.074
School program (γ 01)			.202	.165				
Student-teacher ratio (γ 02)			.018	.019				
Asian student percentage (γ 03)			-.014 *	.005				
Model for Korean orientation slope (B1)								
Intercept (γ 10)	-.014	.067	.500	.330	-.006	.053	.014	.068
School program (γ 11)			-.070	.129				
Student-teacher ratio (γ 12)			-.034	.014				
Asian student percentage (γ 13)			.004	.003				
Model for Other-group orientation slope (B2)								
Intercept (γ 20)	.045	.055	-.345	.360	.107	.059	.041	.046
School program (γ 21)			.131	.196				
Student-teacher ratio (γ 22)			.015	.017				
Asian student percentage (γ 23)			.003	.007				
Model for Gender slope (B3)								
Intercept (γ 30)	.091	.080	.403	.320	.211 *	.078	.205 *	.096
School program (γ 31)			-.407 *	.174				
Student-teacher ratio (γ 32)			-.009	.018				
Asian student percentage (γ 33)			.010 *	.005				

Note. * $p < .05$. ** $p < .01$. $df = 29$.

Korean orientation is a continuous variable, where the score is on a metric of 1-5 with a higher value indicating a higher Korean orientation.

Other-group orientation is a continuous variable, where the score is on a metric of 1-5 with a higher value indicating a higher Other-group orientation.

Gender is a nominal variable, where male ($n = 206$) is coded as 0 and female ($n = 201$) as 1.

GPA is a continuous variable, where the score is on a metric of 1-100 with a higher value indicating a higher level of GPA.

Giftedness is a nominal variable, where non-gifted student ($n = 312$) is coded as 0 and gifted student ($n = 95$) as 1.

School program is a nominal variable, where middle school ($n = 118$) is coded as 0 and high school ($n = 289$) is coded as 1.

Student-teacher ratio is a continuous variable with a higher value indicating a higher ratio level.

Asian student enrollment percentage is a continuous variable with a higher value indicating a higher Asian student

enrollment percentage in school.

¹ This study reported final estimation of fixed effects with robust standard errors.

The Intercepts-and slopes-as-outcomes model with $df = 26$ was used in Direct instruction, Technology, and Peer teaching learning styles.

Student's Korean orientation, Other-group orientation, and GPA were centered around the school means.

Table 3: Variance Components of Three Models Toward Learning Styles.

One-Way ANOVA Model		Direct instruction		Technology		Simulations		Independent study	
Random Effects (Var. Component)	Variance	$\chi^2_{(29)}$	Variance	$\chi^2_{(29)}$	Variance	$\chi^2_{(29)}$	Variance	$\chi^2_{(29)}$	
Var. in school means	.014	39.02	.009	35.04	.004	30.00	.017	40.90	
Var. within schools	.472		.498		.572		.529		

Random-Coefficient Model		Direct instruction		Technology		Simulations		Independent study	
Random Effects (Var. Component)	Variance	$\chi^2_{(21)}$	Variance	$\chi^2_{(21)}$	Variance	$\chi^2_{(21)}$	Variance	$\chi^2_{(21)}$	
Var. in school means	.095	39.88 **	.055	34.26 *	.050	24.87	.020	23.98	
Var. in Korean orientation slope	.014	14.31	.029	19.13	.002	16.07	.062	24.44	
Var. in Other-group orientation slope	.034	27.08	.003	20.84	.022	27.42	.006	10.85	
Var. in Gender slope	.095	32.44	.062	36.72 *	.116	35.49 *	.050	26.25	
Var. in GPA slope	.001	22.69	.001	28.05	.001	30.49	.001	37.15 *	
Var. in Giftedness slope	.037	12.47	.082	21.27	.021	30.87	.040	24.88	
Var. within schools	.410		.448		.503	20.51	.470		

Intercepts-and Slopes-as-Outcomes Model		Direct instruction		Technology		Simulations		Independent study	
Random Effects (Var. Component)	Variance	$\chi^2_{(18)}$	Variance	$\chi^2_{(18)}$	Variance	$\chi^2_{(18)}$	Variance	$\chi^2_{(18)}$	
Var. in school means	.078	29.70 *	.058	31.31 *					
Var. in Korean orientation slope	.006	12.86	.027	18.41					
Var. in Other-group orientation slope	.023	22.69	.003	15.16					
Var. in Gender slope	.111	30.66 *	.054	31.72 *					
Var. in GPA slope	.001	18.62	.001	26.76					
Var. in Giftedness slope	.012	9.18	.015	15.40					
Var. within schools	.411		.446						

One-Way ANOVA Model		Projects		Peer teaching		Games		Discussion	
Random Effects (Var. Component)	Variance	$\chi^2_{(29)}$	Variance	$\chi^2_{(29)}$	Variance	$\chi^2_{(29)}$	Variance	$\chi^2_{(29)}$	
Var. in school means	.006	30.66	.005	32.15	.001	17.46	.010	33.43	
Var. within schools	.648		.652		.668		.737		

Random-Coefficient Model		Projects		Peer teaching		Games		Discussion	
Random Effects (Var. Component)	Variance	$\chi^2_{(21)}$	Variance	$\chi^2_{(21)}$	Variance	$\chi^2_{(21)}$	Variance	$\chi^2_{(21)}$	
Var. in school means	.013	20.55	.076	34.67 *	.033	21.12	.051	30.60	
Var. in Korean orientation slope	.028	12.06	.014	22.75	.001	16.29	.012	26.66	
Var. in Other-group orientation slope	.016	15.61	.058	24.12	.029	17.87	.002	17.50	
Var. in Gender slope	.023	18.58	.086	26.15	.055	24.29	.075	35.49	
Var. in GPA slope	.001	13.17	.001	17.18	.001	22.47	.001	19.75	
Var. in Giftedness slope	.103	22.49	.005	25.53	.018	22.14	.040	21.08	
Var. within schools	.594		.557		.594		.684		

Intercepts-and Slopes-as-Outcomes Model		Projects		Peer teaching		Games		Discussion	
Random Effects (Var. Component)	Variance	$\chi^2_{(18)}$	Variance	$\chi^2_{(18)}$	Variance	$\chi^2_{(18)}$	Variance	$\chi^2_{(18)}$	
Var. in school means			.046	18.65					
Var. in Korean orientation slope			.026	20.82					
Var. in Other-group orientation slope			.072	25.43					
Var. in Gender slope			.050	15.53					
Var. in GPA slope			.001	18.04					
Var. in Giftedness slope			.025	24.35					
Var. within schools			.545						

Peer Teaching Learning Style Preference at the Student-level and the School-level

Relative to the random-coefficient model, 39.5% of the variability for between school differences in mean Peer Teaching Learning Style could be attributed to school-level variables (see Table 3). There was no unexplained variability between schools in the mean of Peer Teaching Learning Style by school-level variables ($\chi^2_{18} = 18.65, p = .413$).

After controlling for student-teacher ratio and the percentage of Asian students in school, the mean for peer teaching in middle schools was 3.322 ($t_{26} = 10.24, p < .001$). In addition, the mean for peer teaching decreased by .014 for each 1% increase in the percentage of Asian students in middle schools ($t_{26} = -2.73, p = .012$). For example, when the percentage of Asian students in a school was 10%, the mean for Peer Teaching Learning Style in middle schools was 3.18. When the percentage of Asian students in a school was 20%, the mean for Peer Teaching Learning Style in middle schools was 3.04.

After controlling for the percentage of Asian students in the school, the effect of Korean orientation on peer teaching decreased by .034 points as the student-teacher ratio increased by one percentage unit ($t_{26} = -2.39, p = .025$). Students less oriented to Korean culture preferred peer teaching more than students more oriented to Korean culture within the same school contexts. Interestingly, schools with a higher student-teacher ratio showed a larger difference in preference for peer teaching between low Korean oriented students and high Korean oriented students.

For high schools, the effect of gender on peer teaching was decreased by .407 points on average, after controlling for the student-teacher ratio and the percentage of Asian students in school ($t_{26} = -2.33, p = .028$). Female middle school students preferred peer teaching more than males at the middle school. Female middle school students preferred peer teaching more than female high school students. There were minimal gender differences at the high school after controlling for the student-teacher ratio and the percentage of Asian students.

The percentage of Asian students in a school had a positive effect (.010) on the effect of gender on Peer Teaching Learning Style ($t_{26} = 2.11, p = .045$). The effect of gender on peer teaching in middle schools was increased by .010 for each 1% increase in Asian student enrollment, after controlling for student-teacher

ratio. Students in schools with a high percentage of Asian students preferred peer teaching more and had a stronger association between gender and Peer Teaching Learning Style than schools with a low percentage of Asian students. There was a stronger gender difference toward peer teaching, which favored females, in schools with higher percentages of Asian students.

Game Learning Style Preference at the Student-level

After including student-level variables as predictors of Game Learning Style within schools (see Table 3), within school variability in game learning style was reduced by 11.1%. The estimated variance among school means was .033 with $\chi^2_{21} = 21.12, p = .452$. This means the random-coefficient model explained the differences in this learning style. The overall mean for the Game Learning Style across schools was 3.307 ($t_{29} = 53.59, p < .001$). On average across schools, there was a positive effect of student's gender on Game Learning Style (.211) within schools ($t_{29} = 2.70, p = .012$). In other words, after controlling for other student variables (ethnic orientations and giftedness), female students preferred games more than male students preferred them.

On the average across schools, the GPA slope (.015) was positively related to game learning within schools ($t_{29} = 2.65, p = .013$). Game Learning Style increased .015 points for every one point increase in student GPA, students with high GPAs preferred learning games more than students with low GPAs.

On the average across schools, the effect of giftedness (.230) was positively related to Game Learning Style within schools ($t_{29} = 2.50, p = .019$). Thus, gifted Korean American students preferred learning game more than non-gifted Korean American students, after controlling for other student-level variables.

Discussion Learning Style Preference at the Student-level

After including the student-level variables as predictors of the Discussion Learning Style within schools (see Table 3), within school variability in the Discussion Learning Style was reduced by 7.2%. The estimated variance among school means was .051 with $\chi^2_{21} = 30.60, p = .080$. The overall mean for Discussion Learning Style across schools was 3.151 ($t_{29} = 42.45, p < .001$). On average across schools, the gender slope (.205) was positively related to Discussion

Learning Style within schools ($t_{29} = 2.14, p = .041$).

The average effect of gender across schools for Discussion Learning Style was increased by .205 points in female students. Thus, female students preferred discussions more than male students.

Discussions

In general, researchers comparing learning style preferences between gifted students and non-gifted students have focused on the individual characteristics without considering the school contexts where the teaching-learning process is occurring. However, results of this study indicated both student variables and school variables play a role in learning style preferences. Ethnic orientations (Korean orientation and other-group orientation), gender, GPA, and giftedness at the student-level explain some of the differences in learning style preferences. School contexts (school type [middle or high school], student-teacher ratio, and the percentage of Asian students in a school) explain why students in some schools have stronger learning style preferences than others and why there is a stronger association between student-level variables and learning style preferences.

With regard to giftedness on learning style preferences, we found that gifted Korean American students prefer direct instruction, using technology, simulations, projects, and learning game more than non-gifted Korean American students, after controlling other student-level variables. These results corresponded to research showing that gifted students typically preferred simulations, projects, and teaching games to non-gifted students (Dunn & Griggs, 1985; Ristow et al., 1986; Stewart, 1981). Gifted Korean American students' preference for flexibility and independence also reflects their desired for opportunities for self-determination and self-selection of learning experiences.

Gifted Korean American students preferred direct instruction and using technology in this study more than their non-gifted Korean peers. The possible interpretations of this finding could be founded in the effects of their cultural backgrounds and school contexts. The ethnic culture of Korean American students tends to reinforce convergent (or analytical) thinking, which is reflected in their technology learning style preference. As the name implies, direct instruction includes having the teacher present a lesson, explain new information, and present

various viewpoints. Thus, direct instruction is compatible with the ethnic culture of Korean American students that emphasizes conformity, respect for authority, and correctness.

School contexts such as school type, student-teacher ratio, and the percentage of Asian students in a school, mediated the effect of giftedness on direct instruction and preference for technology learning. For example, gifted Korean American students in middle schools preferred direct instruction more than gifted Korean American students in high schools. Perhaps this reflects some cultural independence older students may be developing. The percentage of Asian students in a school mediated the relationship between giftedness and direct instruction, e.g., schools with the higher percentages of Asian students showed larger differences in direct instruction preference between gifted Korean American students and non-gifted Korean American students. The Korean culture is likely to be stronger among Korean American students when there are more Korean students in a school.

The effect of giftedness on the learning with technology preference also was affected by the school contexts of the student-teacher ratio and the percentage of Asian students in the school.

Gifted Korean American students who attended middle schools with a high student-teacher ratio preferred technology learning more than students who attended middle schools with a low student-teacher ratio. At the same time, gifted Korean American students who attended schools with a low percentage of Asian students preferred technology learning more than gifted Korean American students who attended schools with a high percentage of Asian students. It appears that Korean American students who have less opportunity to interact with teachers (high student-teacher ratio) and other Korean American students (low percentage of Korean student in the school) are more likely to prefer learning with technology. Technology learning may serve their need for an organized learning experience.

The finding that Korean students less oriented to Korean culture are more likely to

prefer working with a peer was anticipated. That this is more prominent in schools with higher student-teacher ratio is an area of concern. Learning from peers becomes more important when teachers' attention to individual students is diminished, as in the case of high student-teacher ratios.

Since the preference for peer teaching also decreased as the percentage of Koreans in the school decreased, Korean students with a Korean culture orientation attending schools with high student-teacher ratios and limited Korean student populations face a greater risk of isolation.

These results also indicate Korean American students varied in learning style preferences and adapted in order to function

within their school contexts. Students sought different levels of attachment to and involvement (acculturation level) in the mainstream culture and their culture of origin.

This suggests that learning style preferences of gifted Korean American students may be the result of dynamic interactions among students and school contexts— an indication of the necessity for a multilevel perspective for understanding students' learning style preferences and the teaching-learning process. Consequently, researchers should consider developing and researching instructional models that fit students' preferred learning styles within specific learning contexts and environments.

Limitations

For the purpose of this study, gifted students were persons who attended a gifted program (e.g., Bronx Science High School, Hunter College High School, Stuyvesant High School) or were nominated by themselves, parents, or teachers as gifted. Defining the construct of giftedness is controversial and the one used in the study was very subjective. Moreover, the group of gifted students attending gifted programs may be more homogenous and the group of gifted students nominated by themselves, parents, or teachers may be more heterogeneous. Our *t*-test analysis of GPA and learning style preferences, however, did not indicate this.

We elected to include students' ethnic orientation, rather than their generation status (e.g., first generation) or the time they had been in the United States (e.g., immigrated at 10 years of age). We selected ethnic orientation because we were interested in acculturation effects. Other researchers may wish to explore generation status and age at time of immigration.

The precision of estimations of the intercepts and the slopes in HLM are dependent on the sample size within each school. Therefore, schools with fewer student participants may exhibit poor, less reliable intercept and slope estimations. Additional research should be conducted with a larger sample.

A high correlation among intercept and slope variances produces multicollinearity. In traditional regression, a smaller error variance is expected when more parameters are added to a

model. Since in this model the phenomenon was opposite, we centered students' ethnic orientations and GPAs around the school means to avoid this limitation. Treating data in this way could result in fitting a conceptually different model. Future researchers may wish to explore this.

All of the students in this study were associated with Korean American New York City and Chicago churches. Students from smaller cities or rural areas and students not associated with Korean American churches may reflect different learning styles.

Given the large number of variables in this study the complexity of these results can be difficult to comprehend, but in essence we found Korean culture can affect the learning styles of Korean American students. We also found these styles differ between gifted and non-gifted Korean American students. It was also clear that given some variability in school means, school factors, e.g., the student-teacher ratio and the percentage of Asian American students in school, have a limited impact on Korean students' preferred learning styles. Readers are cautioned that although the reported effect sizes are statistically significant, many of them are small.

A study of this nature raises more questions than it answers. Based on our findings future researchers may wish to conduct qualitatively studies. They may also wish to replicate these findings with students from other cultures and compare learning styles across cultures in different contexts. This may include studying the impact varying levels of

subpopulation membership has on learning preferences.

With the increased national emphasis on improving student achievement, educators need to use a variety of curricular and instructional strategies to improve student

learning. Considering student learning preferences and developing strategies that compliment student learning through their preferences may be one option particularly helpful for gifted and talented student in reaching their potential.

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Student Teachers in Special Education and their Readiness to Work with Gifted and Talented Children

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Abstract

The paper is devoted to the review of our research with respect to the Polish special education student teachers' readiness to work with gifted and talented children. The research covered not only special education students but also their peers who represented other pedagogical specialisations. The purpose of our study was to evaluate the level of a pre-service teacher's knowledge and skills with respect to different forms of identification and education of gifted children in Poland. Some statistical facts and figures are provided.

Keywords: Gifted and talented children, special education, special education needs (SEN), readiness to work, university students, giftedness, high ability, talent, exceptional children, pre-service teachers' knowledge.

Introduction

The achievements of gifted children depend mostly on their experience pertaining to the circumstances of the educational process (Sękowski, 2001, p. 222; see Górniewicz, Rubacha, 1993, p. 53). Bandura writes (1974), a gifted pupil "copes with difficulties under any circumstances" (p. 5), but this may result in a critical attitude towards school (Łaszczyk, 1996, p. 40), or even maladjustment (Wasyluk-Kuś, 1971; Górniewicz, Rubacha, 1993, p. 53; Lewowicki, 1986, p. 61). We are told; "Too many pupils who are potentially highly gifted show a level of achievement that is much lower than could be expected" (Sękowski, 2001, p. 222).

These facts are of particular importance. In order to provide gifted children with efficient educational support, it is necessary for teachers to be prepared to work with them. Given a teacher is fully responsible for the organisation of the educational process in the classroom, our attention needs to be focused on how he or she

is disposed toward the many aspects relevant to educating the highly gifted.

Gifted and talented children have special educational needs (SEN). Thus, to find the solutions to these children's problems, we should make use of special education resources. Gifted and talented pupils can be perceived differently by would-be special and regular mainstream educators. The pedagogical approaches typically adopted more by special education, concentrate on meeting the child's individual needs and fostering the child by way of the teacher's empathy, competence and specialized knowledge.

The students of special education in our study represented two specialisations groups. The first or group A, specialised in education of the visually impaired and intellectually disabled. The second or group B studied education of maladjusted children. The third sample comprised the students of non-special education.

Method

This paper was a team effort. It aimed at evaluating the knowledge of students specialising in special education and other pedagogical specialisations with respect to identifying and working with a gifted child. Data were attained by means of a diagnostic interview based on a purposely constructed measure "Knowledge of the Highly Gifted Education Test".

This instrument comprised of eight questions. Six of them dealt with the characteristics, identification procedures, problem behaviours and educational needs relating to gifted children. The additional two questions concerned the students' self-evaluation of their readiness to work with a highly gifted child. This couple of queries was expressed as a rating scale. The students' teachers were told to choose and assess the answers associated with identification and education of gifted children as well as their preparedness to work with them. The ratings were given on seven- and ten-point scales.

Participants

The study was carried out in the spring of 2007. The participating students were in their second and third year of studies at Polish Maria Curie-Sklodowska University (UMCS) in Lublin.

Three heterogeneous groups of education students participated (N=72):

- Group A specialised in the visually impaired and mentally handicapped (n =18)
- Group B specialised in the socially maladjusted (n =21).
- Group C were non-specialists (n =33).

Results

Analysis of data with respect to students' knowledge of a gifted child's qualities showed that more than 90 % of the total number of students (N=72) considered *creativity* to be a significant feature of the gifted individual. Half of Group A and 40% of Groups B and C thought *high and very high achievement levels* were significant. Group A ascribed greater importance to a *powerful memory and insight* compared with Groups B and C. Groups B and C considered a *wide scope of interests* more valuable than Group A. Overall, it was notable that the special educators, i.e., Groups A and B, identified significant features of giftedness more frequently than Group C – the non-specialists (see Table 1).

Table 1: The Students' Knowledge of the Most Important Qualities of the Gifted Pupil

A gifted pupil's qualities	Group A		Group B		Group C	
	N	%	N	%	N	%
is a good learner	9	50.00	9	42.86	14	42.42
is polite	0	0.00	0	0.00	1	3.03
is creative	17	94.44	20	95.24	30	90.91
has a powerful memory	18	100.00	19	90.48	25	75.76
gives insight into sth?	18	100.00	19	90.48	25	75.76
has many interests	10	55.56	15	71.43	23	69.70
has a high IQ	15	83.33	15	71.43	28	84.85
has a sense of humour	2	11.11	2	9.52	4	12.12

Further analysis examined the ways of identifying the gifted child. Table 2 shows the number of responses and their respective percentages in Groups A, B and C. Response to the questions was ranked 1 – 6 (1 = high through to 6 = low) according to the level of emphasis placed on particular way of identifying a gifted child.

More than 60 % of Group A indicated the most significant method of identification was a child's IQ score. The other groups did not find this factor so important. Approximately 30% of Group A, compared with only 4.76% of Group B, ranked identification via contests and competitions highly. Groups B and C, more than Group A, considered a teacher's nomination and the school achievement test crucial. Group B, in particular, ranked these methods of identification most highly.

All participants ranked peer and parent nominations least valuable as a means of identification. For example, peer nomination was ascribed sixth place by 50% of Group C -the non-specialists and no one in Group A rated a parent and peer nomination above a 4 on the six-point scale (see Table 2).

Table 2: The Students' Knowledge of the Ways of Identification.

Rank	Group A		Group B		Group C		
	N	%	N	%	N	%	
Teacher nomination							
High	1	1	5.56	4	19.05	3	9.09
	2	1	5.56	2	9.52	4	12.12
	3	4	22.22	6	28.57	5	15.15
	4	10	55.56	7	33.33	13	39.39
	5	2	11.11	2	9.52	6	18.18
Low	6	0	0.00	0	0.00	2	6.06
School achievement test results							
High	1	1	5.56	7	33.33	5	15.15
	2	10	55.56	2	9.52	10	30.30
	3	5	27.78	2	9.52	13	39.39
	4	2	11.11	2	9.52	1	3.03
	5	0	0.00	7	33.33	3	9.09
Low	6	0	0.00	1	4.76	1	3.03
Intelligence tests results							
High	1	11	61.11	7	33.33	18	54.55
	2	4	22.22	6	28.57	5	15.15
	3	3	16.67	5	23.81	3	9.09
	4	0	0.00	2	9.52	2	6.06
	5	0	0.00	1	4.76	0	0.00
Low	6	0	0.00	0	0.00	5	15.15
Contests and competitions							
High	1	5	27.78	1	4.76	5	15.15
	2	3	16.67	10	47.62	11	33.33
	3	6	33.33	8	38.10	10	30.30
	4	4	22.22	2	9.52	3	9.09
	5	0	0.00	0	0.00	1	3.03
Low	6	0	0.00	0	0.00	3	9.09
Parent nomination							
High	1	0	0.00	2	9.52	2	6.06
	2	0	0.00	1	4.76	3	9.09
	3	0	0.00	0	0.00	0	0.00
	4	2	11.11	8	38.10	12	36.36
	5	12	66.67	8	38.10	13	39.39
Low	6	4	22.22	2	9.52	3	9.09
Peer nomination							
High	1	0	0.00	0	0.00	0	0.00
	2	0	0.00	0	0.00	0	0.00
	3	0	0.00	0	0.00	2	6.06
	4	0	0.00	0	0.00	2	6.06
	5	4	22.22	3	14.29	10	30.30
Low	6	14	77.78	18	85.71	19	57.58

We wanted to determine the students' opinions with respect to problem behaviours typically manifested by gifted schoolchildren (see Table 3). Virtually all participants in all three groups regarded adjustment difficulties, i.e. being unable to conform to social group standards, as the most frequent problem behaviour presented by gifted individuals.

However, participants in Group A and B (100% and 95.24% respectively) were somewhat more aware of its importance than those in Group C (87.88%) who were not familiar with children's SEN issues. With respect to other potential problem behaviours presented by gifted children, e.g., missing classes, violating school rules and regulations, showing disrespect for others, chronic lying, selfishness, over-anxiety and being much more concerned about oneself, a certain similarity in the distribution of responses across the whole sample was noted.

Table 3: The Students' Knowledge of Problem Behaviours of the Gifted Child.

Problem behaviours of the gifted pupil	Group A		Group B		Group C	
	N	%	N	%	N	%
misses classes	6	33.33	4	19.05	11	33.33
breaks school rules and regulations	7	38.89	6	28.57	15	45.45
has trouble conforming to group standards	18	100.00	20	95.24	29	87.88
is boastful	11	61.11	15	71.43	16	48.48
has contempt for peers and teachers	12	66.67	15	71.43	24	72.73
is emotionally labile	7	38.89	13	61.90	15	45.45
constantly tells lies	0	0.00	0	0.00	1	3.03
is not helpful	3	16.67	6	28.57	11	33.33
does not believe in herself/himself	7	38.89	2	9.52	5	15.15
is concerned and overanxious about herself/himself	9	50.00	12	57.14	9	27.27
is suggestible	3	16.67	2	9.52	7	21.21

Responses regarding the students' knowledge - an indispensable aspect of a highly gifted child's special needs, are summarised in Table 4. Cognitive and linguistic aspects were considered by the students as "the least, less, more or most important" in the context of the SEN of a highly gifted child and on a ten-point Likert-type scale (1 = an aspect of utmost importance through to 10 = an aspect of no importance).

Analysis of data showed 38.89% of Group A regarded *knowledge about finding out and solving problems* as the most important issue. Group B (19.05%) and Group C (24.24%) paid less attention to this aspect.

Group A thought *knowledge of speed of information processing* an important aspect with more than 30% indicating that it was particularly significant for exceptionally gifted children and their special needs. Groups B and C were not so sure (28.57% and 21.21% respectively). A significant difference was noted between the groups with respect to the *scope of reading interests*. For Group A the issue of a gifted child's *range of reading interests* was a more important issue than Groups B and C. Half of Group A gave this aspect second place, compared with only 10% of Groups B and C.

The *ability to deduce* took last place for over 60% of Group B. This result was significantly different to Group A students. None of this group regarded *ability to deduce* as unimportant for a gifted pupil and his or her needs. It was surprising to find that nobody in Groups A, B or C ranked the *level of language competence* highly.

Apparently the focus was more on cognitive as opposed to linguistic aspects. The distribution of responses regarding the question of *coping with daily routine* looked very interesting. The larger proportion of Group A students, compared with those in Groups B and C students, considered it of lowest importance. This may confirm the assumption that Group A, i.e., those training to teach visually impaired and mentally handicapped children, are more familiar with the problems of highly gifted children perhaps realizing that such children become easily bored with daily routine.(see Table 4).

Table 4: The Students' Knowledge of the Special Education Needs of a Gifted Child.

Rank	Group A		Group B		Group C	
	N	%	N	%	N	%
The level of language competence						
High 1	0	0.00	0	0.00	0	0.00
2	0	0.00	0	0.00	1	3.03
3	0	0.00	0	0.00	1	3.03
4	6	33.33	1	4.76	3	9.09
5	3	16.67	2	9.52	5	15.15
6	5	27.78	4	19.05	2	6.06
7	3	16.67	0	0.00	7	21.21
8	1	5.56	7	33.33	7	21.21
9	0	0.00	7	33.33	3	9.09
Low 10	0	0.00	0	0.00	4	12.12
Coping with daily routine						
High 1	0	0.00	1	4.76	1	3.03
2	0	0.00	1	4.76	4	12.12
3	2	11.11	1	4.76	1	3.03
4	0	0.00	0	0.00	0	0.00
5	1	5.56	0	0.00	1	3.03
6	0	0.00	1	4.76	0	0.00
7	2	11.11	3	14.29	2	6.06
8	1	5.56	5	23.81	4	12.12
9	0	0.00	4	19.05	10	30.30
Low 10	12	66.67	5	23.81	10	30.30
The scope of reading interests						
High 1	1	5.56	4	19.05	2	6.06
2	9	50.00	2	9.52	3	9.09
3	2	11.11	7	33.33	10	30.30
4	1	5.56	4	19.05	3	9.09
5	3	16.67	3	14.29	2	6.06
6	1	5.56	1	4.76	5	15.15
7	0	0.00	0	0.00	2	6.06
8	1	5.56	0	0.00	5	15.15
9	0	0.00	0	0.00	1	3.03
Low 10	0	0.00	0	0.00	0	0.00
The ability to deduce						
High 1	1	5.56	0	0.00	3	9.09
2	0	0.00	0	0.00	0	0.00
3	1	5.56	1	4.76	0	0.00
4	0	0.00	1	4.76	0	0.00
5	1	5.56	0	0.00	1	3.03
6	2	11.11	0	0.00	4	12.12
7	0	0.00	0	0.00	3	9.09
8	10	55.56	2	9.52	5	15.15
9	3	16.67	4	19.05	11	33.33
Low 10	0	0.00	13	61.90	6	18.18
The speed of mental processing						
High 1	6	33.33	6	28.57	7	21.21
2	3	16.67	3	14.29	3	9.09
3	3	16.67	5	23.81	1	3.03
4	1	5.56	2	9.52	12	36.36
5	2	11.11	0	0.00	4	12.12
6	2	11.11	1	4.76	3	9.09
7	0	0.00	3	14.29	1	3.03
8	0	0.00	0	0.00	2	6.06
9	1	5.56	1	4.76	0	0.00
Low 10	0	0.00	0	0.00	0	0.00
The ability to find and solve problems						
High 1	7	38.89	4	19.05	8	24.24
2	0	0.00	5	23.81	7	21.21
3	3	16.67	2	9.52	3	9.09

4	2	11.11	4	19.05	2	6.06
5	2	11.11	2	9.52	3	9.09
6	2	11.11	2	9.52	4	12.12
7	2	11.11	1	4.76	6	18.18
8	0	0.00	1	4.76	0	0.00
9	0	0.00	0	0.00	0	0.00
Low 10	0	0.00	0	0.00	0	0.00
A rich imagination						
High 1	0	0.00	0	0.00	2	6.06
2	2	11.11	4	19.05	2	6.06
3	0	0.00	2	9.52	6	18.18
4	2	11.11	3	14.29	2	6.06
5	1	5.56	0	0.00	6	18.18
6	1	5.56	2	9.52	5	15.15
7	5	27.78	4	19.05	4	12.12
8	1	5.56	3	14.29	4	12.12
9	6	33.33	3	14.29	2	6.06
Low 10	0	0.00	0	0.00	0	0.00
The ability to ask unique questions						
High 1	1	5.56	0	0.00	2	6.06
2	0	0.00	0	0.00	5	15.15
3	3	16.67	1	4.76	0	0.00
4	0	0.00	0	0.00	3	9.09
5	2	11.11	5	23.81	1	3.03
6	3	16.67	5	23.81	1	3.03
7	2	11.11	5	23.81	5	15.15
8	0	0.00	2	9.52	1	3.03
9	5	27.78	1	4.76	3	9.09
Low 10	2	11.11	2	9.52	12	36.36
The ability to remember things						
High 1	2	11.11	1	4.76	3	9.09
2	2	11.11	5	23.81	2	6.06
3	2	11.11	0	0.00	9	27.27
4	4	22.22	5	23.81	2	6.06
5	1	5.56	5	23.81	4	12.12
6	2	11.11	2	9.52	7	21.21
7	2	11.11	3	14.29	2	6.06
8	1	5.56	0	0.00	1	3.03
9	2	11.11	0	0.00	3	9.09
Low 10	0	0.00	0	0.00	0	0.00
The ability to concentrate						
High 1	0	0.00	5	23.81	4	12.12
2	2	11.11	1	4.76	6	18.18
3	3	16.67	3	14.29	2	6.06
4	1	5.56	1	4.76	7	21.21
5	2	11.11	4	19.05	6	18.18
6	0	0.00	3	14.29	2	6.06
7	3	16.67	2	9.52	1	3.03
8	2	11.11	1	4.76	4	12.12
9	1	5.56	0	0.00	0	0.00
Low 10	4	22.22	1	4.76	1	3.03

Overall the Table 5 shows data involving the choice of the most effective teaching method for gifted children. Group A (90%) were convinced the most efficient method was *discussion* compared with Group B (70%) and Group C (> 60%). All Groups (A-94.44%; B-95.24%; C-81.82%) regarded the *problem method* -the way of teaching that requires pupils to find their own solutions to problems presented- as highly efficient. Interesting discrepancies were noted with respect to the *usefulness of practical methods* - the ways of teaching that encourage presentations and doing simple experiments. Group C students (84.85%) laid much more emphasis on them than either Group A (44.44%) or Group B (38.10%). This may underline a conviction held by special education students in Groups A and B that these methods are more experiential and do not require exceptional mental capacities. They may even associate them with education of the intellectually disabled.

Table 5: The Students' Knowledge of the Most Effective Teaching Methods. i.e. the Most Suitable for Working with a Gifted Pupil.

Teaching method	Group A		Group B		Group C	
	N	%	N	%	N	%
Talk (chat)	1	5.56	7	33.33	2	6.06
Practical method	8	44.44	8	38.10	28	84.85
Discussion	17	94.44	15	71.43	21	63.64
Learning through emotion methods	8	44.44	5	23.81	5	15.15
Lecture	2	11.11	4	19.05	0	0.00
Didactic games	6	33.33	4	19.05	18	54.55
Mental activity with a book	4	22.22	7	33.33	6	18.18
Situational. contextual method	3	16.67	10	47.62	19	57.58
Problem method	17	94.44	20	95.24	27	81.82
Brainstorming	12	66.67	11	52.38	24	72.73
The case method	8	44.44	5	23.81	11	33.33

Table 6 shows responses regarding knowledge of institutions established to help highly gifted children. Group A knowledge of this topic was at the highest level. Over 65% of the students in group A mentioned MENSA and 55% noticed the role played by *foundations* in this context. Students in Groups B and C seemed most aware of psycho-educational counselling centers.

Table 6: The Students' Knowledge of the Institutions for Gifted Children.

Institution	Group A		Group B		Group C	
	N	%	N	%	N	%
Counselling centres	6	33.33	9	42.86	17	51.52
MENSA	12	66.67	0	0.00	4	12.12
Foundations	10	55.56	0	0.00	8	24.24
Cultural centres	0	0.00	3	14.29	1	3.03
Other centres	0	0.00	0	0.00	1	3.03
Societies. associations	4	22.22	0	0.00	2	6.06

Table 7 provides statistical data for Groups A, B and C based on students' self-evaluation of their readiness to work with a highly gifted child. The analysis of variance (ANOVA result), the means calculated for the three groups and alpha levels of the LSD (least significant difference) test between groups comparisons are included in the table. Snedecor's F test value was at a highly significant statistical level. Furthermore, marked differences were observed between Groups A and C, as well as B and C.

There was no difference between groups A and B. Taking a look at the means and alpha levels of the LSD test, we could state that the subjects representing the two special education groups (A and B) achieved higher scores in terms of how they perceived their preparation compared (Group C), i.e., non-specialists (see Table 7).

Overall, the degree of preparation for all three groups was not considered very high, suggesting caution when interpreting the students' self-evaluation of readiness to work with a highly able child. The means for Group A and B only reached the level of 3 points, whereas the mean for Group C was even below 2 on a 10-point scale. The scores of Group C non-specialist students were much lower than those in Groups A and B. Perhaps the students in group C realise that working with such a child is a challenge they may not be able to accept. Students in Groups A and B felt more confident about their competence perhaps having a better understanding of the issues concerning gifted children.

Table 7: The Students' Perception of their Level of Preparation to Work with a Highly Gifted Child.

The students' evaluation of their preparation	ANOVA result		GR	Mean	Group comparisons	LSD test p
	F	p				
	8.438	<0.0005	A	3.167	A - B	n.s.
		B	3.000	A - C	<0.0007	
		C	1.878	B - C	<0.001	

$df_1=2$, $df_2=69$; n.s. – non significant.

The next variable to be investigated was readiness to work with a gifted child. The relevant data may be seen in Table 8. Students in groups A and C responded positively much more often than their peers in group B. In fact, positive responses were rare in Group B compared to Groups A and C. The question arises: Do these findings contradict those shown in table 7? It seems that the answer to this question should be negative. The feeling of readiness to work with an exceptionally gifted child is one thing, but expressing the willingness or desire to work with him or her in the future is another. For example, students studying the education of the maladjusted – Group B, when asked: "Would you work with a highly gifted pupil in the future?" responded: "It would be an interesting job" but "It would be better for us to work with the socially maladjusted, that is, in accordance with the specialisation we have chosen." On the other hand, Group A students of special education scored their readiness at a higher level and often responded positively to the question concerning their future work with a highly able pupil.

Table 8: The students' Readiness to Work with a Gifted Child in the Future.

The responses	Group A		Group B		Group C	
	N	%	N	%	N	%
Yes	14	77.78	8	38.10	27	81.82
No	4	22.22	13	61.90	6	18.18
Total	18	100.00	21	100.00	33	100.00

Concluding remarks and discussion

In our study, those training to be teachers of the visually and mentally disabled children, compared to students of other groups:

- Demonstrate a wider knowledge of the gifted pupil's qualities and traits.
- Prefer more reliable to less reliable psychological methods of identifying the gifted.
- Show a high level awareness of the adjustment difficulties of the gifted particularly concerning conforming to group standards.
- Are more precise about defining the knowledge base for working effectively with a gifted individual.
- Are able to make better choices of those methods which nurture special educational needs of highly gifted children.
- Know more about institutions set up for exceptionally gifted children.
- Express a degree of readiness to work with a gifted pupil that is much higher than that of other students.
- More often claim that they are willing to work with a gifted child.

Comparing our results to the findings obtained by Świrko-Pilipczuk (2001) with a sample of University of Szczecin students, it needs to be mentioned that the students in our groups valued more the effectiveness of psychological, rather than educational assessments made by teachers when identifying a gifted child. The study by Świrko-Pilipczuk (2001) indicated students' methodological knowledge of working with gifted pupils is *rudimentary*. In our research this fact was not confirmed. Students in all three groups made wise choices, indicating that problem methods as highly valuable enhancements in the education of gifted children.

However, our findings relating to the level of self-evaluation of the students' preparation to work with a gifted pupil concur with the results of the Świrko-Pilipczuk (2001) study. Both in our

research and the above-cited research, overall, it is rather low. However, the students of special education scored highest in terms of their knowledge and skills necessary to work with a gifted pupil. Perhaps it may be assumed that the inclusion of subjects in the special education syllabus designed to prepare the students to work with children afflicted with a wide variety of disabilities, impairments, disorders or difficulties may be a crucial factor in terms of fostering the teacher's readiness to work with a gifted pupil.

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Anxiety in Gifted Female Students in the Kingdom of Saudi Arabia

Abdullah Aljughaiman and Mei Tan

Abstract

This study seeks to identify the extent of anxiety among gifted girls in Saudi Arabia and, further, to determine whether differences in anxiety levels exist according to grade. The study sample consisted of 66 female 6th and 7th graders, 11 to 14 years old, attending public school enrichment programs for gifted students in Jeddah Province, Saudi Arabia. The author assessed levels of anxiety among gifted students to ascertain whether these levels were above the average levels of anxiety as defined by the scale used. Differences were examined according to grade level using a *t*-test. The findings indicate that levels of anxiety in gifted girls are higher than the average defined by the scale. Furthermore, results of the study indicate that levels of anxiety in gifted girls tend to be higher in earlier grades, i.e., the degree of anxiety in gifted 6th grade girls is higher than that of gifted 7th graders.

Keywords: Gifted, gifted girls, emotional needs, anxiety, anxiety and giftedness, gifted programs.

Introduction

The intellectual, psychological, and social needs of gifted students often differ from the needs of their chronological peers (Alnafe'i, 2001; Renzulli, 1992; Whitmore, 1980; Whitmore & Maker, 1985). This category of students therefore requires attention carefully tailored to those needs. Without this attention, potentially detrimental outcomes may result, not just for gifted students but for society at large—present and future (Davis & Rimm, 2004).

Care for the gifted amounts to more than merely aiding in the development of intellectual and educational ability. It also involves providing access to various advisory, social, and psychological services. Experts in the field consider this sort of attention foundational to positive intellectual growth and the means by which gifted individuals are most enabled to utilize their capabilities and energies constructively for their own good as well as for the good of society (Silverman, 2000).

One intriguing aspect of gifted is that their high intellectual ability frequently conceals the various psychological problems to which they are prone. This can be misleading to parents and educators who may conclude that gifted students enjoy a high measure of psychological health and that therapeutic interventions are unnecessary (Rimm, 1995).

One such psychological problem suffered by gifted students is a relatively high measure of anxiety. Anxiety in gifted individuals appears to spring from many factors primarily rooted in their distinguished intellectual abilities, e.g., attempts to compete with other students in order to remain at the top, desire to fulfill aspirations others have for them, a persistent inclination towards self-achievement, and a love of impressing others with their accomplishments. Above all, there are the various extrinsic pressures to excel in many activities and in many fields.

In investigating the concept of anxiety, it is evident that the presence of one or more of its symptoms, whether moderate or acute, to some degree inhibits full interaction with, or fosters maladjustment to, society (Okasha, 1992; Mosa, 2001). A child possessed of superior intellectual abilities is vulnerable to particular problems that may ultimately lead to his or her experiencing some symptoms of anxiety (Davis & Rimm, 2004).

The present study attempts to gain some understanding of the levels of anxiety in gifted children by looking at levels of anxiety in a sample of gifted girls in the Kingdom of Saudi Arabia. The study attempts to shed light on the following important issues: The extent to which anxiety exists in gifted female students in the Kingdom of Saudi Arabia, and how they compare to the average levels of anxiety indicated by the scale used; and how these levels of anxiety relate to educational stage.

These issues are of special interest to teachers and advisors working with gifted students in the schools as they underline the importance of providing gifted students with appropriate remedial,

preventive, and developmental advisory assistance. Also, the information presented here might break fresh ground in this field of research in different regions in the Kingdom of Saudi Arabia and other Arab countries.

Findings of this study need to be viewed cautiously given the limitations of the sample—a small n of a single gender, drawn from one geographical area. It is also limited by the fact that only a single measure of anxiety was used, and that relative levels of anxiety are determined by the average according to the scale only; no control population was measured. The study also did not investigate any issues regarding the causality of anxiety with respect to the sample.

Many studies (Dobson, 1985; Fisher, 1996; Horwitz, 1986; Ma, 1999; MacIntyre, & Gardner, 1991; Onwuegbuzie, 1998) have dealt with the relationship between anxiety and other variables (e.g. anxiety and depression, language anxiety, math anxiety). A few studies examining gifted students and their attributes have mentioned their potential psychological difficulties (Brown, 1993; Delisle, 1992; Silverman, 2000). However, no studies focusing specifically on the issue of anxiety in gifted students have received proper attention in the KSA.

According to Brown (1993), who analyzed issues considered most significant when giving psychological guidance to gifted students, the gifted population can be characterized by advantageous and disadvantageous attributes. She began by characterizing the gifted student according to the various definitions associated with "giftedness." For example, their mental ages are higher than their chronological ages; they are distinguished academically; they learn easily; they have a talent or a group of special talents in addition to other abilities; they are more comprehensively aware; and they have a broader cultural knowledge than most average students. Brown (1993) then recommended that gifted programs of any kind should pay particular attention to study skills, effective time management, and issues related to tension and anxiety. Delisle (1992) and Silverman (2000) list the challenges and difficulties gifted individuals face and that may aggravate potential psychological problems. Anxiety is typical but may be accompanied by social difficulties such as dissociation from friends, adjustment pressures, concealment of skillfulness or distinction for the sake of obtaining peer acceptance, difficulty accepting criticism, resistance to authority and prevailing modes of acceptable behavior, vulnerability to low levels of mental challenge, rejection of routine and repetitive tasks, severe competition, poor study habits, depression and disappointment in the face of daily life.

A review of a handful of studies comparing some specific psychological issues of gifted versus non-gifted individuals (i.e. anxiety, depression, negative self-concept), however, reflects mixed results. In the United States, Beer (1991) studied depression, anxiety, exam anxiety and rigidity in gifted high school students in Kansas. The sample consisted of 27 gifted students ranging from 12 to 18 years. In this study, the degree of depression suffered by the gifted girls was found to be less than average and they scored almost average in the anxiety scales.

Also in the United States, Merrell, Gill, McFarland, & McFarland (1996) compared gifted and normal students using personal symptoms relating to depression, social withdrawal, psychosomatic disorders, and positive and negative emotional disorders as variables. The study sample (N=65), comprised of gifted and non-gifted third through sixth graders, was examined using a list of internal symptoms in addition to an instrument measuring the social and emotional traits in children. Although the study revealed differences between the two groups, i.e., the scores for gifted students were less than for the non-gifted students, these differences were not statistically significant. The discrepancy was attributed to a comparatively elevated sense of competency, credibility, and importance in gifted students.

Two Canadian studies present more negative results. Forsyth (1987) compared gifted children, French Immersion, and regular classes in terms of self-concept, anxiety, and security, using the North York Self Concept Inventory (Educational Research Services, 1971), the State-Trait Anxiety Inventory for Children (Spielberger, Gorsuch, & Lushene, 1970) and the Institute of Child Study Security Test (Grapko, 1957). In this study, gifted students, particularly girls, proved most anxious, had lower self-concepts, and yet felt more secure. Tong & Yewchuk (1996) studied 36 male and female students classified as gifted. After comparing them to a control group of non-gifted students, the researchers found the measure of

anxiety in gifted students higher than in the control group.

Alzahrany (2003) examined problems faced by high gifted students in the Kingdom of Saudi Arabia. The sample consisted of 443 high school students divided into two groups, i.e., those characterized by intelligence and creativity and those who were not. Their ages ranged from 12 to 16 years. One of the most important findings of this study was that students scoring high on intelligence and creativity suffered from psychosomatic problems in addition to those relating to morality, religion, house affairs, studying habits, and uncomfortable career choices after high

school. After comparing highly creative students to those with lower levels, it was found that the highly creative students suffered more than others with regard to the foregoing problems.

Thus, a range of studies conducted internationally looking at the relationships between giftedness and social-emotional indicators of behavior and personality shows somewhat conflicting results. It should be understood, though, that these comparisons can only be made generally as each study incorporated its own conceptualizations of the construct under study, employed different instruments, and worked with different populations.

Method

The Sample

This study sample consisted of 66 female students studying in the Enrichment Program for the Gifted in the schools of General Education in the Governorate of Jeddah, Saudi Arabia. Female students fell into two groups: elementary stage (6th grade) and first year in the middle stage (7th grade). The age group of these students ranged from 11 to 14 years old. Students were selected via the mandated process employed by the Enrichment Program for the Gifted. To enter the program, a pupil has to meet at least three out of five of the following criteria:

- a. Advanced academic achievement (above 90%);
- b. High levels of cognitive ability as determined by the Wechsler Intelligence Scale for Children-Revised (WISC-R; Wechsler, 1974) (above 120);
- c. High academic achievement as measured by the General Aptitudes Scale (Alnafe'i, 2001)– Group Test - (a scholastic aptitude scale) (above 120);
- d. High levels of creative abilities as determined by Torrance's Tests of Creative Thinking (TTCT) (above 120); and
- e. Teachers' nominations based on Renzulli's Scales for Rating the Behavioral Characteristics of Superior Students (at least two thirds of the total score of the selected scales).

Students who are selected to join the Enrichment Program for the Gifted participate in pullout programs twice a week, after school programs once a week and one weekend morning a week. There is also a four-week

intensive summer program. During these programs, students work in groups on projects designed to help them develop and exercise their thinking skills, learning skills and research skills, along with personal skills and attributes such as social skills, self-efficacy, self-confidence, coping skills and leadership. It should be noted that eligibility for involvement in this program commences in the fifth grade.

This study started during the first academic semester of 2006, thus the sample of sixth graders would have received two year of services provided by the Enrichment Program for the Gifted, and the first year of middle school would have received three years of services.

Instrument

The current study used the Scale of Anxiety for Children and Adolescents prepared by Alleili (2005). The scale is calibrated according to the following stages:

Enumeration of the symptoms (responses) of anxiety that have been dealt with in some references such as Zahran (1978), Goodwin (1986), and Hamed (1991). The scale includes four dimensions as follows: the emotional, mental, physical/physiological, and behavioral dimensions. It consists of a 45-item five-point Likert-type scale. After each participant completes the scale, the magnitude of their response is calculated (Maximum=225; Minimum = 45).

A score of 116 is considered the mean for anxiety according to the norms of the scale in its original form; this mean score was

determined using a population in the western part of Saudi Arabia, where Jeddah is located.

Data analysis

The basic framework of this study was based on using the t-test to compare between average levels of general anxiety in gifted female students and average levels in the general population of children and adolescents according to the scale of anxiety used in the present study.

The findings pertaining to the level of anxiety in female gifted students in the

elementary and middle school stages are summarized in Table 1.

As noted in Table 1, there is a statistically significant difference at $p < 0.01$ in anxiety between gifted female students in the elementary stage and those in the middle school stage, indicating higher levels of anxiety in students at the elementary stage.

The mean score of the performance of the elementary groups was ($M = 149.75$), while that of the middle stage was ($M = 132.36$).

Table 1: Differences in Anxiety According to Stage Level.

Name of the Group	N	M	SD	t
Female students of the elementary stage	52	149.75	28.12	2.42**
Female students of the middle stage	14	132.36	12.80	

** t-scores are statistically significant at $p < .01$ level.

Conclusions and discussion

To understand gifted students better, and thereby properly comprehend and serve these students' needs, it is useful to assess levels of anxiety in this population to ascertain its variance from levels of anxiety in typical students.

Analysis of this study's data suggests that the average degree of anxiety in each group of gifted females studied is elevated compared with average levels in the general population of children and adolescents described by the tool used, the mean score of which was determined in western Saudi Arabia. This suggests that female gifted students may face particular problems and difficulties that potentially cause them high levels of anxiety.

This finding concurs with other studies (e.g., Tong & Yewchuk, 1996, Delisle, 1992, Silverman, 2000, and Alzahrany, 2003). Accordingly, it is imperative to work further towards defining these problems in order to help female gifted students, either through remediation or prevention, to become more adjusted to society.

Statistically significant differences in anxiety suggest that gifted female students in the elementary grade are likely to experience higher levels of anxiety than their peers in the middle grade. This may be attributed to

children's inclination in this earlier stage towards separatism, the fact that their social circle becomes larger, and their fear of school (Zahrán, 1977).

It is also important to note that the average degree of anxiety in female students in 7th grade, although lower than that of students in 6th grade, is still higher than the average levels indicated by the scale. This increase may be attributable generally to the number of pressures operating on gifted female students which maintain higher levels of performance.

The lower levels of anxiety in female students in 7th grade compared with their gifted peers in 6th grade may be attributable to the success of the Enrichment Program for the Gifted in the Schools of General Education. This program is perhaps able to decrease anxiety in the students who benefit from the services for two full consecutive years.

This phenomenon may be closely associated with curricula changes that take place as the children spend more time in the Enrichment Program for the Gifted at school. Another reason for the decrease in levels of anxiety could be the growing maturity of the female students and the development of their ability to adjust socially and psychologically.

In conclusion, the variance in levels of anxiety between gifted girls and the average levels described by the scale used, along with the variance in levels of anxiety between gifted girls of different educational stages, indicates the possible psychological and social effects of being gifted, whether they be a result of identification and labeling, self-imposed

performance expectations or expectations imposed by others. This small study makes its contribution as a first step in identifying a situation which may require attention, intervention and remediation so that gifted individuals can be nurtured to achieve their highest potential, in the KSA and elsewhere. Further studies will need to carry this forward.

Recommendations

In view of the findings discussed above, the present study suggests the following:

1. A similar study be conducted using a broader sample of gifted students in different parts of the Kingdom of Saudi Arabia and the Arab world to determine more accurately the extent to which this phenomenon is spread among gifted students in relation to their peers.
 2. Further quantitative and qualitative academic studies be conducted to identify possible reasons for the higher levels of anxiety in gifted students compared with those not identified as gifted.
 3. Investigative studies be conducted on, a) the psychological health, and b) the psychological, social and advisory needs of the gifted in the Kingdom of Saudi Arabia specifically, and in the Arab world, generally.
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Perceptions of Parents with Gifted Children about Gifted Education in Turkey

Bahar Eris; Ramazan Seyfi; and Suna Hanoz

Abstract

This phenomenological study investigates the perceptions and experiences of Turkish parents with children identified as gifted based upon IQ testing. The voices of parents with gifted children have been missing from academic literature in Turkey. The semi-structured interviews conducted with 31 parents from 23 families were designed to find out what advantages and, or disadvantages they associated with being a parent of a gifted child. Results indicated that parents mainly experienced disadvantages arising from the lack of support for gifted education in Turkey. Implications are discussed for parents, teachers and policymakers.

Keywords: Parent perceptions, gifted education, Turkey.

Introduction

In gifted education literature worldwide, it is hard to find the voices of teachers and students participating in gifted programming. It is even harder to find the voices of those who are close to that programming but who do not personally participating in it directly (Matthews & Kitchen, 2007). Research specific to gifted education in Turkey is noticeably scarce. Little quantitative and virtually no qualitative research with or about parents of gifted children is currently available. What research there is, talks only “about” parents of gifted children (Akarsu, 2001; Ataman, 2004; Davasligil, 2004). It does not document the parents’ understanding of giftedness, challenges and opportunities they associate with giftedness. In fact, published literature on parent views on giftedness is non-existent.

In Turkey education policies for gifted children have fluctuated over time with changing governments and priorities. Since parents are in the best position to express the advantages and disadvantages these policies make to their children’s development and education, it is important to understand their point of view. This phenomenological study, aimed at listening to

the voices of parents whose children are identified as gifted, may help us understand parents’ perceptions of the opportunities and challenges as well as their unmet needs.

It is hoped this research might lead to improvements in policies and schooling practices used specifically in Turkey for gifted children. Additionally, the study may bring about an understanding of parents’ views regarding gifted education practice that is culturally relevant to Turkey. It may also serve to expand any existing international literature by highlighting the commonalities and differences experienced by parents in this region pertinent to the global gifted community.

There are probably thousands of parents all over the country who experience the opportunities and challenges of having a gifted child in unique ways, thus, the cases featured here may not necessarily be wholly representative. However, we hope that the powerful insights provided by the interviews with participating parents will represent a glimpse of the experiences and views of parents with gifted children.

Brief Background on Gifted Education in Turkey

The history of gifted education in Turkey dates back to the mid-15th century. During the Ottoman period well-built, intelligent boys from foreign families were selected, converted to Islam and educated about religion, science and arts at the palace schools known as Enderun to become

top-level state administrators. After the termination of Enderun in the mid-19th century there was no such comprehensive practice in gifted education until the 1960s. At that time there were some low-profile efforts to establish homogeneous grouping and special gifted classes (Enç, 2004).

The Turkish Ministry of Education (MoE) passed a law regarding children with special needs in 1983. A definition of giftedness was included that required an IQ score of 130 or above. However, the law was annulled in 1997 and replaced by a “decree law on special education”. The issues pertaining to its implementation were incorporated into a Special Education Regulation which was passed in 2000. Paragraph V of the Regulation defines giftedness as being based on a single measure (Üstün Yetenekli Çocuklar Komisyon Raporu, 2004) and stipulates the establishment of institutions to cater to the needs of gifted children at elementary and secondary education level.

Today, despite this legislation, in practice there is no systematic effort for differentiated education catering to the needs of gifted students in Turkey. Seventy million people live in Turkey, but there is only one state-run elementary school for the gifted. It is located in the metropolitan city of Istanbul. Furthermore, while half of this school’s population is composed of children identified as gifted based on IQ testing, the remainder are regular students. At secondary school level there are state-run Science High Schools, i.e., Anadolu High Schools and Anadolu Fine Arts Schools. These schools admit students with high intellectual and artistic abilities on the basis of a national achievement exam. The only strategy pursued at MoE level is the development of what are referred to as BİLSEMs (read as bil-sem), centers for extracurricular science and art activities. These institutions cater to gifted children after the 3rd grade of elementary school. There are a total of 45 BİLSEMs throughout the country, but 10 of which are still under construction (Milli Eğitim Bakanlığı, 2008).

There are also a small number of non-governmental organizations (NGOs) striving to fulfill the needs of gifted children. Additionally, some private schools offer within-school opportunities (such as extracurricular arts and sports activities, special science and math classes, hands-on projects) for children identified as gifted through in-house assessment methods. The only official high school focused solely on gifted education is İnanç Türkeş High School, a self-contained private school admitting gifted students from around the country. It does have a particular emphasis on economically disadvantaged students who qualify for scholarships. All institutions offering official gifted programs at elementary and secondary school level admit students based on a minimum IQ score of 130.

RAMs, i.e., Guidance and Research Centers, are nationally accredited and the only institutions officially responsible for the identification of gifted children. They are available in each district. RAMs do not offer education services but act as testing, identification and parent guidance centers for special education in general. Children at both elementary and secondary education levels need a report from RAMs before they can be admitted to gifted education programs. Currently, there are a total of 190 RAMs nationwide (Milli Eğitim Bakanlığı, 2008).

The only undergraduate program for educating teachers in gifted education in Turkey is offered by Istanbul University. The university also offers graduate programs at the master’s and doctorate levels. Anadolu University offers a graduate program on gifted education as well as the Talent Education Program that caters for gifted children and their families in terms of education and guidance services.

The Purpose of the Study and Research Questions

The purpose of this study was to explore how Turkish parents of gifted children; a) perceived the opportunities and challenges of parenting a gifted child in general; and b) determined needs and expectations regarding their children’s education.

Our research questions were:

1. What are the opportunities/advantages of gifted education in Turkey from a parent(s)’ perspective?
2. What are the challenges/ disadvantages?
3. What are unmet needs and expectations?

Method

Site/ Participant Selection

The principal author and two student researchers who had completed a one-semester course on gifted education conducted all data collection and analysis. Mothers and/or fathers from 23 families were interviewed, adding up to a total of 31 parents (see Table 1). Their children were identified as gifted based on a minimum WISC-R (Turkish version, 4th edition published in 1998) score of 130.

Although giftedness may be defined in ways beyond the psychometric, the psychometric definition is employed here because it is the official criteria used in a Turkish education context.

Table 1: Demographic Information of the Sample.

Parent's Name	Interviewee	Age of Child	Gender of Child	Type of School	Parents' Education	Income Level
A.S.-B.S	Both Parents	6	F	Regular State School	University Graduate	Upper
B.K.	Mother	6	M	Private School	University Graduate	Middle-upper
G. A - F. A.	Both Parents	6	M	Private School	Master's Degree	Upper
F. E.	Mother	8	F	Regular State School	University Graduate	Upper
İ. O.-M.O.	Both Parents	8	F	State Gifted School	University Graduate	Upper
N.C.	Father	8	F	Regular State School	High School	Middle
H. A.	Father	8	M	State Gifted School	Master's Degree	Upper
R.B.	Mother	8	M	State Gifted School	Master's Degree	Middle
F. S.	Mother	8	M	State Gifted School	Two-year Degree	Medium
N. T.	Mother	9	F	Private School	University Graduate	Upper
Ö.C. - B. C.	Both Parents	9	F	Regular State School	University Graduate	Upper
M. S. - A. S	Both Parents	9	M	State Gifted School	University Graduate	Middle-upper
S. M. - M. M.	Both Parents	10	M	State Gifted School	Primary School	Middle
G. T.	Mother	10	F	Regular State School	Master's Degree	Upper
C. A.	Mother	11	M	Private School	University Graduate	Upper
F. A.	Mother	11	M	Private School	University Graduate	Middle
Z. Y.	Mother	11	M	State Gifted School	High School	Lower
B.U.	Mother	6	F	Private School	University Graduate	Upper
H.C.- Hu.C	Both Parents	11	M	State Gifted School	University Graduate	Upper
H. O.-M.O.	Both Parents	8	M	Regular State School	University Graduate	Upper
M.D.	Mother	9	F	Regular State School	Master's Degree	Upper
S.T	Mother	9	M	Regular State School	Not Available	Lower
Z.P.	Mother	11	M	State Gifted School	University Graduate	Middle

In locating participants, the NGO known as TÜYÇEV, or Foundation for the Education of Turkish Gifted and Talented Children, was very helpful. It currently has 1200 subscribers, many of whom are parents whose children fit the selection criteria. TÜYÇEV is open to everyone interested in gifted education and provides guidance for parents of gifted children from all over the country free of charge. This source also enabled our access to parents representing a diverse array of cultural, educational and economic levels.

Eligibility for participation was founded on; (a) having an elementary school-aged child with a minimum IQ of 130 and not necessarily enrolled in a special program for the gifted, and (b) a willingness to participate as determined by a response to our research invitation within a specified deadline. All participants were from Istanbul except two couples from Bursa and Giresun provinces.

Data Collection

Initially, three pilot interviews were conducted in order to refine our interview questions. After this process, 2-hour semi-structured, “qualitative in-depth interviews” (Marshall & Rossman, 1999, p. 108) were conducted with available parents at their home or a location of their choice.

The interviews were transcribed throughout the data collection period. Participants were contacted for any additional questions or clarifications after the interview was transcribed. All interviews were audiotaped with the participants’ permission.

The questions started out as open-ended as possible and were supplemented by probing questions as needed. Parents provided documents if and when available. Data collection lasted from May to October 2007. Researchers held weekly meetings to exchange experiences, ideas and files.

The style of data analysis can be described as “emergent intuitive” (Marshall & Rossman, 1999) since there was a constant editing and re-formulation process until meaningful categories of data emerged. The goal of data analysis was to take participants’ statements and restructure them into meaningful “wholes” (Erlandson, Harris, Skipper & Allen, 1993). Considering the plurality of perspectives and multiplicity of possible meanings parents’ words could engender and recognizing reliance upon the principal researcher’s perspective alone might impede full analysis of all the possibilities, cross-analysis by all three researchers was used to minimize bias. Conclusions were drawn only when a strong consensus of opinion expressed by the participating parents. Whenever a response was limited to a minority, this was made clear in the text or categorized the response under “other”.

Results

Direct quotes in this section are followed by the initials of the interviewee, interviewee’s relationship to the child, gender of child (M or F), and age of child in the same order.

Disadvantages Outweighing Advantages

The most obvious result of the study, from the perspective of the participating parents, is that disadvantages regarding gifted education in Turkey far outweigh advantages. The parents identified available institutions and, or organizations such as TÜYÇEV, the state elementary school for the gifted or the BİLSEMs and RAMs, as offering the major opportunities, e.g., courses, seminars and extracurricular activities. Istanbul University was viewed as the most competent institution presently focusing on gifted education since it offered theory and practice-based programs at the undergraduate and graduate levels.

Stephens (1999) asserts that workshops can help in disseminating information about gifted education and introduce parents to other parents of gifted children from the same geographical area. In our study, seminars and workshops were seen as beneficial by parents since they served to complement their parenting skills, helped them avoid negative behaviours and improve themselves about how to approach their gifted child. They facilitated their learning about available resources and books, while also providing a chance to network with other families sharing the same situation. A few

parents mentioned that such events increased their self-confidence.

Parent’s Concerns about Gifted Education

In Keirouz’s (1990) analysis of literature on concerns of gifted parents family roles, parental self-concept, family adaptations, neighborhood and community issues, and educational concerns were identified as the main areas. The findings from this research concentrate around educational system concerns, teacher-related concerns, neighborhood and community concerns and parental self-concerns.

Parents in this study criticized the lack of a national policy regarding the education of gifted children and urged immediate action. They emphasized that such a policy should not be influenced by changes of government. Another priority for action was the inclusion of gifted education within the framework of special education. There was a consensus regarding the lack of a state policy hindering the identification of children with gifted potential and resulted in precious potential for the future of the country:

The MoE must first include this within the framework of special education. And the policy must transcend the government level

and be a policy of the Republic of Turkey.... We keep repeating that human resource is the most important, we live in the information age, and we still neglect this area... If these children are different and if they are to contribute to their country and to the world, they must be provided with appropriate teachers and with special education status. (R.B./father/M/8).

Notwithstanding a consensus on the need for a “supra-governmental” policy, the underlying rationale varied. Some parents complained about the paucity of public institutions for the gifted and asserted that the good private schools were unaffordable. On the other hand, some parents lacked trust in the “commercial-oriented, interest-seeking” private institutions and preferred the state to plan, implement and monitor gifted programs. Yet another view was that the state must assume responsibility for gifted education and change its image as an institution with “dusty shelves full of outdated information” (F.E./mother/F/8). On the other hand, one parent thought the state should not handle all the burden in such a populous country and argued that “we should be the ones to identify our children and be very determined as parents” (N.T./mother/F/11).

Faced with the lack of state policy and action, many parents expected private sector institutions to provide financial support and criticized private schools for being negligent. Since private schools are more interested in building a successful image, some parents asserted the scholarship would be mutually beneficial since the presence of “gifted” children would boost the school’s image while the child would gain from the scholarship.

Furthermore, some Islamic religious orders tracked children and tried to attract families by offering financial support and well-equipped education programs. Four families who were approached by such groups preferred to stay away regardless of the extent of support, thinking their children could be brainwashed by religious ideologies: “They spare a noteworthy budget for [gifted education]. They’ve established private courses and schools in every province and these institutions are fed by religious sects. The state is absolutely not up to par” (O.C./father/F/9).

Due to the lack of public or private support, financial difficulty emerged as a serious disadvantage for the majority of the parents. They had to stretch their budgets to be able to cater to their children’s needs. Social events occasionally organized by private institutions

such as museums or banks or other extracurricular activities outside the school were too costly. One exception was the Scientific and Technological Research Council of Turkey (TÜBİTAK) that provided full non-conditional scholarships for their summer camps to children whose families could document their income.

Another system-related concern centered around the scarcity of schools for the gifted in Turkey. Respondents unable to enroll their children in the few organizations available for the gifted either tried to get scholarships from private schools or they chose grade skipping or just continued sending their children to the regular public school while externally supporting their child’s education. On the other hand, parents whose children were placed in one of the handful of institutes for the gifted were worried about the future since there are not many options available at the high school level.

A primary concern for parents whose children attended a public elementary school for the gifted was the fact that children labeled as gifted shared the classroom with children not labeled as such and for whom the pace of instruction is slower or much easier. They believed such placement was doing harm rather than good to both groups of children. The parents whose children attended a regular school wanted their children to be placed with other high-IQ children for their intellectual development.

Brain Drain

Given the lack of favorable conditions for the development and use of potential, parents deemed brain drain an inevitable consequence. They blamed the state for allowing this situation and saw it as a waste of national intellectual wealth. They linked the lack of inventions or technological advancements in Turkey to the state’s limited efforts on gifted education:

When a world scientist receives applause abroad we learn that he is Turkish in origin. He goes abroad and becomes a citizen of that country and we applaud him from far away. This will continue as long as the state pays no serious effort on this issue. (Z.Y./mother/M/12).

Respondents talked enviously of the practices in countries with established systems for gifted education, especially the US, Russia, Canada and the Nordic countries. Parents considered sending their children abroad if they could find the opportunity so that their children

would be “saved”. They had the perception that state institutions in other countries cared more about children and that there was earlier intervention on gifted education. Parents also associated this situation with the availability of financial resources in those countries. However, one parent argued that rather than financial availability the mentality mattered most. Despite the fact that there is a lack of a coherent national strategy in the US regarding gifted education and no funding for gifted programs in some states (NAGC, 2009), this parent had the perception that the US was more advanced in terms of the mentality regarding giftedness.

All for the Disabled, None for the Gifted

Another notable conception was that educational resources and programs associated with disability significantly outweighed those for gifted education. Furthermore, feelings of compassion and sympathy people had for children with disabilities were not shown for their children. While the Turkish MoE, indeed society at large, viewed gifted education as violating equality of opportunity, parents believed inequality rested in the failure to provide an appropriate education for gifted children. They perceived the general public resented attempts to promote gifted education since these children were perceived as the “lucky ones” who “can succeed anyway”:

MoE does not support gifted education worried about breaching equality of opportunity... This is not something the society approaches compassionately. That’s why it is harder to find resources. They say “you are already lucky, what else do you want?”...Giving everyone the same education rather than what they really need... that’s inequality too, but they overlook this point. (M.S./mother/M/9).

Teacher-related Problems

Denial of a child’s giftedness by teachers, indifference, and a reluctance to cater to the child’s needs through differentiated curriculum were attitudes most worrisome to parents. With the prevailing belief exists among teachers that gifted children will achieve irrespective, parents fear it will lead to their child’s potential remaining unrealized. There also seemed to be a general dissatisfaction with teachers’ level of knowledge, even in the public school for the gifted. One father wrote: “The lack of a well-equipped teacher is as nightmarish as having a toothache in the middle

of the night with no doctor around” (A.S./father/M/9). Parents perceived teachers neither believed in the project nor were well-selected or trained in the topic. The guidance and counseling service did not seem to be the solution either. Two parents asserted the guidance teachers and counselors had no clue about giftedness or the presence of such children. Yet another parent shared that her child’s teacher felt like he had to please all the parents and dealt with the giftedness topic secretly.

Shortcomings in teacher education, particularly in training teachers for entry level to the profession and supposed specialization in giftedness, were identified by the parents. Parents were unhappy to know low scoring students in the nationwide university entrance exam, for the lack of anything better, could still qualify to teach. Parents considered it unacceptable to commit their children’s future into the hands of such individuals. Some suggested that upon graduation prospective teachers should be tested to confirm their suitability for the profession. Several parents viewed teaching as a vocation requiring genuine love for children and sufficient levels of general intelligence. An idea was fielded calling for intelligence testing of teachers along with other psychological assessments before their being allowed to practice the profession.

A scarcity of teachers specializing in gifted education was also an issue. Since the state randomly appoints teachers to public schools on a nationwide basis, the public elementary school for the gifted cannot employ teachers specialized in the field. Further, from the parents’ perspective, the only two graduates of gifted education working in the school appeared to lack experience, while the more experienced teachers have little information about gifted education. Parents believed that training in gifted education must be mandated for all teachers, including classroom teachers, guidance teachers and branch teachers.

Community-related Problem

Unfavorable community reaction towards a child’s giftedness e.g., by neighbors, parents of children not labeled as gifted, other children, academicians, and senior government officials, was common concern. Use of hurtful adjectives, e.g., psychopath, introvert, computer nerd, abnormal, Rain Man, or hyperactive, were used to describe these children. When anticipating such reaction many parents found it preferable to hide their child’s giftedness. In

some cases, other parents ceased communicating with the parents of the gifted child since they perceived giftedness as a case of abnormality:

I still cannot tell anyone that my child is gifted. Whichever words I may choose to describe the situation I make a mistake one way or another, because the other person is somewhat irritated or gets uncomfortable and stops talking to me. ... [Giftedness] is usually not great news for a parent to prance about. (H.C.-Hu.C./ mother-father/M/11).

People usually hold high expectations of, and put a lot of pressure on, a child labeled as gifted. Sometimes they try to give some quick “test” to judge the child’s level of giftedness. Or if a child misbehaved, they would overreact, even become furious. Any other child engaged in similar behavior might not attract such attention.

Parents were also disturbed by use of a label. In Turkish, “gifted” translates into “children with superior intelligence.” The term “superior” was bothersome to some parents. One disappointed parent wrote:

After going to the state school for the gifted my child learned about terms such as gifted, superior, inferior, retarded in a month.... And he has been asking about his IQ score for the last one month, because his friends IQ scores were such and such. (C.A./mother/male/11).

As for the parents themselves, apprehension, feelings of inadequacy and cluelessness were the most common concerns. Worry was the common initial reaction to the news on their child’s giftedness. “Parents need more rehabilitation than the children” (M.S./mother/M/9). Negative feelings parents associated with their experience included: stress, loss of motivation (to do something about it), feeling burdened, physical and psychological exhaustion, a sense of heightened responsibility, and feeling that they are causing regression in their own child.

Institution-related Problems

Various problems, particularly with respect to the RAMs, were mentioned several times by the parents. Complaints included: difficulty making appointments due to a busy schedule, shortcomings regarding the staff’s knowledge of giftedness and a non-standard approach towards parents. One parent whose child was exhibiting gifted characteristics and

was referred for testing described her experience. Before any testing took place she was informed that her child’s behavior could be random and not necessarily a sign of giftedness. She was refused an appointment. Interestingly, another parent with *no* referral was more insistent and managed to get her child tested.

The fact that testing depended upon a referral from a teacher was another problem in this context because typically classroom teachers were more knowledgeable about disabilities than gifted abilities. Consequently very few students with gifted characteristics were referred for evaluation.

BİLSEMs were considered as being too few in number and catering to children only at the 4th grade, which is perceived to be too late. “Do these children suddenly turn gifted after 4th grade? Can someone explain the logic behind that?” (B.U./mother/F/6).

Other Disadvantages

One major problem mentioned was the paucity of advanced educational material in Turkish, be it original or translated. Existing translations lacked appeal since they fit neither Turkish society nor its education system. Although the Internet seemed to be the major source of information for most parents, texts on the Internet were simply reiterations and, in any case, the English language texts could only be read by the few parents who knew the language.

Lack of collaboration between parents in lobbying the government was another issue. In the opinion of one parent, it was essential for all stakeholders involved, i.e., the NGOs, universities, and others in the private sector, to cooperate in order to realize change. Lack of early childhood institutions for the gifted, lack of child-friendly settings, such as interactive museums and the like, lack of general awareness about giftedness and lack of continuity of congresses organized by the government were other points raised by various parents.

Finally, some found the language used in the seminars a hindrance to understanding. A parent from a lower sociocultural level attended a seminar but she found the language too complicated for her to follow: “There was no one like me. Just those parents who are well off... I wish there were more families like ours. I wish things were explained to us more clearly” (S.T./mother/M/9).

Discussion

The experience of the parents in this study reflects what Rash (1998) promises; "Parents of gifted kids must be prepared to be misunderstood and undervalued, and that they are continuously discounted" (p. 16). They suffer from a general lack of support for gifted education from both state and private sectors in Turkey, especially given their main expectation of a state-level, super-governmental policy on gifted education.

Based on current feedback, the Turkish MoE appears not to regard the topic of giftedness as a priority - a situation reminiscent of the US (Shaunessy, 2003). Parents in both countries observe mandates and programs for disabled children outnumber those for gifted students. The few NGOs seem helpful when there is nothing else, but such institutions are overburdened and fall far short in meeting the needs of all applicants. Parents distrust the agenda of religious groups attempting to fill the support gap by offering education free of charge for their children. For the most part families have to rely on their own resources and given insufficient levels of awareness and support they must shoulder the financial and emotional burden in order to education their children appropriately.

Although legislation exists with respect to the education of gifted children in Turkey, in practice it is ineffective. The failure of parents to mention it also suggests they are unaware of its form or existence. It may therefore be helpful to raise awareness about their legal rights and encourage them to lobby for action together with NGOs and other stakeholders (Kiger, 1998). Davis and Rimm (1985) argue that a vocal and visible support group is necessary to attract attention to gifted education (pp. 374-375). According to Clark (1997), parents should "organize first, then become informed" (p. 177; Rash, 1998). Furthermore, to increase local, state, and national support, parents, teachers, and other advocates need to become knowledgeable, constantly use positive public relations strategies and collaborate with experts for effective advocacy (Dettmer, 1991; Karnes, Lewis & Stephens, 1999; Kiger, 1998). In Turkey specifically, the several small-scale NGOs may need to join hands to become a vocal and visible advocacy group.

Seminars, workshops and congresses are considered important sources of information by the parents. The first national seminar on gifted education was organized in 2004, however, according to the Director of Special

Education at the Turkish MoE, since "it was too difficult to organize the first seminar ... we don't plan the next one at this point" (personal communication, November 13, 2007). Regardless of where or when the next event will be, if the main audience is parents, it seems crucial to incorporate a level of language that reaches out to all parents regardless of their sociocultural background.

As in other research, teacher-related concerns clustered around negative attitudes towards or lack of knowledge about giftedness. The benefit of training teachers in giftedness is demonstrated through research (Fetzer, 2005; Hanninen, 1988). Stephens (1999) suggests issues pertaining to families and parents of the gifted can be integrated into already existing coursework required for teachers of the gifted. Additional benefits may be found by providing constant support for teachers through in-service training. Since teachers engaged in guidance and counseling appear to lack appropriate knowledge, they must also participate in such training. Furthermore, in line with Van Tassel-Baska and Johnsen's (2007) argument with respect to preparing teachers in the US, it may help to examine and learn from standards developed around special education issues. Lessons learned elsewhere will help reframe policies and rules that presently undermine the quality of gifted programs and services in Turkey.

Collaboration between the more experienced teachers and less experienced new graduates in gifted education through exchange of experiential lessons, updated formal information and strategies for best practice may be instructive. One way suggested by parents to solve the specialization issue in Turkey is to change the random teacher appointment procedure and appoint graduates from the university gifted programs to teach in schools setup for gifted education.

Given the paucity of knowledge regarding giftedness possessed by teachers, sole reliance on their referral for students to get tested becomes questionable. Hoge and Cudmore (1985) propose teacher referral is crucial, providing; a) they are familiar with the purposes of identification, b) know how to administer whatever rating instrument is used - if any, and c) have an accurate definition of giftedness in mind. Beyond the teacher, it may help to include other stakeholders in the identification process. Feldhusen (2001) states that long range observations by parents,

teachers, and grandparents can provide the information needed to clarify the nature and levels of children's talents and help develop effective educational programs and services.

RAMs are too busy to fully cater to demand and lack a standardized approach to parents who bring their child to be tested. Given the busy schedule, a separate department for the testing of giftedness may reduce the burden. Based on parents' comments, it may also be helpful to increase the staff's awareness about giftedness in general and offer training in ways to communicate with parents.

Furthermore, the community seems to have a negative perception of giftedness since it is perceived as being linked with stereotypes or abnormalities. People use the word "gifted" without giving much thought as regards the potentially unfavorable repercussions its use may have on a child, e.g., difficulties such as lower adjustment in self-reports and peer-report measures (Cornell, 1989; Janos, Fung & Robinson, 1985). In Turkish, the word "gifted" is quite value-laden and creates a hierarchy among children. It implies the use of the adjective "superior" as a prefix to intelligence and talent, creating a hierarchy among children. Deletion of the adjective in reference to these children may help alleviate the problem if not

eliminate it altogether. The interchangeable use of high IQ and giftedness in the Turkish public education context (considering that IQ score is either the only or the major criterion in admission to gifted programs) is another problematic issue that can be discussed in further studies since it is not a direct finding of this study. It should be noted that there are a few private schools which employ alternative, multidimensional interpretations of giftedness.

There were some positive developments in the field of gifted education during the course of the study, e.g., the inclusion of the pilot elementary school for gifted children under the status of special education. In addition, in line with the research findings, we started a translation project at TÜYÇEV in order to provide more resources available for parents. Several academicians, including the authors, lectured to parents during a one-week interactive seminar in an attempt to raise an awareness on major topics about giftedness. It was organized by TÜYÇEV and was free of charge. The seminars will be repeated on a yearly basis. A next step may involve gathering the participants of this study to discuss the findings and brainstorm possible solutions to problems identified during the study. Other stakeholders may be invited to such forum for a more productive outcome.

Limitations

This study has several limitations. Although identifying parents from a national foundation for the gifted enabled us to access a diverse pool of parents, it also imposed limitations. It meant having to conduct the study in a single site and with only 31 parents, most of whom were from Istanbul and with high levels of education. The fact that the participants were mainly from upper-middle class families with higher socioeconomic levels is an interesting finding in itself. However, the responses may not be representative of parents of gifted children who may have no access to institutions such as TÜYÇEV due to lack of awareness or different socioeconomic levels. This may indicate the need to find ways to access to a broader spectrum of parents. It is also possible that parents with access but outside of the study may hold different opinions from those represented here. Furthermore, we talked only with parents of children who were identified through tests and there is need to hear voices of parents of those identified through other measures. Nevertheless, our hope is that the

experience of the participating parents will be informative for parents in general – a main goal of the study. Even though our sample of 23 families is far from representative of the majority, we believe insights from a small number of parents may still spark some thoughts and ideas for all stakeholders in the process.

While it is true the majority of participants are from Istanbul, this does not necessarily constitute a limitation. Istanbul boasts one fifth of Turkey's total population. It is considered a microcosm of the country since there is a cross-section of people from all cultural, ethnic, economic and educational backgrounds. It is also true, however, that parents outside the area may experience location-specific opportunities and challenges and in that sense we are presented with a limitation.

Another limitation is that only parent perceptions are covered here. Since parents talk from the viewpoint of their experiences and interests, to achieve a fuller, perhaps less bias

picture, it may help to conduct future studies with teachers, policymakers, as well as the

children themselves.

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The Talented Arab Girl: Between Tradition and Modernism

Hanna David and Mahmood Khalil

Abstract

Since Israel's independence in 1948 Arab females were the main beneficiaries of the law of mandatory education. Arab women aged 65+ have, on average, less than one year of formal education. Their granddaughters, aged 18-24, have about 12.5 years of schooling – a number that increases each year. As in many Arab countries, Arab girls in Israel tend to enhance their education while observing the rules of tradition and acting within the socially accepted norms (David & Khalil, in preparation). Unlike in many Western societies, in Arab society in Israel – Muslim, Druze and certainly Christian – educational aspirations are not perceived as contradicting religion. Thus, a young educated Arab woman has no restrictions on her education per se. If she is judged by significant others it is only her behaviour that is criticized. As long as she does not behave against the strict laws of "family honour" she is encouraged to excel, even in co-educational programs. Her achievements, high intellectual abilities, good grades and higher degrees make her family proud (Abed-el-Kader Yichya, 1995; David, 2002, 2007). This paper examines a few areas where Arab girls excel, e.g., in school, in the professions and in social achievements. Also included is an analysis of their hardships and suggestions regarding potential ways to overcome or partially overcome these hardships.

Keywords: Arab girl, Israel, Palestine, gifted education, social achievement.

Historical Background

The education of the Arab girl in the Middle East has gone through several stages since the 19th century. A brief review of the main changes that have taken place over the years will clarify the historical path from illiteracy and ignorance to high education and substantial achievements.

The Ottoman period

Highly educated Arab women have been historically documented from the 15th century. We can find models of highly able, educated Arab women in the Arab literature of the Ottoman period. Palestinian women have been substantially influenced by the development of education in the Arab world at the end of the 19th century.

One of the main results of the rise of female education was the expansion of girls' private schools; many of them belonged to one of the Christian churches.

Thus, the end of the 19th century can be characterized by a significant change in the status of Arab women and their education, initiated by male Arab men of letters and philosophers. Egyptians Rifa'ah Rafi' at-Tahtawi [1801-1873] (Encyclopedia Britannica online), Abdallah Nadim [1845-1896] (Herrera, 2002), and Kassem Amin [1863-1908], were among that group and so it is no wonder the first girls' school in the Arab world was established in Egypt. Muhammad Ali Pasha [1769-1849], who

took control of Egypt in 1805, started a girls' school in 1831 as part of the steps he took towards modernizing Egypt.

A little later, in Lebanon, Mrs. Elizabeth Bowen Thompson opened the first co-educational evangelical school in 1860. Mrs. Bowen's institutions soon spread to other parts of the Arab world. It is notable that one of the main guiding principles of the school remains, i.e., "To challenge those who find academic work easy" (Lebanon Evangelical School for Boys and Girls, 2008). Clearly the founder of girls' education in the Middle East considered providing for the needs of talented students, both boys and girls, an important part of her mission while bringing elementary education to the whole population.

The transition: The end of the Ottoman period and the First World War

Between the years 1904-1916, until the beginning of the British mandate, a few non-profit organizations were established that focused on the status of the Arab woman in general and her education in particular. It was

the commencement of the British Mandate that represented the most crucial and influential time with respect to the educational possibilities for Arab women. Even so, while upper middle class and high class women were the main benefactors of the social-political change influencing even the traditional working pattern of Arab women, the majority of Arab females still had no access to education.

The British Mandate

Bowman (1942), the officer in charge of education in Palestine in 1920-1936, declared that Arab female teachers tended to marry very early as they were highly appreciated by Arab men interested in educated women. The double-edgedness of this fact is quite clear: on the one hand, women were highly motivated to get more education, not just for themselves, but for the well-being of their families who profited from their education. On the other hand, once married it was not socially acceptable for women to work out of home, therefore they were only able to teach the next generation for a short period of time despite the investment in their training.

The influence of the Christian institutions on the education of Arab women was impressive. All staff members teaching in these institutions were Christian, but the

percentage of Muslim girls and young women students increased each decade. The teachers, headmistresses and inspectors served as role models for their Muslim (and Jewish) students. One of the immediate results of this blessed influence was that many students chose newly available professions in addition to teaching, such as social work, a variety of clerical jobs and commerce. A minority of the graduates from these schools continued their education, mostly at the University of Beirut.

From the British mandate to the "Compulsory Education" Israeli law: Highlights of the Arab woman's way to higher education

In 1949, a year after the establishment of the state of Israel, The Knesset, the Israeli Parliament, published the Israeli law making education compulsory.

However, this law was not immediately enforced on the Arab population, so the path to education was not quite so open for the Arab girl. Even though girls living in Arab cities or in mixed Arab-Jewish towns had earned access to education, for the majority of Arab girls, living mostly in the southern part of Israel, i.e., the Galilee and the Negev, it was another two decades before the compulsory education law was implemented.

The most important result of this drastic change was that while among the mostly illiterate 70+-year old Arab women hardly anybody had more than four formal years of schooling, the next generation more than doubled the amount of education, and for their 20+-year-old grand-daughters it was tripled. Table 1 demonstrates the increasing education among Arabs in Israel in general and among females in particular. It is also interesting to compare these data with levels of education in the Jewish sector (See Table 2).

Table 1: Arabs aged 18 and over, years of schooling, age and gender, 2003.

AGE	18-24	25-34	35-44	45-54	55-64	65+	TOTAL (median)
Men	11.8	11.7	11.4	9.9	7.5	6.0	11.2
Women	12.4	11.8	10.9	7.9	4.6	0.8	11.1

Note: Processed from Statistics, Israel, 2007, table 8.3.

Table 2: Jews aged 18 and over, years of schooling, age and gender, 2003.

AGE	18-24	25-34	35-44	45-54	55-64	65+	TOTAL (median)
Men	12.3	14.1	13.7	13.2	13.0	11.9	12.8
Women	12.5	14.6	13.9	13.3	13.0	11.1	12.8

Note: Processed from Statistics, Israel, 2007, table 8.3.

Tables 1 and 2 demonstrate the fact that while their 65+-year old grandmothers had less than one year of formal education, Arab women aged 18-24 have already studied for 12.4 years and in doing so closed the education gap with Jewish women.

The advancement of the Arab girl: Within the social norms

Arab girls tend to extend their education while, at the same time, observing the rules of tradition and managing their lives "within the social norms" (David & Khalil, in preparation). In the Muslim society, educational aspirations are not perceived as contradicting religion; the young educated woman is judged solely by her behaviour. As long as she does not behave against the strict laws of "family honour" she is encouraged to continue her education, achieve highly even in co-educational programs and make her family proud of her high intellectual abilities, good grades and higher degrees (Abed-el-Kader Yichya, 1995; David, 2002, 2007).

Christian schools in Palestine and Israel

For many years Christian Arabs in Israel have enjoyed the highest levels of matriculation and educational achievement. They have ranked highest by all criteria including the best quality of the matriculation certificate, especially with respect to the number of units studied in high school and the number of scientific areas taken during high school at the highest possible level. As good quality of high school education is a main requirement for upper education, the result is that the rate of high school graduates who have earned university degrees has also been very high (*Initial Periodic Report of the State of Israel*, 2004; Ratner, 2005; Weingard, 2001).

Palestinian girls have traditionally had good access to high quality education if they lived in large Arab cities. For example, the town of Nazareth, which presently serves as the capital for Arabs living in the northern areas of Israel, where the first girls' school was established. The Nazareth Nuns' School was founded in 1855 in the large, wealthy, economically and socially developed Christian-Arab town (Convent of Nazareth School, 2008). A second Nazareth Nuns' School was the first Arab school for girls opened in Haifa in 1858 (Ratner, 2005). Haifa was at the time an Arab town with a majority of Muslims, about 15% Christians and a very small minority of Jews.

These two Nazareth Nuns' Schools have a long tradition of academic excellence. They are co-educational where girls are by no means in the minority. In 2006 girls comprised 52% of the graduating class. The school's achievements are impressive by all criteria. In 2002, the general eligibility for the matriculation certificate for Israelis and Arabs in Israel was just 55.5% and 51.5% respectively (Statistics,

Israel, 2004, table 8.21). In that year over 95% of The Nazareth Nuns' School graduates were entitled to the matriculation certificate, scoring second highest among all Israeli schools (Ilan, 2002).

No less impressive are the most recently published achievements of this school in the matriculation examinations. In 2006, 75% of the school's graduates continued their higher education in the most prestigious Israeli faculties. In contrast, the level of Israeli high school graduates meeting university requirements was less than 46%, and in the Arab sector – just 35% (Statistic, Israel, 2007, table 8.24). Overall, the achievements of girls from this school have been remarkable, supplying, for example, the Technion, Israel Institution of Technology, with the largest number of females who were accepted to its various scientific departments (Convent of Nazareth School, 2008).

The Nazareth Nuns' School in Haifa has been no exception regarding its record of achievements among Christian schools. In 2002 it scored second among Haifa schools, while the Convent of St. Joseph School in Nazareth had the best score in the matriculation examinations in Israel. Ninety seven point five percent of its graduates were entitled to the matriculation certificate. In addition, while the minimal units required for eligibility to the matriculation certificate is 20, over 70% of the graduates scored more than 30 points (Ilan, 2002).

These institutions are examples of those that have always been run by a Christian organization. They have served all the Arab population, enabling many youngsters, especially young women who have not been able to leave their home, to get high quality education. Take, for example, the Orthodox School in Haifa: Over 50% of its students at have been Muslim. The remaining 50% are Christians, Druze and Bedouin from all over Israel (Ratner, 2005). The school has a dormitory for male students, but for its female students it arranges reliable transportation allowing many of them come to Haifa from a variety of northern Arab cities and villages.

With this in mind we are able to conclude that those most likely to have benefitted from the openness of these high quality Christian schools are the Muslim Arab girls. In the 19th century only upper middle- and high class Muslims would have considered sending their daughters to these schools. Today, unique cooperation between the

Christian educational institutions and the parents of young Muslim girls allows for almost all talented girls living in the northern part of Israel to acquire excellent education. Many of the Christian schools offer grants to students from a low socio-economic background. This means many families perhaps forced to make a cruel choice between a son's or a daughter's education, can send both to one of these schools. In addition, transportation to school makes it possible for many girls, who cannot use public transportation because of traditional reasons, to arrive safely at school and take advantage of the opportunity to concentrate on developing their intellectual abilities.

An example of sacrifice made by Arab families in order to ensure their daughters have access to the best available education

Shirin is a Muslim girl from Baka Al-Garbiyye or "Western Baka" – a low socio-economic town in the center of Israel, close to the Palestinian Authority, with a population of about 32,000. In 1995, Shirin was in the 8th grade of her junior high school having just turned 13. Every day, after returning from school, she would complain: "The girls are not interested in studying", "If I want to learn more they get angry with me", and "The teachers don't give me enough challenging tasks".

Her mother tired of her complaints, and after a long discussion with the father decided to make an appointment with the headmistress of the Nazareth Nuns' School in Haifa. Being an experienced educator it took little time for the headmistress to realize that it would take considerable effort for Shirin to close

educational gaps in English, mathematics and science. However, she also observed that the girl was striving for good education. Shirin was told that if she attended the new school she would have to work very hard initially to address the gaps in her knowledge and continue with that hard work until the end of 12th grade. It was explained to her that the workload increased every year with expectations for subjects studied far higher than the minimal requirements for the Israeli matriculation examinations. Shirin said she was ready and willing to do anything required if she was accepted to the school.

For 4 years Shirin had to leave home at 6:30 in the morning. Being so far from Haifa, there was no arranged transportation from her town, so the few families from Baka who chose the same school for their children arranged a special van for them. Being late in the morning was not an option allowed by the school so if one of the students did not show up by 6:30 the van would leave without her or him. The journey took about 90 minutes, and since there were so many compulsory subjects to be studied, during winters Shirin never came home in daylight. Nevertheless she was happy, as were her parents, in spite of their large financial contribution for tuition, transportation, books and other school supplies. No less important was their constant moral support.

Shirin graduated from high school with honors in 2000. She commenced her studies in health science at Tel Aviv University in 2001. She graduated with honors in 2004.

Educational aspects: The talented Arab girl in school

1. Talented Arab girls: The unrealized potential

The Arab girl in Israel receives comparatively high level of freedom regarding educational choices. This is due to several reasons:

1. Many girls wish to deepen and extend their education while keeping a strict tradition life style. As long as their life style does not change there is neither familial nor social objection to their education (David, 2002, 2008).
2. Frequently talented women wish to contribute financially to their families. Thus education is encouraged as means for a well-paid job; sometimes even a career (David, 2002).
3. Many Arabs believe it is for the benefit of the next generation when girls, the mothers of the future, are better educated (David, 2002).
4. Arab teachers feel, in many cases, responsible for their society. They encourage all young people to acquire a better education, especially girls who tend to appreciate the opportunity (Abu-Saad, 2003).

5. Because of high rates of unemployment among educated Arab men, many professionals in various scientific fields work as school teachers. The least they can do, in this situation, is contribute to high level teaching, especially in math and science (Abu-Sad, 2003; Abu-Sad & Hendrix, 1995). Girls are the main beneficiaries of this situation.
6. Contrary to Western perceptions that math, science and technology are exclusively male areas, the Arab world perceives them as gender-free. This allows men to encourage female relatives to deepen their education in these domains. Also, unlike in many western societies, once they do, men are not intimidated by them, making marriage a consideration (David, 2002).
7. The Arab tradition is quite tolerant with respect to a man marrying a woman with a higher education than his own (Mazawi, 1997, 1998).
8. The employment level of Arab women in Israel is very low (Tamir, 2007), so highly educated women do not present a threat on Arab men regarding competition in the work-place.

II. The Status of the Arab girl in school

In the Arab education system in Israel, girls and female adolescents comprise the majority of students. They also achieve at a higher level than boys in all areas. Table 3 presents the female advantage at the final stage of high school.

Table 3: Arab 12th graders in Israel: 2005.

Total 12 th graders (%)		Number who took matriculation exams (%)		Number entitled to certificate (% of 12 th graders)		Number meeting university entrance requirements (% of 12 th graders)	
15938		14,332 (89.9)		7,523 (47.2)		5,576 (35.0)	
Boys: 7129 (44.7)	Girls: 8727 (55.3)	Boys: 6074 (85.2)	Girls: 8251 (94.6)	Boys: 2811 (39.2)	Girls: 4779 (54.2)	Boys: 2110 (29.6)	Girls: 3466 (39.7)

Note: Processed from Statistics, Israel, 2007, table 8.24.

Table 3 shows that Arab girls outnumbered boys in grade 12: only 44.7% of grade 12 Arab students were boys, while the male rate at this age group was about 51% (calculated from Statistics, Israel, 2006, table 2.11). The dropout rate of Arab girls is substantially lower than that of boys at all educational levels (David, in press). When looking at the rate of those taking the matriculation exams the gender gaps is becoming larger: only 6074 Arab boys in comparison to 8251 Arab girls belonged to this category in 2005.

The rate of success in the matriculation exams was much higher among Arab girls than boys: 39.2% and 54.2% consequently. However, the most impressive data is that seen in the last column. It shows the difference between the Arab girls' achievement and that of the boys. Out of 5,576 young Arabs who met university requirements only 2,110 were men, i.e., less than 30%.

When taking into consideration the quality of matriculation certification, girls have had an advantage in all possible criteria. Examination of the rate of girls and boys taking high-level subjects, which, in Israel, serve as one of the main pipelines to university education (Adi-Racah & Ayalon, 2008) is instructive.

Table 4 shows the percentage of those entitled to certificates among matriculations examinees in selected enhanced subjects, by gender, in 2006.

Table 4: Percentage of entitled to certificates among matriculations examinees in selected enhanced subjects, by gender: 2006.

Subject	Number of Girls	Number of Boys	Total %
Math	92	87	90
Physics	94	90	92
Chemistry	87	86	87
Biology	78	67	74
Computers	96	93	94
Agriculture	69	(58)	65
Hebrew	74	64	70
History	62	57	60
English	84	76	81
Social science	57	57	57
Geography	49	41	46
Arabic	79	79	79
Electronics and computers	93	87	90
Mechanical supervision	(96)	(56)	70
Computerized administration	63	56	61
Administration and economics	66	62	65
Electronic systems	94	88	91
Electrical systems	79	38	52
Accounting	68	56	63

Note Processed from Statistics, Israel, 2007, table 8.27.

Indeed, until the end of high school the Arab talented girl achieves highly, and makes use of the educational opportunities offered to her in all possible areas of study. In 2006 the percentage of girls entitled to the matriculation certificate among those taking the 4-and 5-level examinations in all subjects was higher than that of boys.

III. Higher education among high ability Arab girls

At the stage when decisions of higher education must be made, the female majority is under-represented. Too many young, talented and creative Arab women prefer studying at the local community college, or at a teachers' college, rather than pursuing their full potential at a faraway-university in a mixed Jewish-Arab society. They chose not to struggle with language problems, a new society and the difficulties caused by the discrepancy between a supportive, warm, and permissive way of learning and the strict, and more "westernized" rules (David, 2007).

Let us look at the figures showing the discrepancy in access to university education between male and female Arabs and between female Jews and Arabs.

Table 5: Continuing studies of high school graduates – % of Arab and Jewish students who began university studies within 6 years of high school graduation.

	1985	90/1989	(1)1991/2	(2)1993/4	(3)1994/5	(4)1995/6	(5)1996/7	(6) 1997/8 (actual number)
Arab men	28.2	23.8	25.8	25.0	25.9	25.7	23.3	23.7 (472)
Arab women	22.0	25.2	20.2	23.1	22.4	22.2	22.7	24.0 (687)
Jewish men	36.7	31.0	30.7	27.1	25.4	24.1	23.9	23.1 (3782)
Jewish women	45.4	42.0	40.6	38.7	37.7	36.9	35.4	34.9 (7094)

Note: (1) Processed from Statistics, Israel, 2002, table 8.26; (2) Processed from Statistics, Israel, 2003, table 8.30; (3) Processed from Statistics, Israel, 2004, table 8.31; (4) Processed from Statistics, Israel, 2005, table 8.35; (5) Processed from Statistics, Israel, 2006, table 8.37; (6) Processed from Statistics, Israel, 2007, table 8.39.

If we look at the data in table 5 we see the gap between males and females participating in university education has been gradually disappearing since 1985. By 1998 the rate of university education of Arab males and females was similar, but with females surpassing males (23.7% versus 24.0% respectively). However, when comparing the actual number of students, i.e., 687 females versus 472 males, the difference is very large (46%).

Altogether these numbers show that despite the fact talented Arab girls are still far from reaching their full potential in terms of high quality tertiary education, they have already actualized their advantage in determinacy, high aspirations, and willingness to work hard. They have applied this advantage in their efforts to overcome, at least partially, the obstacles in their way to university education in Israel.

IV. Religion is taken into consideration: Participation of the Muslim and the Druze talented young female in the different stages of high education

1. University education

The rate of Arab students participating in higher education is increasing yearly. As a result in the 2006 academic year, the number of female university students has been much higher than that of males. However, while the vast majority of Arabs in Israel are Muslims, it is only Christian Arab girls or 10% of the Arab population in Israel (Statistics, Israel, 2007, tables 2.1, 2.2) who fully participate in all levels of higher education. Until 2006 it was only these girls who fully realized their potential in terms of participating in high quality academic studies at a rate similar of Jewish females.

Table 6 shows the decreasing rate of female participation in university studies as levels of education increase. The differences between females belonging to the three main Arab religions in Israel: Muslim, Christian, and Druze are also shown. The only sub-population whose high potential is more fully realized is the Christian Arab group. The majority of Muslims and especially the small minority of Druze still have a long way to go.

Table 6: Arab Female university students in 2004 by religion and degree of studies.

	Total (%)	BA/ BSc		MA/ MSc (%)	Ph.D. (%)	Certificate studies (%)
		Total (%)	First year (%)			
Muslim	53.5	56.8	58.2	42.4	25.4	59.2
Christian	62.0	63.1	63.7	58.9	38.6	76.6
Druze	52.1	55.8	59.5	35.1	12.0	78.4
Total	55.3	58.2	59.6	45.8	26.9	64.5

Note: Processed from Dagan-Buzaglo, 2007, table 8.

2. Teachers' college education

The last column, "certificate studies", refers to the teaching certificate granted to university graduates after 2-year training in the school of education in one of the Israeli universities. The status of teachers in Israel is very low in comparison to most other developed countries (Gur-Zeev, 1999). In 2004, when compared with the salaries of teachers with 15-year experiences in 31 of the Organization for Economic Development Countries (OECD), Israel scored 28th. Only three countries had lesser salaries, i.e., Hungary, Chile, and Poland (Nathan, 2006). While the average yearly salary of such a teacher may be \$45,277, in Israel she or he earns approximately a third - \$15,000. In the Israeli society, a high percentage of women acquiring a teaching license are typically perceived as having a low-status, feminine profession.

It is no wonder that the Druze have the highest rate of females studying for a teaching certificate. The two main reasons are: 1. It is still very rare for a Druze girl to leave home for academic education. As most Druze do not live close to any Israeli university, the preferred option for a talented Druze girls would be, in many cases, opting for a teachers college where she can

complete her education without having to leave her home. 2. due to the very low participation of Druze females in the Israeli work force, the opportunity of having a respectable job, while still being able to fulfill all home obligations, might be a good compromise for a Druze talented girl who does not wish to act against the traditions and customs of her people.

As for the high rate of Christian students in the university teachers-training track – unlike among Muslims, when the number of female students in teachers' colleges is about three times that of university students, most Christian females choose university education, and some of them end up, eventually, as school teachers – in many cases after completing their MA and even their PhD. This happens, in many cases, when the Christian girl reaches a certain age that makes her decide to be a teacher. While young, most Christian girls come from comparatively small families, and they enjoy educational advantages similar to those of many Jewish girls, such as well off houses and parental support. However, when a Christian Arab girl gets married in many cases she still has to deal both with discrimination in the Israeli work place and in her own society and its expectations. Choosing a teaching career satisfies, in most cases, all these demands.

In addition, while in the Jewish sector the number of students in state teachers' colleges has decreased yearly since 1999/2000, the number of Arab students in Arab teachers' colleges had a 40% increase since then (Statistics, Israel, 2007 table 8.44). This shows that in many cases, despite good high school achievements, the talented Arab girl tends to receive an inferior post-secondary academic education, in most cases at a teachers' college. Most graduates of these colleges have not been able to find work in the teaching profession or work third to half time (Gozanski, 2004).

With particular reference to the education received at a teachers' college, we can summarize by recommending that talented Arab girls should be encouraged to continue their education in a variety of subjects rather than limit themselves to the teaching profession. Choosing university over teachers' college education might not only benefit Arab female students but Arab education in Israel in general. There is no lack in teachers in the Arab sector in Israel, so many of the teachers to be can certainly switch to other professions, strive for full participation in high prestige career in Israel, and strength their financial, social, and political standing.

Summary

It is possible to divide the influence of tradition and customs of Arab society on the education of high ability females to two stages:

1. Kindergarten until 12th grade. During this period tradition and customs do not play a major role on the education of the talented Arab girl in Israel. The main influence on the quality of her education is the school which she is able to attend. Good educational programs, high level teaching, a satisfactory budget for professional teachers and high quality equipment, as well as enough classes with easy access to them, can ensure that a high rate of girls benefit from high level education. When new subjects are introduced to the education system it is very rare that parents object to them, even if those subjects include non-traditional areas for girls, such as art studies or sports.
2. Upon completion of 12th grade, despite the excellent achievements of Arab girls, gaps emerge between the quality of education offered to all eligible young men, and that offered even to some of the very best young women. Many girls are faced with a conflict between their own aspirations, e.g., delaying getting married in order to get better education and professional opportunities, and taking on family responsibilities which usually include starting a family as soon as possible. In many cases girls give up scientific or professional areas, where an investment of many years of study is needed, in exchange for a shorter, easier way that will satisfy their families. A young woman "asked" by a young man or "chosen" to be his future wife, does not always get his approval to delay her marriage, and thus must either discontinue her studies or seek a compromise by deciding on a less demanding area of study. Even if such a young girl would prefer not to marry she does not always dare refuse a marriage proposal because she may be afraid that when she is ready she wouldn't get such a good offer. It is also possible that we may not want to be distinguished as "the girl who says 'NO'". In a collectivist and closed society (e.g. Dwairy, 1999, 2002, 2004) such a reputation might not only harm her future marriage prospects, but even the good name of her family.

This is the stage when tradition and customs play a crucial role, and also the stage where the huge investment in time, energy and money of so many talented Arab females do not render their full return.

Participation of Arab girls in gifted programs in Israel

Boys in Israel comprise the majority of participants in most gifted programs. This reflects a pattern worldwide (Landau & David, 2005; Zorman & David, 2000). However, in the Arab sector of Israel the situation is quite different. Here the percentage of girls and boys participating in these programs is very similar (David, 2005; David & Khalil, in preparation). Taking into consideration that while in 3rd grade children are chosen for the public gifted programmes financed by the Ministry of Education and the selection is made solely by their psychometric tests. It is somewhat mysterious how in the Jewish sector the rate of girls is just 25-35%, while in the Arab one – about 50%.

A partial answer to this mystery can be explained by a culture quite different from the Jewish one, especially regarding what can be defined as "gendering of excellence". In the Jewish sector it is a social norm for a boy to be competitive, assertive, striving for achievements, and willing to dedicate a huge amount of time pursuing a learning goal. For a girl it is not normal and is considered "un-feminine". For most girls this labeling may cause no conflict. However, for a gifted girl who is characterized by a need to have time for her own activities, high levels of concentration that might take her away from social activities, and as she approaches adolescence, high achievements in school, such behaviour may identify her as "masculine" (Landau, 1999).

In Arab society striving for knowledge and excellence does not label a girl "undesirable as a future mate". She is free, at least in the first decade of her life, to develop her intellectual abilities in the same way as boys her age. Although a quantitative research has not been done on this subject, case studies collected by researchers and graduate students abound that support this assumption. Arab girls feel proud when being labeled "gifted"; this labeling allows them more freedom to participate in educational programs, and more opportunities as a reward for the honour they award their families (Abed-el-Kader Yichya, 1995).

A future view

The talented Arab girl has gone, in the last few years, through many changes regarding her personal and professional development. She has achieved highly in school, and her participation rate in higher education has been increased substantially. However, in comparison to her Jewish counterpart the glass ceiling she faces is still very high.

The two main causes for this situation are: a) She is a woman in a traditional society, and b) She belongs to a minority perceived as hostile by large part of Israeli society, and thus has to overcome major social hurdles in order to obtain a quality education beyond high school.

The talented Arab female must run rather than walk while wearing house shoes rather than a pair of new Adidas sneakers. For example, in 2006 there was not one female Arab professor in Israel (David, 2007; Trauberman, 2006). It is hard to imagine there being an increase of Arab women in academia in Israel in the near future. The situation in high prestige professions is no more promising. For example, in 2007, only two female Arabs were working as interns in gynecology in Israel (David, 2007; Lee, 2007). Ironically, a decreasing birth-rate among Arab females (Ilan, 2007) might actually help more young, talented professionals fulfill their potential.

As we all know, change takes a long time. But changes are needed - in the family, in society in general, and in local and global political interests. Much support is needed from everybody involved at all levels of education, especially in Israel, in order for talented and highly able Arab women to succeed in the struggle associated with the education and professional standing.

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Expanding Conceptions of Intelligence: Lessons Learned from Refugees and Newcomers to Canada

Karen Magro

Abstract

This qualitative study examines dimensions of emotional intelligence and, more specifically, the growth of resilience through the experiences and challenges of ten refugee and newcomer adult learners who were either children or teenagers during times of conflict and war. Despite their hardships, learners interviewed in this study showed resourcefulness, empathy, optimism, sensitivity, and an openness to starting life in a new culture. These qualities have been linked to intra and interpersonal dimensions of intelligence proposed by theorists like Howard Gardner and Robert Sternberg. Ten teachers who work with either adolescents or adults from war affected backgrounds were also interviewed. This study took place in Winnipeg, Canada---a moderately sized Canadian city, and home to increasing numbers of new immigrants and refugees from different corners of the world. The inclusive model to curriculum design based on Renzulli's (1977, 2001) enrichment triad model is suggested as one way to make learning more meaningful for both youth and adults from war affected backgrounds.

Keywords: Resilience, emotional intelligence, refugee education, curriculum enrichment.

Introduction

As Canadian classrooms today become more culturally diverse and schools receive increasing numbers of newcomers escaping conflict and war from parts of Africa, South East Asia, and the Middle East, re-examination of our conceptions of intelligence, giftedness, and talent within this changing cultural context seems entirely appropriate. Too often, education for refugees and recent immigrants has focused on a "deficit" model emphasizing skills some newcomers may not have---adeptness in English language proficiency, an understanding of new cultural norms, and the adverse impact of the trauma of war (Anderson, 2004; Freire, 2006; Hamilton and Moore, 2004; Marton, 2000). Discrimination, lowered teacher expectations, and higher rates of poverty experienced by newcomer youth and adults make it difficult for them to achieve academic, personal, and career goals. However, by establishing an "asset" model of education highlighting their unique talents, strengths, and newcomers have a foundation upon which creative and transformative learning can be built. Students in culturally diverse classrooms have greater opportunities to learn about different cultural, political, educational, and social customs. These rich learning experiences

can contribute to the development of today's "global citizens."

This paper will highlight the unique strengths and skills that refugee and newcomer youth and adults possess as they relate to dimensions of intelligence and talent developed by theorists like Gardner (1983; 2006), Goleman (1995; 2006); Renzulli (2000), Shavanina and Ferrari (2006); and Sternberg (1988. 1990; 2004).

Challenges faced by refugees

From psychological and social-emotional perspective, it is important for educators, counsellors, and health service providers to understand the unique challenges faced by refugees and newcomers who have escaped zones of conflict and war. Experience of violence, persecution, famine, flight, loss of home, loss of family and friends, an inability to use one's language, loss of one's culture and way of life, and often involuntary migration in several locations can disrupt the sense of meaning and control in an individual's life. An individual's basic sense of trust, security, identity, and confidence may have been threatened by war. (Magro, 2008) Moreover, this

experience, exacerbated by numbers of stressors, e.g., loss of family, difficulties navigating a new culture, contributes to individuals experiencing anxiety and trauma. A supportive family network may have been lost through death, separation, displacement; consequently, depression, anxiety, and a loss of confidence may interfere with the process of acculturation. Anderson (2004) further notes that a sense of self-efficacy or internal locus of control might be eroded by traumatic experiences of war. The process of resettlement may have involved more than one country and challenged individuals to learn more than one language. Hamilton and Moore (2004) note the coping abilities of individuals who have escaped zones of conflict are influenced by factors such as:

- The age when the individual settles in a new country.
- Early childhood experience and family stability.
- Gender, social status, and religious background.
- Years of formal education and proficiency of language in the host country.
- Personality factors such as hardiness, optimism, and resiliency.
- Degree of family separation and loss.
- Degree to which family members are reunited in the new culture.
- Attitudes of the host culture toward newcomers and refugees.
- Educational, health, and counselling resources available.
- Opportunities for employment.

These factors interact with one another to influence personal and social adjustment in a new culture.

Expanding conceptions of intelligence and talent in a culturally diverse world

Theorists like Gardner (1983; 2006), Renzulli (1977) and Sternberg (1988, 1990; 2004) have long asserted that traditional conceptions of intelligence and giftedness have been too narrow, and that undue bias toward rewarding verbal-linguistic and logical-mathematical intelligence have undermined the value and importance of skills in problem solving, creativity, task commitment, practical knowledge, wisdom, and inter and intrapersonal intelligence. Academic and social challenges faced by newcomers may be linked to experiential deprivation, limited language development, differences in learning styles, low

expectations on the part of teachers and family members, cultural differences, racial bias, and a lack of opportunity (Cline and Schwartz, 1998). Cline and Schwartz (1998) note that populations of culturally diverse individuals have often been under represented in programs for the gifted and talented:

“If we are to accurately assess potential giftedness in culturally diverse populations, we need to gain a greater understanding of the differences or special characteristics prevalent among each of the groups. Cultural and environmental factors have shaped behavior in specific populations, and underachievement is more likely to occur when the values, beliefs, norms, and attitudes of one culture are incongruous with those established by the majority.” (p. 71)

Indeed, Howard Gardner’s (1983, 2007) theory of multiple intelligence (MI) provides a broader lens through which talent and giftedness can be viewed. In addition to naturalist and spiritual aspects of intelligence, Gardner presented seven other categories of intelligence: verbal linguistic, logical-mathematical; spatial; bodily-kinesthetic; musical; and intra and interpersonal intelligence. Gardner (1983 cited in Cline and Schwartz) considers each intelligence:

“A proclivity or potential that can blossom or not depending on the culture in which individuals are reared. Giftedness is seen as the ability to fashion products and solve problems in any domain that is of value in a cultural setting.” (p. 8)

Gardner’s theory has been widely applied to different educational contexts and by teachers who differentiate their instruction both recognizing and validating the diverse range of talents possessed by their students. All learners should be provided with curriculum opportunities that facilitate an optimum level of learning that cuts across cognitive, affective, social, and aesthetic dimensions.

More recently, in his book *Five Minds for the Future*, Gardner (2007) asserts that skills such as the ability to synthesize and analyze information through a critically reflective stance should be balanced with individual creativity, respect, and the ability to act in an ethical way. He notes the skills needed to be active citizens in an increasingly globalized world, are complex and require transformative changes in education. He also notes that effective leadership in today’s world includes the

characteristics of self-understanding, self-expression, and openness to personal growth. In his view, students need to be given opportunities to develop leadership skills or the abilities to exercise power or influence in social collective such as groups, organizations, communities or nature. Indeed, a “new way” of thinking is needed:

“We live in a time of vast changes that call for new educational forms and processes. We do not think deeply enough about the human qualities that we want to cultivate at the workplace, so that individuals of diverse experience and background can interact effectively with one another. Nor do we ponder how to nurture the workers who will not simply pursue their self-interest but will realize the core mission of their calling, or how to cultivate citizens who care passionately about the society in which they live and the planet they will pass on to their successors.” (Gardner, 2007, pp. 17-18)

Building on Howard Gardner’s (1983) research into multiple intelligence theory, Goleman (1995; 2007) emphasizes that such traits as empathy, self-awareness, the ability to manage stress, and effective interaction with others are essential “life skills” perhaps more important than traditional indicators of intelligence in contributing to success in life. Goleman’s (1995) emotional intelligence (EI) competence framework includes: self-awareness or recognizing one’s emotions and their effects on others. Self-awareness also includes the ability to assess one’s strengths and limitations. Self-regulation refers to managing one’s internal states, impulses, and resources. Personality traits such as conscientiousness, adaptability, trustworthiness, and the ability to feel comfortable with new ideas and information are linked to self-regulation. Motivation refers to the emotional tendencies that guide short and long term goals. Components of motivation include traits such as commitment, initiative, optimism, and achievement drive. Empathy refers to the awareness of others’ feelings and perspective as well as the ability to take an interest in others’ concerns. The final component in Goleman’s EI framework includes social skills which include effectiveness in collaboration and cooperative, active listening, conflict resolution, and negotiation, and leadership. Deficiencies in these competencies, notes Goleman, can result in increased aggression, violent behaviors, depression, anxiety, attention or thinking

problems, and social withdrawal. Consistent with the perspectives of Howard Gardner and Daniel Goleman, Robert Sternberg’s (1988) triarchic theory of intelligence provides a valuable framework for understanding and interpreting the skills and talents of students from culturally diverse backgrounds. While Gardner focuses on different kinds of intelligence and Goleman extends our understanding of intra and interpersonal intelligence, Robert Sternberg (1988) focuses on the nature of intelligence itself. He explains:

“Intelligence can be defined as a kind of mental self-management—the mental management of one’s life in a constructive purposeful way.... Mental self-management can be said to have three basic elements: 1) adapting to environments, selecting new environments, and shaping new environments. While the components of intelligence are universal, their use in shaping environmentally appropriate behavior varies not only across groups but across individuals as well.” (p. 11)

An individual’s ability to act “intelligently” may vary depending on the particular context and on the specific knowledge, skills, and cognitive processes that a task requires. Prior experience and the cultural/environmental context also influence behavior.

Pluralistic and interrelated, Sternberg’s (1988) triarchic theory of intelligence identifies three types of intelligence: *Analytical intelligence* involves cognitive processes used to plan, monitor, and evaluate problem solving. It is often related to familiar decontextualized abstract and academic situations. *Creative intelligence* involves skills needed in relatively unfamiliar and novel kinds of situations. *Practical intelligence* involves skills needed in highly conceptualized situations encountered in the normal course of one’s daily life.

Wisdom: A neglected quality of giftedness

Connected to the practical, creative, and cognitive dimensions of intelligence, Sternberg (1990; 2004) emphasizes that wisdom is also a critical quality that individuals need to develop. “The question we must ask ourselves is whether the skills that are rewarded in schools are those that will matter later in life” (Sternberg, 2004, p. 184.)

Academic skills are a beginning and not an end, notes Sternberg, and with a world in turmoil “we need to turn our attention to the

identification and development of giftedness in wisdom” (pp. 184-185). Wisdom, for Sternberg, includes components such as reasoning ability, altruism, intuition, creativity, learning from ideas and one’s environment, being able to assess and understand the implications of one’s actions on others, good judgment and creativity.

Central to the development of wisdom is the valuing of tacit or informal knowledge which “comprises the lessons of life that are not explicitly taught and are not even verbalized” (Sternberg, 2007, p. 78). Tacit knowledge is learned more through experience or mentoring rather than direct classroom or textbook instruction. According to Sternberg (2004) wisdom is

“The application of tacit knowledge mediated by values toward the goal of achieving a common good. This good is achieved through a balance among multiple 1) interests, 2) over time, and 3) responding to environmental contexts and adapting to existing environmental contexts.” (p. 184)

Resilience

Resilience is connected to dimensions of emotional intelligence and Sternberg’s (2004) concept of wisdom. It is also a critical concept to understand when addressing issues facing both refugee children and adults. Resilience can be described as “the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances. Psychological resilience is concerned with behavioral adaptation, usually defined in terms of internal states of well-being or effective functioning” (Masten, 1991 cited in Anderson, 2004, p. 53). Anderson (2004) notes resilience is something that only emerges as a result of adversity. “It is in the face of extreme challenges, those that exceed most people’s coping resources that only the resilient escape adverse outcomes” (p. 52).

Personality traits such as optimism, a sense of humour, problem solving abilities, flexibility, patience, an openness to new experience, and a degree of self-awareness have been linked to resilience. These personality traits can act as a buffer to stress in conditions of extreme risk and adversity. Drawing on the literature, Anderson (2004) identifies three types of resilience factors:

- “Individual, such as internal locus of control, problem solving ability, agreeableness, self-reliance, and a good

self-management skills, high IQ, physical attractiveness, and a sense of humour.

- Familial, including healthy family functioning, a resilient family, structure and rules in household, shared values, and a sense of cohesion.
- Contextual and institutional, which includes supportive neighborhoods, close peer friends, access to special services (including health and educational), additional caretakers, existing support for mothers outside the household, financial security, religious affiliations, positive school experiences, and the presence of a caring adult or mentor.” (p. 58)

While the adults in this study experienced multiple stresses, they also demonstrated remarkable tenacity, patience, self-reliance, and an openness to new experience. Anderson (2004) emphasizes that educators, counsellors, and other service providers working with refugees and new immigrants need to be keenly aware that even the most resilient individuals are not immune to adversity and stress.

The experiences of children and adults from war affected countries need to be validated, and their strengths drawn out. However, each person has limitations, and without the necessary support systems in place—opportunities for literacy education, community and employment networking, counselling and family reunification, the resilient person may find themselves coping less effectively. “The resilience that has developed is not a permanent guarantee that the same individual will not ever be overcome by some future adversity.

Even resilient people have limits to their coping abilities” (Anderson, 2004, p. 59). Resilience can be developed in various ways, e.g., learning scaffolds can be put in place in counselling, mentoring, and in educational programs so that resilience can be taught and fostered.

Literacy programs, for example, can be built around the concepts of resilience and empowerment.

Mentoring programs at the individual and family level can provide opportunities for individual to learn skills associated with resilience, i.e., self-reliance, resourcefulness, and creativity.

Method

The data for this study was drawn from twenty qualitative interviews with young women and men ranging in age from 18 to 32 from countries like Sudan, Somalia, Sierra Leone, and Afghanistan. Most interviewees had been in Canada for five years or less and were refugees having escaped zones of conflict and war. The data was collected during 2007-08. The interviews lasted approximately 1-2 hours. The adult learners in this study were either completing their Grade 12 at a local adult learning centre or completing a university degree. All were working either full or part time.

The interviews were tape recorded and then transcribed. The approaches to interviewing were drawn from research methodology developed by Van Manen (1997) and Merriam (2002). The questions for the interviews focused on the challenges of adjusting to life in a new country and the challenge of navigating a new educational, social, culture, and legal system. During the interviews the participants reflected on their pre, trans, and post migration experiences.

Questions such as “How would you describe some of the greatest challenges you faced when you arrived in Canada? How did you cope with some of the obstacles you encountered? What or who helped you adjust to life in Canada? What do you hope to accomplish in five years? What are some of your personal, academic, and career goals?”

In terms of immigration and refugee studies, the themes of uprootedness, resettlement, and issues of identity and acculturation lend themselves to qualitative study where reflection and autobiographical analysis can reflect the complexity of culture,

gender, language, and history. Kouritzen (2000) notes that biographical analysis and life history research are valuable methods that can also be used to inform policy and practice in teaching refugees and newcomers. She states that “even one history could add depth of knowledge to our understanding of social change, yet generations of history are lost because there is no time, ability, or opportunity to record them” (p.11). On this premise the participants were also given an opportunity to write an autobiography using a series of questions centering around childhood experiences, culture, education, and the impact of war on their lives to guide their writing. Eight out of the twenty participants completed an autobiography. Themes evolving from the interview transcript data and from the autobiographies were identified and elaborated upon: coping with loss, adjusting to a new culture, educational and career plans, barriers to learning, resilience/optimism, drawing upon inner resources of strength, and perseverance amid adversity were some of the themes identified

Ten English teachers who worked with both children and adults from war affected backgrounds were also interviewed for this study. They were asked to reflect upon their understanding of the process of learning, barriers their students experienced, strengths their students demonstrated, their own role and responsibilities, and effective teaching and learning strategies for EAL learners. The interview questions were based on Pratt and Associates’ (1998) approach to exploring teachers’ perspectives and personal philosophies of teaching.

Research Findings

The themes that surfaced in these interviews with young adult refugees and newcomers reflected insights made by Sternberg, Goleman, and Gardner into different dimensions of intelligence, creativity, and wisdom.

Relying on practical or tacit knowledge, perseverance and resilience, courage and optimism amid loss and hardship, and a love for learning were personal qualities that surfaced in the written autobiographies and the interviews. Years of interrupted education and a lack of formal secondary education in their homeland

left gaps in academic knowledge, yet many of the refugees spoke of valuable lessons learned from parents and respected elders that enabled them to cope with the harsh life in refugee camps. Many could speak several languages including English, Dinka, Arabic, Italian, and French. Some had lived in cities like Cairo and Rome before coming to Canada.

It was not the *absence* of barriers or problems in their lives that was impressive; it was the *attitude and approach to challenges* that reflected courage and resilience. The adult learners in this study identified the major

barriers interfering most with their academic and personal goals, including:

- (1) Difficulties developing English language proficiency;
- (2) Loss of close family members and difficulty reuniting with remaining family members;
- (3) Poverty and financial responsibilities;
- (4) Problems navigating a new culture and “networking” to make new friends and contacts for employments;
- (5) Loss of professional standing and a lack of recognition of learning experiences and knowledge of other languages; and
- (6) Difficulties balancing work, school, and family responsibilities.

The discrepancy between the expectations many held for Canada, e.g., a good education, interesting employment, making new friends, and the harsh reality of beginning life again in a new country with little or no support was also a source of stress. Even so, for many, a good education represented hope, security, and a bright future, and, despite the setbacks and barriers, the interviewees demonstrated strong personal qualities such as resilience, optimism, and a determination to be successful in Canadian society.

Optimism and resourcefulness in overcoming challenges

The following excerpts exemplify the optimism and resilience of a young man from Nigeria and a young woman from Somalia. James referred to his faith as being a powerful guide and inspiration in his own life. He continues to work on his doctorate degree in theology while working as a community liaison worker helping adult refugees and their families adjust to life in Winnipeg.

I remember proverbs and saying from my parents, and these have got me through tough times. You have to hide your disappointment, frustration, and anger when you first arrive in Canada. You think that your experience and credentials will be recognized but they are not. Once you overcome your frustration, you start to think: ‘OK, now that I know how this society operates, I know what to do to become successful. There is hope but you have to have determination, vision, and a plan. Each person has a variety of resources.

You can’t be mentally locked up in the past if you are to move forward. I don’t use the word ‘impossible.’ I use the word ‘possible.’ I ask the youth that I work with: ‘What is possible and how can you achieve your goals? You have freedom in Canada, but you also have to abide by the new laws. Yes, you have to throw caution to the wind and obstacles are not insurmountable. You have to have inner drive and vision. This drive comes from my family and background. My father was a leader in our village and he had a passion for learning. I started my life in Canada as a garbage sorter and I had a Master’s degree from Kenya.

James sees himself as a role model for other refugees and immigrants. He counsels families and works as a minister part time. He noted that the children of adult refugees are particularly vulnerable to dropping out of school and entering a life of crime:

I see teens today who are alienated from their parents. They are living in two worlds. Poverty can drive young people from refugee backgrounds to a life of crime. A lack of education, cultural misunderstandings, a lack of communication, and poverty can cause refugees to become alienated from society. The neighborhoods that some refugees live in are not safe and their children quickly become out of control. Worlds and communities collide and the results can be devastating. We have to be more proactive rather than reactive in helping refugees adapt. Some young teenagers find refuge on the streets. The children are confused with different discipline patterns and clashing value systems. In speaking to these young people, I am hoping to inspire them with my story of survival and success. I tell my story to encourage them. I am an advocate for them. I challenge young people when they need to move forward tell them: ‘Everyone has hurdles but you have to make the steps to change your life. You can’t expect to hit the ground running. Things just do not fall into place. You have to work hard if you want to move up.

You have to participate and engage.’

In my view, we have to educate not only our communities but the world about peace and working out problems peacefully. It takes a change in attitude.

Also, if we do not educate girls and women, they will continue to be disempowered.

Compassion and altruism: A responsibility to those left behind

The theme of helping others surfaced in the autobiography of a young man who fled Sierra Leone's brutal civil war in 2002. Both of David's parents were killed in the war. He completed his Grade 12 and Health Care Aid certificate in Winnipeg, and works at a local Nursing Home. While he received high grades that would have enabled him to succeed at university, financial responsibilities (paying back student loans) and financial support for his family back in Sierra Leone make it difficult for him to study at the university full time. As a teenager, David worked in diamond mines near Freetown, Sierra Leone, but his vision was always to further his education and become a doctor. Separated from family and friends, life has not been easy:

When I first arrived in Winnipeg, it was a culture shock. I missed the socialization with family members. Here in Canada, you can live in an apartment or a house and never meet your neighbor. These are some of the things that shocked me. In my town in Sierra Leone, we always came together as a community. You could talk to your neighbor. The community is so rich. In Canada, there is more loneliness; the buildings and the work is structured in a way that people are more isolated. It is harder to make new friends.

Captured by rebel soldiers in 1998, David managed to escape on the third night and fled on foot to neighboring Guinea. He lived in a UN refugee camp until the UNHCR enabled him to settle in Winnipeg. With the intent of helping his siblings near Freetown, David regularly sends part of his earning back home each month. David is a sensitive, compassionate, and insightful young man who spoke of the stress and struggle of living in "two worlds" and of his responsibility to help those who cannot speak for themselves: In the West, a diamond is a symbol of prestige and beauty; in my country (Sierra Leone), a diamond is a symbol of misery. When the war was at its peak in 1998, I was a teenager. I was working in the diamond mines, I was captured by the rebels and I had to work for them. It was a miracle that I escaped on the third night. I could have been recaptured and killed. I walked in the forest for many

miles. When I lived in Sierra Leone, I saw horrible things. There was no respect for humanity and all the conventional laws were violated. Since I have been here, I have freedom and human rights. I consider Canada to be a great country. I saw the respect for humanity in Canada and that has motivated me to go back to Sierra Leone this year and help. I want to show my people what freedom means. With security and peace, you can have development. I am particularly interested in making a documentary about the innocent amputees in Sierra Leone. They are victims of the war and their lives changed in a second. They all deserve to have help and their dignity restored. I want to help build a health facility for the disabled—similar to ones I have seen in Canada.

I want to first tell the stories of the women and the children. They are still suffering physically and psychologically. They are not being supported right now; money is being mismanaged. They do not have good medical facilities. The system is chaotic. The war dragged the already poor Sierra Leonean people into more abject poverty. Even the normal people find it difficult to manage—imagine if you are an amputee how much more difficult life would be. Think of daily tasks—you cannot do anything for yourself. I have faith that the people in Canada will help me. I came to this country for a reason. I was saved for a reason....I think that the Canadian people can learn the importance of perseverance and courage from refugees. Despite all the problems we have had, we work hard.

Zana, a young woman in her twenties from Somalia, works as an outreach worker with refugees in the school system while completing her degree in Social Work. She is balancing her parenting duties with work and academic responsibilities. When asked the question, how she managed to cope with the stress of work and parenting in Canadian society, she also spoke of "the wisdom of her elders" as an inspiration:

Having a nomadic background has helped me...first to endure the war and resettle I came from a family of herders who had to fight lions in real life. I would hear stories of how strong my people are; the Somali people are very brave. My mother had eight children and raised us in a rural setting. My

mother did not have a formal education but she was very intelligent. She had many skills. She worked so hard. I grew up with people who struggled to improve their lives in small ways and this gave me the courage to push ahead and take changes. The Somalis believe that as long as there is life, you have to fight and try your best. We think that where there is a will, there is a way. There are so many Somali proverbs that I think about when I encounter a difficult situation. Now I help students who have emotional distress, financial problems, and inaccurate information. I provide support and resources....Immigrants often live in two worlds, and it is not easy to make it financially or emotionally when you are alone. I also have a passion and determination to improve my life. I love learning. The more I learn, the more I want to learn. If you work hard, a door will open....

Members of the Lost Boys and Girls of Sudan had experienced the impact of civil war in the south Sudan since they were young children. Witnessing the death of parents, siblings, and close relatives and traveling hundreds of miles to reach a zone of safety, the experiences of the Lost Boys and Girls of the Sudan exemplify the importance of perseverance, optimism, and resiliency. For many, formative years were spent in refugee camps like Kakuma, Kenya. With the collapse of the adult world, the older children learned to take care of their siblings and those who had been orphaned.

To survive life in the camp, one had to assess the risks and learn to protect themselves. Bixler (2006) described the Kakuma camp as bleak, sprawling, and "prone to sandstorms and flash floods and year-round temperatures near 100 degrees Fahrenheit"(p. 69). Floods, drought, famine, and ongoing war resulted in children and adults living in a state of chronic stress. Education was inconsistent and varied in the refugee camps. To survive, those who had lost their parents formed friendships with older children and other adults. Kakuma would be "home" in some cases, for over a decade. London (2007) writes: There is no easy life in a refugee camp. The total dependence on outside assistance for materials to build a home, food to eat, supplies to do anything at all, affects every member of a displaced society. There is

psychological stress beyond what they survived in getting to the relative safety of the camp. Freedom of movement is limited due to legal constraints and safety issues. (p.116)

The deprivation of quality education during their formative years may be one reason why so many members of the LBGS revere education and its potential to improve their lives. One young man who spent over a decade living at the Kakuma refugee camp stated. One of the study participants explained that "for those with no parents, we told ourselves the education would be our parents. When you had no one to talk with in the camp, I had to focus on the future, and for me, education is the key to life. It will help me interact with other people in society."

Despite the hardship endured through multiple relocations, loss of family, and years of deprivation in the camp, many young Sudanese newcomers remain optimistic. The young adults interviewed had positive memories of their early childhood-recalling loving and caring parents and a sense of security in their home. It was these positive memories that they drew upon during times of hardship:

I grew up in a small village and my job as a young Dinka boy was herding cattle. My parents were very loving and encouraging toward all of us. The civil war in Sudan changed everything. I was lucky to escape into the forest. Some of us crossed the Gilo river and made it to Kakuma. The older boys and the elders became like our parents...

I used to enjoy listening to their stories. Life in the refugee camp still affects you—regardless of your age and regardless of your ambition. The more you internalize the experience, the more it affects you. I tried to make friends in the camp and I tried to study with the few resources that we had. You have to have hope that somehow life will get better. When I think back, I have seen many of my friends die. Looking at the larger picture makes you feel sad. Some people walked 1,000 miles without their shoes. I lost friends who drowned crossing the river. When you become a refugee, you are no longer a citizen.

I often asked myself: 'Why was life so hard?' ...Now I am finishing my degree in economics and I want to help people. I try to encourage my friends and the younger

people to value Canada. I tell them that they have two homes now—the Sudan and Canada. The Sudan was your old home. Here in Canada, peace and freedom are valued. If you work and study hard, I tell them that they can succeed.

Many of the refugees in this study valued Canada. For them it represents freedom, safety, a future for their children, and an opportunity to pursue an education. They viewed the glass as “half full” rather than “half empty.” One young woman asserted:

Canadian people can learn a lot from our community. We are hard working and courageous, and we can help and improve Canadian society.... Back home you could not go outside because you were afraid. You did not have the freedom like you have here. I can go out freely and I can do different things. This is the beautiful thing that I like about Canada.

Developing resilience in schools: Teaching roles and responsibilities

Teachers and schools play a critical role in helping refugee youth and adults succeed in a new culture. The teachers interviewed for this study also emphasized the strengths of their students, and the importance of providing an educational structure and curriculum that recognizes and validates the skills and learning experiences of youth and adults from war affected backgrounds. They were able to draw the strengths from their students in creative ways challenged teachers to integrate art, music, and cross cultural themes into the curriculum.

A teacher’s own ability to model empathy, compassion, and resourcefulness is important. Some of the common themes that emerged in the interviews with teachers were: providing a safe, open, and trusting environment for learning about different cultures, and using instructional strategies that promoted a balance of self-direction and collaboration. Effective teaching, noted many of the educators in this study, involved teachers being empathetic, authentic, and caring. One teacher wrote:

Despite the horrible events they have endured, I am amazed by my students’ gentleness and dedication. I have to honor in some way what they have been through and help them create a new life for themselves. A good EAL teacher is one who can get into the skin of that student. Every human being brings some gift into the world, and if I can help them find this gift,

that is my primary job. The teacher should be connecting with the human being first and foremost, the content is secondary.

Another teacher explained the value of “life history writing” as a way for her students to articulate the experiences of their journey and resettlement in North America:

There is not any pressure for my students to include details that may be painful for them. I balance creative writing with helping them understand literature and non-fiction. Themes about relationships, journeys, struggles, and current events interest my students. A lot of talented young people grow up with poverty, prejudice, and a lack of hope. I try to make my students recognize how vital they are and how they can move mountains if they are willing to realize that negative experiences can be a resource of energy and insight. As a teacher, you are in a position to teach skills for living. I think of teaching English as tapping areas of the imagination. I want my students to value their experience. I try to encourage and provide hope.

Building an emotionally intelligent curriculum

Teaching from an “emotional intelligence” framework could challenge readers to understand at a deeper level issues like responsibility, freedom, conscience, and human rights. “Literature is the best traditional subject matter for helping students understand human psychology. The challenge in the curriculum is to bring these psychological themes to the foreground and to give them the context that makes them comprehensible” (Shaker, 2001, p. 28).

Teachers emphasized the importance of patience, kindness, flexibility, cultural sensitivity, and patience as personal qualities that enabled them to be effective in the classroom. Taylor (1998) defines “intercultural competence” as “an adaptive capacity based on an inclusive and integrative world view which allows participants to effectively accommodate the demands of living in a new culture” (p. 154). Individuals with intercultural competence have encountered experiences that have challenged their own cultural assumptions that provide insights into how their view of the world has been shaped by their culture. They also show cultural empathy and can “imaginatively participate in the other’s world view” (Bennett, 2007, p. 9).

Encouraging intercultural intelligence

As global interaction and cultural diversity become more pronounced, cultural competence has received more attention. Students coming from diverse cultural backgrounds provide an opportunity for all students to broaden their knowledge base about different political and cultural systems. In doing so they are more likely to learn intercultural competence. The adult learners interviewed for this study often lived in several countries and could speak several languages such as Italian, Arabic, French, in addition to English. Refugees and newcomers often have a deeper knowledge of geography and political situations from a global perspective. Their experiences during the war led them to have a greater sensitivity to factors that lead to conflict. An "asset" model of education would highlight these students' strengths and experiences, and in so doing, contribute to their becoming role models for other students. Students coming from different cultures can serve as facilitators and catalysts for discussions about different cultures.

The complexity of teaching in a culturally diverse world

Working with youth and adults from war affected backgrounds also challenged the teachers to expand upon their roles and responsibilities. They commented that as a teacher, you have to also be a co-learner, an advocate, and a guide or mentor. The importance of balancing language acquisition within a framework of social awareness and personal development was emphasized by these teachers who work with both adolescent and adult refugee learners:

Teaching English [to newcomers] has helped me develop a broader world view. I would not understand what is going on in Afghanistan or Iraq at a more complex level. I have learned more from my students some days than they have learned from me. We all have families and we all have points of connection. I have learned to be more creative as a teacher. You can never be certain how a student is interpreting or processing what you are saying so you try to reach each person in different way. A major misconception that Canadians have about refugees and immigrants is that they are here to take our jobs away. This is simply not true. Another misconception is that when a student struggles with English, people think that they are slow learners or that they have special needs. These students do not have

learning disabilities. You have to give them time to open up like a flower and blossom. They have all kinds of skills and strengths. My students have a sense of humour and a depth of humanity that I will never forget.

I teach a group of women from Afghanistan in the afternoon, and they are expert carpet weavers and embroiderers. They also walked miles over the mountains with their children to reach a point of safety. All of their husbands disappeared or were killed. Many adult refugees have endured years of stress before settling in Canada and finding a home in Winnipeg, and the reality is that the stress is not over. Resilience also has to be developed; it does not occur over night. We have to be open to learning from other cultures and as a teacher of newcomers and refugees, part of my job is breaking down these communication barriers.

Consistent with strategies and approaches developed by critical literacy theory like Paulo Freire (1997), the teachers in this study emphasized the importance and value of using cooperative learning groups, debates, creative writing, multi-disciplinary approaches to curriculum planning, and incorporating a multiple intelligence approach to teaching that drew upon learners' strengths and interests. In developing a curriculum built around peace and cultural diversity, theorists like George Dei (2002) and Anne Goodman (2002) use poetry, drama, and art as ways to tap into learners' creativity. The importance of using art for self-expression can also be a powerful catalyst for bridging culture and silence.

Creating an educational landscape for discovery and new learning

Having students from diverse cultural backgrounds also provides a valuable opportunity for other students to learn more about the plight of refugees worldwide. In learning more about the experiences of refugees, other students are more like to develop empathy for fellow classmates coming from war affected countries. Francis Bok's autobiography *Escape from Slavery*, for example can be used at the senior high or college level to explore issues like the refugee crisis, human rights, racism, social justice, and courage. One of the Grade 12 teachers in this study organized discussion groups and collaborative projects centred around powerful texts like Elie Wiesel's *Night*, Khaled Hossini's *The Kite Runner* and Nelofar Pazira's *A Bed of Red Flowers*. A discussion of the UNESCO declaration of

human rights was also used in conjunction with these novels.

The idea of using literature and non-fiction to help students broaden their perspective of world issues and the plight of refugees can promote critical thinking and transformative learning. Greenlaw (2005) writes:

Readers can learn to probe their own emotional responses, gather information to help them interpret what they are reading, develop a vision of what a better world might be like, and critically examine injustices both in their own lives and the lives of others.” (p. 46)

Projects students could work on include photo-essays, autobiographies, reports, speeches, and film reviews. Chris Weber’s (2005) *Nurturing the peacemakers in our students* provides an excellent guide to writing and speaking out about issues of war and peace. Giroux (2005) highlights the importance of education providing students with social and emotional skills that can empower and enable them to understand the world they live in through a critically reflective stance. “Education is not only about issues of work and economics, but about questions of justice, social freedom, and the capacity for democracy.” (Giroux, 1995, p. 85)

Working towards an inclusive curriculum for all learners

Rooted in multiple intelligence theory and experiential learning, Renzulli’s (1977; 2001) enrichment triad framework provides an opportunity for learners from diverse cultural backgrounds to be engaged in meaningful learning experiences. Renzulli’s work taps into a broader understanding of giftedness and talented. Students can gain personal knowledge about their own abilities, interests, and learning styles. His ideas are particularly important when working with youth and adults whose talent and skills may not be recognized in traditional approaches to instructional design. Transformative change in education, notes Renzulli, challenges educators and school administrators to critically examine the authoritarian social and psychological climate of schools.

Renzulli’s (2001) work builds upon his earlier research into the development of human talent and potential. A balance of self-directed and collaborative learning activities is encouraged; an in-depth understanding of a particular subject, theme, or topic rather than a superficial overview are highlighted.

The learning projects or clusters that Renzulli describes centre around eight subject areas: language arts, literature, and the humanities; the physical and life sciences; the arts (theatre, dance, music); social sciences; mathematics and computers; physical education, industrial arts, and home economics. Each cluster is associated with specific interest groups and projects. For example, students and teachers interested in language arts and literature might join an investigative journalism group or a poetry workshop. The activities are rooted in “real world” projects and are highly experiential. Students may contribute to a specific Children’s Literature Journal, for example, or an author’s guild.

Renzulli’s approach to curriculum planning: Enhancing cognitive and affective skills

In Renzulli’s enrichment triad model (1977; 2001), each phase of learning emphasizes a deeper level of insight and discovery for students. In “type one” enrichment, general exploratory experiences that are designed to introduce students to topics not ordinarily covered in the regular curriculum. Activities might include debates, field trips, guest speakers, and newspaper programs. Type two enrichment includes a broad range of affective learning activities that would enable students to gain leadership and interpersonal skills. Students would also develop research skills and the ability to gather and organize data from primary and secondary sources. Students develop skills in writing and presenting the data from their research integrating analytical and organizational skills with creative activities and experiences, while at the same time, developing affective skills. This project based approach to curriculum planning can thus prevent apathy and demotivation.

For EAL learners who may not be as proficient in English but, for example, have a keen interest in art or film making, this choice component embedded in Renzulli’s (2001) model would be highly motivating and give them an opportunity to become a “specialist” in a particular area. An emphasis is placed upon matching individual interests and motivational structures with meaningful learning projects that tap into multiple subject and skill domains. His approach to inclusive education differs from traditional approaches to grouping students for special activities in four key ways:

1. Interests and learning styles—rather than ability—are major considerations for participation in a particular learning cluster

2. All students are involved in clusters; the choice is student-determined.
3. Teachers select the clusters with which they would most like to be involved
4. The clusters are guided by an enrichment learning and teaching model rather than by most of the practices that characterize formal instruction (lecture; practice and drill, etc.). (Renzulli, 2001, p. 28).

The challenge of acculturation

The task of re-building one's life in a new culture with unfamiliar legal, cultural, social, and educational systems is daunting. Cultural integration is a complex process of struggle, negotiation, and transformation. Integration into a new society is a time-consuming process of learning. While newcomers need to acquire the knowledge of their new home, the host cultures must also be willing to understand cultures very dissimilar to their own. While it is important not to minimize the impact that war and trauma can have on learning and successful adaptation to a new culture, it is equally important not to underestimate the prior experiences, strengths, and "different ways of knowing" individuals from diverse cultural backgrounds bring to our societies. Successful learning is thought most likely when conditions are right, i.e., accessible opportunities, time, appropriate support, safety, motivation, risks with manageable consequences. Yet in extreme contexts of war, learning must take place quickly under stressful conditions. The adult learners in this study recollected the way war disrupted their childhood and adolescent. Never-the-less, despite the hardship, they were able to draw upon the wisdom of their parents, their own resourcefulness, and other tacit knowledge that gave them the motivation to pursue their educational and career goals in Canada. All participants interviewed for this study commented on the positive aspects of Canadian society—the charter of human rights and freedoms, access to education, freedom of speech, safety, a better standard of living, respect for the law, a brighter future for their children, and an absence of war.

Collectively, the teachers in this study suggested qualities like empathy, self-confidence, self-awareness, and resilience can be fostered in the following ways by:

- Ensuring a nurturing, accepting, and caring school climate characterized by tolerance and acceptance, which includes structured opportunities for social interaction, e.g., peer support programs, in order to maximize opportunities for newcomers to make friends and find more supportive social networks (Anderson, 2004).
- Developing programs or philosophies promoting further development of personal resources such as self-esteem, internal locus of control, and collaborative social skills.
- Attending specialized workshops that provide information about the socio-political, cultural, and educational background of refugees.
- Validating and celebrating cultural diversity among learners through creative writing, art, music, film/ video, dance, and autobiography.
- Respecting and honoring students as survivors; affirming that their identity is much more than 'refugee'.
- Role modeling emotional and social intelligence; be open and gentle with students and provide both structured and creative strategies.
- Building on students' strengths and prior knowledge: recognizing your students can often speak several languages and their insight into different cultures can be an enriching learning opportunity for all students.
- Creating authentic, experiential learning activities to maximize motivation and help students apply their knowledge in practical ways, e.g., presentations, field trips, portfolio assessments, collaborative projects, drama and role playing.
- Choosing educational resources that reflect diversity in terms of culture and voice.
- Providing resources so that students can explore options and alternatives for their educational and career future.

Conclusion

Newcomers commonly seek what democratic countries espouse: opportunity, security, and the freedom to preserve their identity. A school may be the first and only nexus between refugee

children and adults and their new society. Successful interventions and supports often require a multidisciplinary approach and collaboration between mental health systems, social service departments, and educational institutions. Too often, with refugee children and adults, emphasis is placed upon skills they may not possess rather than validating and helping developing skills many do already possess—openness to new experience, resiliency, courage, multiple language and geographical knowledge. With greater awareness, educators will be in a stronger position to truly create a transformative educational context rooted in the talents, aspirations, concerns, and needs of all of our students.

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Charting Self-Concept, Beliefs and Attitudes Towards Mathematics Among Mathematically Gifted Pupils with Learning Difficulties

Anies Al-Hroub

Abstract

The current study investigates how two groups of mathematically gifted pupils with learning difficulties (MG/LD) change/do not change their attitudes towards, and beliefs about, mathematics over five weeks during which they received two different instructional programs in mathematics. Thirty pupils (16 girls and 14 boys), aged 10 years to 11 years and 11 months, were identified as 'mathematically gifted children with learning difficulties' at three public primary schools in Amman, Jordan. Pupils were divided equally into two treatment groups: the first group (n = 15) received traditional mathematics instruction, while the second group (n = 15) received multi-sensory/enrichment mathematics instruction. The pupils in the two groups were matched according to the following criteria: school, grade, gender, IQ scores, mathematical abilities, levels of learning difficulty, and access to teaching resources. The Pupil Questionnaire of the Mathematics Attitude Scale for gifted and non-gifted children (Jarwan, 2001) was administered prior to and after instruction. The findings revealed that while positive changes occurred in the students' self-concept in mathematics in the multi-sensory/ enrichment group, students' self-concept in the traditional group declined. Positive effects were noted from multi-sensory/enrichment treatment on students' beliefs about themselves in relation to mathematics; but negative effects resulting from traditional instruction. Exposure to a novel instruction, compared to traditional instruction, enabled pupils to enjoy mathematics and attribute their success to their own efforts rather than luck.

Keywords: Lebanon, mathematically gifted, attitudes, learning style, self-concept, enrichment.

Introduction

Beliefs about, and attitudes towards mathematics

Attitudes and beliefs are often used synonymously in the psychology of mathematics education (Leder & Forgasz, 2002). Psychologists define 'attitude' as any strong belief or feeling or any approval or disapproval toward people and situations (Kiamanesh, 2004). According to Schuck and Grootenboer (2004) there is disagreement over whether beliefs are expressions of knowledge or of opinion, and whether beliefs belong to the affective rather than cognitive domain.

Doug McLeod (1992) distinguishes between beliefs and attitudes. According to him, beliefs are described as ways in which the pupils perceive mathematics or their own abilities. One example is that 'mathematics is about solving problems'. Attitudes are the positive or negative degree of affect associated with a certain subject, i.e., like/dislike, such as mathematics. In McLeod's (1992) classification,

attitudes together with beliefs and emotions are considered as one of the constructs that constitute the affective domain. Leder and Forgasz (2002) argue that meaningful research can still be carried out without a single, universally accepted definition. For example, in her study Saad (2007) compared the *perception* (a combination of attitudes and beliefs) of mathematically gifted Lebanese seventh grade pupils of their classroom learning experiences in terms of interest, challenge, choice and enjoyment with that of their classmates. The findings revealed that mathematically gifted pupils experience fewer challenges, less enjoyment and less interest than their classmates.

Zan and Di Martino (2007) indicate three main types of definitions can be derived from the literature on 'attitudes towards mathematics': (1) a 'simple' definition of attitude - the positive or negative degree of affect associated with a certain subject, e.g.,

mathematics; (2) a multidimensional definition, including three components of attitude: emotional response, beliefs regarding the subject, behaviour related to the subject; and (3) a bi-dimensional definition, in which behaviours do not appear explicitly. Attitude toward mathematics is therefore seen as the pattern of beliefs and emotions associated with mathematics.

Self-Concept in mathematically gifted pupils with learning difficulties

Research in the field of special educational needs broadly agrees children experiencing special learning problems develop low levels of self-concept and self-esteem (Humphrey, 2002). It is generally accepted *self-concept* and *self-esteem* form a larger, holistic sense of self. These two terms and other related ones (e.g. self-perception) are often used interchangeably in the literature (Huitt, 2004, Humphrey, 2002; Trautwein, Lüdtke, Köller & Baumert, 2006).

For the purpose of clarity, self-concept and self-esteem will be defined as follows: Self-concept is the cognitive, academic or thinking aspect of self (related to one's self-image) and generally refers to the overall complex and dynamic system of learned beliefs and attitudes that each individual holds. Self-esteem is the affective or emotional aspect of self and generally refers to how we feel about or how we value ourselves or one's self-worth (Huitt, 2004). Self-perception is broadly defined as 'an umbrella term' used to describe the combination of thoughts, feelings, attitudes and beliefs that make a person an individual (Humphrey, 2002). Bryan (1986) found in her study that the self-concepts of pupils with learning difficulties regarding academic performance are more negative than those of their peers without difficulties. Montgomery (1994) found pupils with learning difficulties exhibit equivalent self-concepts (or self-esteem) to those pupils without difficulties in non-academic areas but had significantly more negative self-concepts in the areas of academic work and competence.

Closely associated with self-concept is motivational theory. In Bernard Weiner's theory (1986, 1992), pupils' outcomes can be attributed to four causes: ability, effort, task difficulty or luck. Individuals with learning difficulties are thought to have an external, rather than an internal, locus of control. In other words, if success is attributed to luck, the pupil is not likely to make greater efforts in the future, nor is

this successful outcome likely to influence the pupil's perceptions of his/her ability.

Closely related to locus of control and attribution is the concept of learned helplessness – a person's belief that no matter how hard he or she tries, failure will result (Hallahan, Kauffman & Pullen, 2009). Research has repeatedly shown children with learning difficulties have learned academic helplessness, leading some researchers to refer to them as inactive learners (Hallahan, Lloyd, Kauffman, Weiss, & Martinez, 2005). Also closely related to locus of control (or motivation) are the two approaches of 'deep' and 'surface' styles of learning, i.e., how pupils approach learning materials in a way that helps them to understand the meaning of materials (deep style) or simply what needs to be learned (surface style). While 'deep' learning is associated with internal or intrinsic motivation, 'surface' style is more strongly associated with external or extrinsic motivation. However, these two approaches are not mutually exclusive: one person may use both approaches at different times, although she or he may have a preference for one or the other (Biggs & Moore, 1993). In Chapman's (1988) study pupils with learning difficulties and doubt in their abilities were found to; (a) tend to blame their academic failures on those deficits, (b) generally consider their low abilities unchangeable, (c) generally expect failure in the future, and (d) readily give up when confronted with difficult tasks.

Gifted children with learning difficulties may experience a conflict between their high aspirations, e.g. in mathematics, and the low expectations others, e.g. teachers and parents, may have of them. Thus they tend to show low levels of self-esteem (Brody & Mills, 1997). Van Tassel-Baska (1991) found gifted pupils with learning difficulties have lower levels of self-concept than gifted pupils. They were also found to have lower opinions of their high-school education and fewer out-of-class achievements, i.e., in mathematics, leadership, athletics, arts, than their higher-achieving classmates (Gallagher, 2003). Moreover, in one study, teachers perceived gifted pupils with learning difficulties as more asocial, less popular, quieter and less accepted by others than were gifted pupils (Waldron, Saphire & Rosenblum, 1987). This same study also supported Whitmore's (1980) contention that gifted pupils with learning difficulties are at greater risk of having lower levels of self-concept and of facing rejection by their peers. As a result they need counselling services that

differ markedly from those provided for pupils in other categories, including average pupils (McEachem, & Bornot, 2001).

Generally, large numbers of gifted children with learning difficulties are underachievers at school, and their underachievement may be attributed to poor self-esteem, lack of motivation, emotional and social problems or laziness (Brody & Mills, 1997). In her review of literature, Wendy Stewart (2003) categorizes characteristic weaknesses and strengths of gifted children with learning difficulties according to three main types:

cognitive, meta-cognitive and affective. With particular regard to the affective type, she found pupils tend to have low levels of self-esteem and self-concept. They fail to complete assignments. They tend to have unrealistic expectations and set extremely high goals for themselves. They are very critical of themselves especially when they fail to reach these goals. They possess a sense of low personal control over their lives and are reluctant to take risks. They have an external locus of control, accepting responsibility for failures, but not for successes.

The Current Research

The current study investigates how two groups of 'mathematically gifted pupils with learning difficulties' (MG/LD) changed their attitudes towards, and beliefs about, mathematics over five weeks when they received two different instructional programs in mathematics.

In this article, which is based on a broader research study conducted by a multi-disciplinary team, 30 pupils (16 girls and 14 boys), aged 10 years to 11 years and 11 months, at three public primary schools in Amman, Jordan were identified as MG/LD children. A multi-dimensional evaluation process involved the use of a combination of psychometric and dynamic mathematics assessment in addition to teacher and parent interviews. The researcher divided the pupils into two different treatment groups.

The main research question is: *Were the MG/ LD pupils' self-concept, attitudes and beliefs different after they had received the two instructional mathematics approaches?*

In order to answer this question, the two research treatment groups were studied with regard to:

- The pupil's self-concept in terms of his/her ability to do mathematics, i.e., belief about the difficulty of this subject.
- The factors needed by pupil to improve his/her mathematical performance, and positive attitudes toward the subject of mathematics.

Method

Participants and procedure

The Pupil Questionnaire of the Mathematics Attitude Scale for gifted and non-gifted children (Jarwan, 2001). It is a self-report instrument and was administered to the two treatment groups (15 participants in each) with a total of 30 MG/LD pupils (16 girls, 14 boys) from Grades five and six (16 and 14 respectively). To ensure validity, the pupils were divided and matched in the two groups according to the following criteria: school, grade, gender, IQ scores, mathematical abilities, levels of learning difficulties and access to teaching resources. However, the results for one boy pupil from Grade six were excluded as he refused to continue as a participant in the instructional programme.

Pupils in the first group received only regular mathematics teaching prescribed by the Jordanian curriculum. Students in the second

group received a teaching program combining both multi-sensory and enrichment approaches. The classical/traditional mathematics lessons typically began with the presentation of a mathematical concept on the board at the front of the class, and ended with students attempting to apply the concepts. The multi-sensory/enrichment program used different tools to stimulate all the senses rather than just sight and hearing, such as coloring fractions, using small colored cubes to describe or help in answering the fraction questions. The enrichment teaching lessons also used different kinds of audiovisual materials, extra worksheets in problem-solving, and a short history of fractions.

The questionnaire was administered twice: first) prior to the commencement of the respective instructional mathematics programmes; and second) at the end of a five-

week period of instruction. All questionnaire items were read a loud to the pupils to avoid any misreading or misunderstanding.

Instrumentation

Attitudes and beliefs about mathematics were measured using the four subscales of questionnaire. The subscales contained a total of 18 items derived from the Jordanian version of the Pupil Questionnaire of the Mathematics and Science Attitude Scale for gifted and non-gifted children (Jarwan, 2001). The questionnaire was translated into Arabic from the International English version of the Third International Mathematics and Science Study (TIMSS-R -Mullis et al., 2000) and subsequently adapted by the National Centre for Human Resources Development to fit the unique characteristics of the Jordanian educational system (Jarwan, 2001).

The instrument is comprised of positive and negative statements pertinent to the liking of, and, enthusiasm for mathematics, and confidence in one's own mathematical ability. Each item has a 4-point Likert-type scale format ranged as follows: 'A-strongly agree', 'B-agree', 'C-disagree', and 'D-strongly disagree'. As some items are not scaled in the same direction, it was necessary to reverse the scores for them.

Current research presents two education indicator methods which are frequently used in TIMSS 1999 study. In these two methods, data from different source items combine to form indices. The scale development method summarise data from multiple indicators to provide information about a complex construct. Numeric codes assigned to individual questions are averaged so that an underlying continuous scale is formed, and *absolute* cut-off points are established to create three index levels: *high*, *medium*, *low*. The second method creates index levels by specifying a unique combination of responses to the source items that must be satisfied for a pupil to be assigned to its high, medium, or low levels (Gonzalez & Miles, 2001; Martin et al., 2004; Mullis et al., 2000).

In particular, this National Jordanian Pupil Questionnaire addressed many of the issues discussed above. This investigation focuses on four of the revised subscales (or variables):

- *First Subscale: How Do Pupils Perceive Their Ability in Mathematics?* This subscale consists of five statements which address the pupil's belief about how difficult the subject of mathematics is, and what do

he/she thinks of his/her mathematical abilities. Pupils were asked to state their agreement or disagreement with the following statements:

- (1A) I would like mathematics much more if it were not so difficult.
- (1B) Although I do my best, mathematics is more difficult for me than for many of my classmates.
- (1C) Nobody can be good in every subject, and I am just not talented in mathematics.
- (1D) Sometimes when I do not understand a new topic in mathematics initially, I know that I will never really understand it.
- (1E) Mathematics is not one of my strengths.

The means of a pupil's responses to these five statements were divided into three qualitative levels using cut-off points as follows: 1 point = *Low Self-Concept* if all of the responses were either 'A-strongly agree', or 'B-agree'; 2 points = *Medium Self-Concept* if all of the pupil's responses were mixed and different from the other two level; and 3 points = *High Self-Concept* if all of the pupil's responses were either 'C-disagree' or 'D-strongly disagree'.

- *Second Subscale: What Do Pupils Need to Improve Their Mathematical Performance?* This variable consists of four statements relating to four different factors that every pupil needs in order to improve his/ her mathematical school performance. Pupils are required to indicate what they need in order to do well in mathematics:

- (2A) Lots of natural "talent/ability".
- (2B) Good luck.
- (2C) Lots of hard work studying at home.
- (2D) To memorise the textbook or notes.

These responses were categorised into three index levels: (1) *Negative (low) attitudes* if the pupils' mean positive responses were less than or equal to, 2 points ($X \geq 2$); (2) *Neutral (medium) attitudes* if pupils' mean responses were greater than 2 or less than, or equal to, 3 points ($2 < X \leq 3$); (3) *Positive (high) attitudes* if pupils' mean responses were greater than 3 points ($3 < X$).

- *Third Subscale: What Are Pupils' Attitudes Towards Mathematics?* In this subscale, pupils were asked to state their agreement or disagreement with five statements. They are made up of positive and negative statements concerning liking and enthusiasm for mathematics as follows:

- (3A) I like mathematics.
- (3B) I enjoy learning mathematics.
- (3C) Mathematics is boring.

(3D) Mathematics is important to everyone's life.

(3E) I would like a job that involved using mathematics.

The educational scoring indicator used in this subscale is the same as that used in the first subscale of self-concept in mathematics. However, it is important to note the response categories for the 3B statement (mathematics is boring...) were reversed in constructing the index.

- *Fourth Subscale: Why Pupils Need to Do Well in Mathematics?* This variable consists of four statements which represents four

possible reasons for any pupil to do well in mathematics or consider themselves mathematically gifted. These statements contain four different answers, as follows:

(4A) To get the job I want.

(4B) To please my parent(s).

(4C) To get into the secondary school or university I prefer.

(4D) To please myself.

The educational scoring indicator that is used in this subscale is the same as that used in the first subscale of self-concept in mathematics.

Data Analysis

As stated earlier, the questionnaire scaling method produced a score by averaging the responses of each pupil to the items answered. Prior experience raised the suspicion that distribution outcomes might be skewed and not normally distributed (e.g. bell-shaped curve). In addition, the assumption of homogeneity of variance within the population is not met.

Accordingly, pupil's pragmatic *t*-test was not considered appropriate when testing for differences between the two treatment groups. Data analysis was therefore performed using two alternative non-parametric tests: the Mann-Whitney *U*-test for the equal-variance *t*-test, and the Wilcoxon signed-rank test for paired *t*-test. Use of substitute tests was considered preferable when sample sizes are small and the assumptions of normality and homogeneity are not valid.

Between-group and within-group analysis was performed, assessing both pre- and post-evaluation measurements for the two treatment groups. This compared the amount of change in the means *attitude and self-concept in mathematics*, and *self-concept* for each treatment group.

A comparison of absolute differences in the mean *positive attitude and self-concept* in mathematics between the two treatment groups using the Mann-Whitney *U*-test was also performed. Furthermore, it was necessary to use a description statistic test with the subscales, that asks: What do pupils need to do well in mathematics, and why? Descriptive Statistics were helpful to provide detailed summaries about the reasons to do well in mathematics.

Results

In order to show the changes in self-concept, attitudes and perceptions about mathematics, the results of each subscale are presented separately.

Self-concept in mathematics

The absolute change in the mean *self-concept in mathematics* for each of the treatment groups was compared using the Mann-Whitney *U*-Test (Tables 1 & 2). Table 1 illustrates a comparison between the two treatment groups on the pre- and post-measurements. It is important to note in Table 1 that the mean ranks for pupils' *self-concept in mathematics* declined for the traditional teaching group (M pre = 17.1, and M post = 14.75), while pupils' mean ranks of *self-concept* were enhanced (M pre = 12.47, and M post = 15.23).

Table 1: Mean ranks of pupils' self-concept in mathematics for the two treatment groups for each of the pre- and post-instruction questionnaires.

Self-Concept in Mathematics	Groups	N	Mean Rank	Sum of Ranks
Pre-Instruction Questionnaire	Traditional	14	17.7	248.0
	Multi-sensory / Enrichment	15	12.5	187.0
	Total	29		
Post-Instruction Questionnaire	Traditional	14	14.8	206.5
	Multi-sensory / Enrichment	15	15.2	228.5
	Total	29		

Another between-group analysis was performed using the Mann-Whitney *U*-test to assess the difference in mean linear distance for each of the two treatment groups during the pre-and post-instruction questionnaires. Table 2 illustrates that on pre-instruction questionnaire, there is a significant difference in mean self-concept scores between each group (*P* value of 0.025) in favour of the traditional group. The table also shows that on the post-instruction questionnaire, there is no significant difference in mean self-concept scores between the two groups (*P* value of 0.860).

Table 2: Comparisons between the two independent treatment groups for each of pre- and post-instruction questionnaire.

Self-Concept in Mathematics	Pre-Instruction Questionnaire	Post-Instruction Questionnaire
Mann-Whitney U	67.0	101.5
Wilcoxon W	187.0	206.5
Z	-2.24	-.176
Asymp. Sig. (2-tailed)	.025	.86
Exact Sig. [2*(1-tailed Sig.)]	.102(a)	.88(a)

(a) Not corrected for ties.

The differences in mean *self-concept* scores are given for both treatment groups and are grouped into pre- and post-measurements (Tables 3 & 4). These were compared using the Wilcoxon Signed-Rank test. Table 3 illustrates a within-group comparison of the difference in mean for the two treatment groups for pre-and post-instruction questionnaires.

Table 3: Changes in self-concept in mathematics within each treatment group for pre- and post-instruction questionnaires.

Pre- and Post- Self-Concept Subscale	Positive/Negative Ranks	N	Mean Rank	Sum of Ranks
Traditional Instruction Group	Negative Ranks	2(a)	3.0	6.0
	Positive Ranks	3(b)	3.0	9.0
	Ties	9(c)		
	Total	14		
Multi-sensory/Enrichment Instruction Group	Negative Ranks	0(a)	.00	.00
	Positive Ranks	7(b)	4.0	28.0
	Ties	8(c)		
	Total	15		

(a) Post < Pre

(b) Post > Pre

(c) Post = Pre

The findings in Table 4 shows no significant mean difference for the traditional instruction group, with a P value of 0.655, and a significant mean difference for the multi-sensory/enrichment group, with a P value of 0.008.

Table 4: Comparisons between the two related treatment groups' self-concept in mathematics for each of the pre- and post-instruction questionnaire.

Pre- and Post- Self-Concept Subscale	Traditional Instruction Group	Multi-sensory/Enrichment Instruction Group
Z	-.45(a)	-2.65(a)
Asymp. Sig. (2-tailed)	.66	.008

(a) Based on negative ranks.

Table 5 presents the number of cases, minimum and maximum scores, and mean and standard deviations for item (1E) 'Mathematics is not one of my strengths'. As indicated in TIMSS-R (Mullis et al., 2000), it is possible to compute a derived score for pupils by averaging their valid responses to the other four questions only. Although all of the pupils' responses are valid in the other questions, the statistics in Table 5 are used to confirm the findings in the previous Tables. In the pre-instruction questionnaire, the means of item (1E) indicated that, on average, pupils were at the 'high level' ($M = 3.64$) for the traditional treatment group, and at the 'medium level' in the multi-sensory/enrichment group ($M = 3.00$). However, pupils reported different means scores after reach treatment group had received instructional treatment. Pupils in the traditional group continued to be at the 'high level' but with a lower mean of ($M = 3.57$). In contrast, the multi-sensory / enrichment group indicated that, on average, pupils changed from being mid-way between agreeing and disagreeing (medium level, $M = 3.00$) to being mid-way between disagreeing and strongly (high level, $M = 3.27$) disagreeing with 'Mathematics is not one of my strengths'.

Table 5: Descriptive statistics for pupils' reports that 'mathematics is not one of their strengths'.

Traditional Instructional Programme									
Pre-Questionnaire					Post-Questionnaire				
N	Min	Max	M	SD	N	Min	Max	M	SD
14	2.00	4.00	3.64	.63	14	2.00	4.00	3.57	.65
Multi-sensory/Enrichment Instructional Programme									
Pre-Questionnaire					Post-Questionnaire				
N	Min	Max	M	SD	N	Min	Max	M	SD
15	1.00	4.00	3.00	1.20	15	1.00	4.00	3.27	.88

What do pupils need to do well in mathematics

Table 6 presents the number of cases, minimum and maximum scores, and mean and standard deviations for each item analysed (after reverse scoring). In all, 29 of the 30 pupils provided a valid response to all four items. Consistent with the 4-Likert format, the minimum and maximum values for each item were 1 and 4 respectively. The range of mean scores for the traditional instruction group was from medium to high levels (2.43-3.07) in the pre-instruction questionnaire and at the medium level (2.50-3.00) in the post-instruction questionnaire. In the multi-sensory/enrichment group, the mean scores ranged from medium to high levels (2.93-3.47) in the pre-instruction questionnaire and (2.20-3.13) in the post-instruction questionnaire.

In the pre-instruction questionnaire, the means of item (2A) for the traditional and multi-sensory/enrichment groups ($M = 3.07$ and 3.47 respectively) indicated that, on average, pupils were at the 'high level' and as top of the four items they reported that they need 'lots of natural

“talent/ability” to do well in mathematics. Furthermore, the means of item (2D) for the two treatment groups ($M = 3.57$ and 3.47 respectively) indicated that, on average, pupils were moderate and they need ‘good luck’ to do well in mathematics. In item (2C), the mean of pupils’ responses in the two traditional and multi-sensory/enrichment groups indicated that, on average, they were moderate ($M = 3.00$ and 2.93 respectively) reporting need for ‘lots of hard work studying at home’. In item 2D, while pupils in the traditional group, on average, were moderate ($M = 2.93$) in ‘memorising the textbook or notes’, the mean responses of pupils in the multi-sensory treatment group showed that they were at the high level ($M = 3.13$).

In the post-instructional questionnaire, pupils in the traditional treatment group showed, on average, moderate responses toward all of the four items ($M = 3.00, 2.71, 3.00, 2.50$ respectively). In contrast, pupils in the multi-sensory/enrichment group showed, on average, moderate responses in relation to the need for ‘good luck’ and ‘memorising the textbook or notes’ ($M = 2.20$ and 2.87), while their responses were at a high level in terms of the need for ‘lots of hard work studying at home’ and ‘lots of natural “talent/ability” ’ ($M = 3.13$ and 3.07). Notably, pupils in this group shifted from medium level in the pre-instructional questionnaire to the high level in the post-instructional questionnaire reporting a need for ‘lots of hard work studying at home’. Conversely, they changed from high to moderate levels reporting a need ‘to memorise the textbook or notes’.

Table 6: Descriptive statistics for four Items related to second subscales.

Four Statements	Traditional Instructional Programme									
	Pre-Questionnaire					Post-Questionnaire				
	N	Min	Max	M	SD	N	Min	Max	M	SD
2A_talent	14	1	4	3.07	1.07	14	1	4	3.00	.88
2B_luck	14	1	4	2.43	1.09	14	1	4	2.71	.91
2C_hard- work	14	1	4	3.00	1.11	14	2	4	3.00	.88
2D_memorising	14	1	4	2.57	1.09	14	1	4	2.50	.94
Four Statements	Multi-sensory/Enrichment Instructional Programme									
	Pre-Questionnaire					Post-Questionnaire				
	N	Min	Max	M	SD	N	Min	Max	M	SD
2A_talent	15	2	4	3.47	.64	15	1	4	3.07	1.16
2B_luck	15	2	4	2.07	.88	15	1	4	2.20	1.21
2C_hard work	15	1	4	2.93	1.03	15	1	4	3.13	.83
2D_memorising	15	1	4	3.13	1.06	15	1	4	2.87	1.13

Positive attitudes towards mathematics

The absolute changes in positive attitudes towards mathematics for each of the treatment groups were compared by means of the Mann-Whitney *U*-Test (Table 7 & 8). Table 7 demonstrates a comparison between the two treatment groups in the pre- and post-measurements. Table 7 shows similar results to the findings concerning pupils’ self-concept in mathematics. The mean ranks for pupils’ attitudes towards mathematics declined for the traditional teaching group from $M = 15$ in the pre-instruction questionnaire to $M = 13.71$ in the post-instruction questionnaire, while pupils’ mean ranks in the multi-sensory/enrichment group rose from $M = 13.71$ in the pre-instruction questionnaire to $M = 16.20$ in the post-instruction questionnaire.

Table 7: Mean ranks and sums of positive attitudes towards mathematics for the two treatment groups for each of the pre- and post-instruction questionnaire.

Positive Attitudes Toward Mathematics	Groups	N	Mean Rank	Sum of Ranks
Pre-Instruction Questionnaire	Traditional	14	15.00	210.00
	Multi-sensory/Enrichment	15	15.00	225.00
	Total	29		
Post-Instruction Questionnaire	Traditional	14	13.71	192.00
	Multi-sensory/Enrichment	15	16.20	243.00
	Total	29		

Another between-group analysis was performed using the Mann-Whitney *U*-test to assess the difference in positive attitude toward mathematics for each of the two treatment groups during the pre-and post-instruction periods. Table 8 illustrates that when comparing the two groups pre-instruction no significant difference in mean difference is found between each group (*P* value of 1.00). Compared to the post-instruction there is also no significant difference in mean linear distance between the two groups (*P* value of 0.422).

Table 8: Comparisons between the two independent treatment groups for each of the pre- and post-instruction questionnaires.

Positive Attitudes Towards Mathematics	Pre-Instruction Questionnaire	Post-Instruction Questionnaire
Mann-Whitney U	105.0	87.0
Wilcoxon W	225.0	192.0
Z	0.0	-.803
Asymp. Sig. (2-tailed)	1.0	.422
Exact Sig. [2*(1-tailed Sig.)]	1.0(a)	.451(a)

(a) Not corrected for ties.

The differences in the positive attitude towards mathematics are given for both treatment groups and are grouped into pre-and post-measurements (Tables 9 & 10). These were compared by means of the Wilcoxon Signed-Rank test. Table 9 illustrates a within-group comparison of the difference in mean for the two treatment groups for pre- and post-instruction questionnaires.

Table 9: Changes in positive attitudes towards mathematics within each treatment group for pre- and post-instruction questionnaires.

Pre- and Post- Self-Concept Subscale		N	Mean Rank	Sum of Ranks
Traditional Instruction Group	Negative Ranks	5(a)	6.50	32.50
	Positive Ranks	6(b)	5.58	33.50
	Ties	3(c)		
	Total	14		
Multi-sensory / Enrichment Instruction Group	Negative Ranks	3(a)	4.00	12.00
	Positive Ranks	3(b)	3.00	9.00
	Ties	9(c)		
	Total	15		

(a) Post < Pre

(b) Post > Pre

(c) Post = Pre

The findings in Table 10 show no significant mean difference for the traditional instruction group, with a *P* value of 0.964, and also no significant mean difference for the multi-sensory/enrichment group, with a *P* value of 0.939.

Table 10: Comparisons between the two related treatment groups' self-concept in mathematics for each of the pre- and post-instruction questionnaire.

Pre- and Post- Self-Concept Subscale	Traditional Instruction Group	Multi-sensory / Enrichment Instruction Group
Z	-.045(a)	-.333(b)
Asymp. Sig. (2-tailed)	.964	.739

(a) Based on negative ranks.
 (b) Based on positive ranks.

Table 11 presents the number of cases, minimum and maximum scores, mean and standard deviations for each item analysed (after reverse scoring). In all, 29 of the 30 pupils provided a valid response to all five items. Consistent with the 4-Likert format, the minimum and maximum values for each item were 1 and 4 respectively. The range of mean scores for the traditional instruction group was (2.93-3.79) in the pre-instruction questionnaire, and (2.93-3.64) in the post-instruction questionnaire. In the multi-sensory/enrichment group, the mean scores range was (3.00-3.93) in the pre-instruction questionnaire and (3.20-3.67) in the post-instruction questionnaire.

In the pre-instruction questionnaire, only in item (3C) did a mean of *M* = 2.93 (for both groups) indicate that, on average, pupils were moderate in reporting 'mathematics is an easy subject'. However, the other four items (3A, 3B, 3D, and 3E) indicated that, on average, pupils in both treatment groups were classified at the high level or mid-way between agreeing or strongly agreeing with 'I enjoy learning mathematics', 'I find it boring' (reverse scoring), 'Mathematics is important to everyone's life', and 'I would like a job that involves using mathematics'.

In the post-instructional questionnaire, pupils in the multi-sensory/enrichment group showed highly positive attitudes towards each of the items. In contrast, the findings for pupils in the traditional group continued to who a medium level of agreement that 'mathematics is an easy subject', although they pupils demonstrate a high level of positive attitudes in the other four items.

Table 11: Descriptive statistics for five Items related to attitudes toward mathematics.

Five Statements	Traditional Instructional Programme									
	Pre-Questionnaire					Post-Questionnaire				
	N	Min	Max	<i>M</i>	<i>SD</i>	N	Min	Max	<i>M</i>	<i>SD</i>
3A_enjoy	14	1	4	3.57	.85	14	1	4	3.50	1.09
3B_boring	14	1	4	3.79	.80	14	1	4	3.57	1.09
3C_easy	14	1	4	2.93	1.0	14	1	4	2.93	.92
3D_important	14	3	4	3.57	.51	14	3	4	3.64	.50
3E_job	14	1	4	3.14	1.1	14	1	4	3.36	.84
Attitudes toward Math	14	1.60	4	3.40	.62	14	2	4	3.40	.50

Five Statements	Multi-sensory/Enrichment Instructional Programme									
	Pre-Questionnaire					Post-Questionnaire				
	N	Min	Max	<i>M</i>	<i>SD</i>	N	Min	Max	<i>M</i>	<i>SD</i>
3A_enjoy	15	3	4	3.93	.26	15	1	4	3.67	.82

3B_boring	15	2	4	3.73	.59	15	1	4	3.20	1.08
3C_easy	15	2	4	3.00	.76	15	2	4	3.47	.74
3D_important	15	2	4	3.53	.74	15	1	4	3.60	.83
3E_job	15	1	4	3.27	.88	15	2	4	3.47	.64
Attitudes toward Math	15	2.80	4	3.49	.35	15	1.80	4	3.48	.60

Why they need to do well in mathematics

Table 12 presents the number of cases, minimum and maximum scores, and mean and standard deviations for each item analysed (after reverse scoring). In all, 29 of the 30 students provided a valid response to all four items. Consistent with the 4-Likert format, the minimum and maximum values for each item were 1 and 4 respectively. In the pre- and post-instructional questionnaires, the average mean scores in the four items, as presented in Table 12, are 2.86 or above for the two treatment groups. This indicates that, on average, pupils in both treatment groups were classified at the high level or mid-way between agreeing or strongly agreeing that they need to do well in mathematics in order 'To find a job I [they] want', 'To please my [their] parents', 'To get into secondary school or university I [they] prefer' and 'To please myself [themselves]'.

In the traditional treatment group, 'To please my [their] parents' was the pupils' top priority in doing well in mathematics in the pre-instructional questionnaire, while 'To please myself [themselves]' was the last and the only one at the 'medium level', with the intentions 'To get into secondary school or university I [they] prefer' and 'To find a job I [they] want' second and third respectively. After receiving their treatment, the only intention that pupils changed was 'To please myself [themselves]' as it jumped from fourth place to third place and from the 'medium level' to 'the high level'.

In the multi-sensory/enrichment group, the mean values of pupils' responses show, on average, that 'To find a job I [they] prefer', 'To please my [their] parents' and 'To please myself [themselves]' were in equal position as the top motives for doing well in mathematics, while 'To get into secondary school or university I [they] prefer' was in second place. After receiving their treatments, pupils showed different results as 'To get into secondary school or university I [they] prefer' became their primary intention, leaving the second, third and fourth places 'To please myself [themselves]', 'To find a job I [they] prefer', and 'To please my [their] parents'. Notably, the intention 'To please the parents' was the only one that declined from the high level to the 'medium level'.

Table 12: Descriptive statistics for four Items related to the fourth subscale.

Four Statements	Traditional Instructional Programme									
	Pre-Questionnaire					Post-Questionnaire				
	N	Min	Max	<i>M</i>	<i>SD</i>	N	Min	Max	<i>M</i>	<i>SD</i>
4A_desired job	14	1	4	3.29	.83	14	1	4	3.21	.89
4B_please parents	14	3	4	3.86	.36	14	2	4	3.64	.63
4C_desired university	14	3	4	3.71	.47	14	2	4	3.57	.65
4D_please myself	14	1	4	2.86	1.03	14	2	4	3.36	.63
Four Statements	Multi-sensory/Enrichment Instructional Programme									
	Pre-Questionnaire					Post-Questionnaire				
	N	Min	Max	<i>M</i>	<i>SD</i>	N	Min	Max	<i>M</i>	<i>SD</i>
4A_desired job	15	2	4	3.60	.63	15	2	4	3.40	.74

4B_please parents	15	2	4	3.60	.74	15	1	4	3.00	1.25
4C_desired university	15	1	4	3.53	.83	15	3	4	3.73	.46
4D_ myself	15	2	4	3.60	.63	15	2	4	3.60	.63

Conclusions

Several conclusions may be drawn from the results of the four subscales for the two treatment groups as follows:

In the first subscale, while positive changes occurred in the pupils' self-concept in mathematics in the multi-sensory/enrichment group, pupils' self-concept in the traditional group declined. There was a significant difference between the two treatment groups in pre-instructional subscale; however, this discrepancy was narrowed (M decreased in the traditional group, and increased in the multi-sensory/enrichment group) in the post-instructional subscale, to the extent that there was no significant differences. This implies there are positive effects of multi-sensory/enrichment treatment on pupils' perception of their mathematical abilities success, whereas, there are negative effects resulting from the traditional instruction.

In addition, the results shown in Table 5 which statistically describe pupils' reports that 'Mathematics is not one of their strengths', support the findings of the overall subscale's scores. However, although the index scores for this statement could be used when dealing with missing data, (Gonzalez and Miles, 2001; Martin et al., 2004; Mullis et al., 2000), the statement was analysed solely to validate the findings and support the interpretation.

In the second subscale, we could conclude that TIMSS-R (Mullis et al., 2000) was based on the attribution theory (Weiner, 1986, 1992) in order to indicate that pupils' perceptions of the reasons for success and failure determine future behaviours. In the current study, we can see from Tables 6 and 7 that after treatment, pupils in the traditional group attributed success in mathematics firstly to *natural abilities* and *effort*, then *luck* and finally *task difficulty*. Notably, this group placed *effort* at a 'high level' in the pre-instructional subscale. However, after receiving their treatment, their attribution of success to *effort* declined to the 'medium level'. Furthermore, although pupils' attributions to *luck* persisted at the 'medium level', it changed its position from last to third, leaving *task difficulty* as last.

Conversely, pupils in the multi-sensory/enrichment group attributed their success after receiving mathematical treatment to the variable of *effort*, leaving *luck* as last in both pre- and post-instructional subscales. It is important to note that *effort* moved up from its position as third attributor at the 'medium level' pre-treatment and into a 'high level' position post-treatment.

In the third subscale, pupils in both treatment groups continued to hold stable and high positive attitudes towards mathematics in the pre- and post-instructional subscales. However, it is important to note that 'I enjoy learning mathematics' was the only statement at the 'medium level' in the pre-instruction scale for both groups. However, it persisted at the same level for the traditional treatment group, but moved up to the 'high level' for the multi-sensory/enrichment group in the post-instruction subscale.

In the fourth subscale, the conclusion may be drawn that the four statements of this subscale examine the 'deep' and 'surface' learning styles. Pupils with a 'deep approach' to learning are intrinsically motivated to study and interested in satisfying their curiosity about given topics or understanding the meaning of a text. This is shown in statements 4A and 4D concerning need to do well in mathematics in order to 'To get into the secondary school or university I [they] prefer' and 'To please myself [themselves]'. They approach learning tasks using problem-solving strategies (such as questioning, planning, evaluating) to maximise their understanding (Biggs & Moore, 1993). On the other hand, pupils with a 'surface approach' to learning typically have extrinsic motives and simply want to avoid failure, as evidenced in the 1D and 2D statements, i.e., they need to do well in mathematics in order 'To get the job I [they] want' and 'To please my [their] parents'. They tend to do as little work as possible and use memorisation as a key strategy during study (Biggs & Moore, 1993). To conclude, Table 13 can be abstracted from Table 12 in order to find out the percentages of the increase or decrease in pupils' style of learning for both treatment groups.

Not surprisingly, both treatment groups showed, in the average surface learning scores, decreases from pre-treatment to post-treatment. However, an increase would be expected in the 'deep learning' of two different treatment groups during the five-week instruction period. A distinct change was noticed in the multi-sensory/enrichment group, as pupils achieved an increase of 14.59 per cent from the pre- to the post-treatment.

Table 13: The percentage increase or decrease of the surface and deep learning styles for the two treatment groups.

Style of Learning	Traditional Instructional Programme (n = 14)					Multi-sensory/ Enrichment Instructional Programme (n = 15)				
	Pre-Questionnaire		Post-Questionnaire		% of Increase/Decrease	Pre-Questionnaire		Post-Questionnaire		% of Increase/Decrease
	M	SD	M	SD		M	SD	M	SD	
Surface	3.57	.39	3.43	.47	- 4.16	3.60	.47	3.57	.53	- .93
Deep	3.29	.67	3.46	.50	5.16	3.20	.73	3.67	.45	14.59

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Raising Expectations: Talent Development in Belfast

David Ryan and Joanne Wilson

Abstract

A unique talent development project took place in Belfast, Northern Ireland over the autumn (fall) term of 2007 that developed 60 young people from ten diverse schools (Special, Secondary, Grammar, Controlled (state schools) and Catholic Maintained). The project culminated in Manchester on 3 December 2007 when the Young People undertook a journey from Belfast to Manchester following in the footsteps of George Best – the famous Manchester United and Northern Ireland professional footballer. The event attracted a huge media interest – being covered by Northern Ireland's Ulster Television News programme, the leading Northern Ireland NI newspaper - The Belfast Telegraph, The Manchester Evening News, Manchester United Television – Sky channel, Manchester Evening News and BBC Manchester. A research study was undertaken in parallel with the project to quantify the young people's self-image, abilities and belief in achievement before, during and after the project.

Keywords: Talent development, self-image, achievement, abilities, belief.

Introduction

Project Context

In November 2006 the lead author attended the UK Government's Department for Education and Skills (DfES) Gifted and Talented Conference held in London during which a conversation was held with Liam O'Reilly from a Manchester based company called ProExcel. This company specialised in working with talented young people in England through dance auditions and intensive workshops which usually culminated in a performance at a major sporting event such as a Premier League football match or Rugby final. From the conversation a project was to be born that would raise pupil, teacher and parent expectations for students in Belfast's secondary schools.

Initial discussions with the company took place from November 2006 until the spring school term of 2007, during which time a series of presentations were made to teachers from schools in the Belfast area in order to ascertain what interest there would be in engaging in a talent development project of this nature. From the initial presentations commitments were secured from ten schools to participate in the project which would become known as 'Move It Belfast 2007'.

The project faced a number of obstacles from the outset: Northern Ireland is one of the

few remaining European democracies without a governmental strategy for gifted and talented and therefore funding was not available for this type of project; and, in addition ProExcel had never worked outside of England before. However, due to the commitment and enthusiasm of the organisers and the students the project was able to proceed between October and December 2007.

Belfast has traditionally been known as a divided city, and the deep rooted divisions continue to be manifest in the educational system. All schools are state funded and a majority continue to be organised along religious divisions – with schools for Protestant or Roman Catholic children and a smaller number of integrated schools for pupils of any religion or none. Although Primary schools cater for pupils with a wide ability range, Social divisions are also represented in the post primary education system with academic selection at age 11 separating pupils into secondary schools or grammar schools. A number of special schools continue to be part of the pupil provision. An aim of the project was to seek to engage schools from wide social and religious backgrounds, and this was realised with schools from both communities and a wide social mix of students becoming involved.

Project Development

The project had a number of phases – and started with auditions in October 2007 at which over 300 young people attended to seek to obtain one of 60 places available. The next phase was held over the Hallowe'en half term holiday in October-November 2007 when the successful students voluntarily sacrificed their school holiday to work with a leading choreographer from London's West End for the workshop.

It was during the workshop week that the seed of an idea was planted – that the project could be themed around the life of the late George Best – as the second anniversary of his death approaching on 25 November 2007 and funeral on 5 December 2007. George Best was known on the international stage as a leading footballer who played for Northern Ireland and Manchester United and sadly lost his life due to liver disease. George was a family man and many members of his family continue to live in Belfast and Northern Ireland. In terms of ethical issues, it was clearly inappropriate to seek to develop the project on the George Best theme without the Best family being consulted in advance and ensuring they were on-board. Initial contact was made with through one of the teachers who knew the family and following this Barbara McNarry Best (George's sister) and her husband Norman came to meet the students during the workshop week. As a result Barbara wholeheartedly lent her support to the project. By the end of the week an impressive dance routine had been skilfully choreographed, using music such as *'Georgie the Belfast Boy'*, (Don Fardon) *'Holding Out for a Hero'* (Bonnie Tyler) and *'Don't Stop Me Now'* (Queen). Permission was also granted by the family to use some of the music by Brian Kennedy that featured in George Best's funeral ceremony, held at Parliament Buildings in Belfast.

It has been previously mentioned that ordinarily, ProExcel project finales take place at major sporting events including English Premier League football matches. However, bearing in mind that Northern Ireland is a relatively small country with just 1.7 million people, there is no equivalent to the English Premier League with football teams mainly consisting of part time players in small capacity stadia. During the workshop week an ambitious decision was taken to make an approach to Manchester United in order to identify options for a possible performance at Old Trafford. In devising this

plan the organisers knew from the outset that this may prove to be a tall order and may have been beyond the reach of the project. However, as the young people were being encouraged to 'aim higher' in developing their talent and performance capabilities – a suitable challenge of aiming higher existed for the organisers. Ultimately a performance at Old Trafford proved to be unobtainable – although through intense negotiations with Manchester United it was agreed that the stadium and Manchester's United Foundation would host a tour of the stadium for the students. Through additional negotiations the commitment of The Trafford Centre – a large shopping centre in Manchester was secured for a performance.

It was through this process that the 'aim higher' skills of the organisers were also severely challenged. As Northern Ireland has no governmental strategy for gifted and talented education, funding for the workshop part of the project had been secured from the schools involved and a limited amount of small scale sponsorship from local businesses – but the problem now faced was that not only funding had to be secured but also a means of transport to take a total of 78 students, teachers and organisers from Belfast to Manchester and back. An approach was made to FlyBe – a regional UK airline for the 'loan' of an aircraft as it had been noted by the project organisers that significantly, the airline had renamed one of its aircraft 'George Best'. A series of meetings and skilful negotiations with senior FlyBe staff in Northern Ireland to explore options followed, the outcome of which was that FlyBe agreed to come on board as the major sponsor and provided the 'loan' of the George Best Aircraft – a 78 seater Bombardier, Dash 8 Q400. The support of Barbara Best McNarry was important throughout the project and was greatly appreciated.

It was also noted by the organisers that one of the regional airports in Belfast – Belfast City Airport had been renamed 'George Best Belfast City Airport' in George's honour on 22 May 2006. Support was sought from the airport authorities and after further negotiation sponsorship was agreed to assist with travel and subsistence for the young people during their time in Manchester.

The first performance took place in November 2007 at the Northern Ireland Under 21 Euro Qualifier football match which was held in Lurgan, County Armagh – a country town about 25 miles from Belfast. The performance was extremely well received by the football fans

and a number of the fans stated to the organisers that they were moved emotionally by the performance. A second, smaller performance took place when the students performed in Lisburn, County Antrim – a newly designated city for the ‘Make a Wish’ Foundation Pantomime (a local charity that works with severely ill children).

The culmination of the project took place on 3 December 2007 when a total party of 87 including students, teachers and organisers gathered at Belfast’s George Best Belfast City Airport to be greeted by the Lord Mayor of Belfast – Councillor Jim Rodgers. Following a press photo call with the dancers in front of the George Best aircraft, the entourage mirrored the journey of the young George Best many years previously by travelling to Manchester. The significant difference was that this group travelled in relative comfort by air whereas George travelled by boat across the Irish Sea in 1961.

As the party made their way to Manchester spirits were high, possibly due to the fact that the passengers on this particular aircraft were travelling with one purpose, and on arrival at Manchester a press pack had gathered to meet the party, including television camera crews from Ulster Television Live – one of the main Northern Ireland evening news programmes and BBC Manchester. The first of the days news footage was recorded which would be aired on news channels in Northern Ireland and England that evening. Kirby (2007), McNeilly (2007)

The first of the days events was held at Old Trafford football stadium – the home of Manchester United where the young people were greeted by the former Manchester United Player and team mate of George– Paddy Crerand who was able to answer questions posed by the young people to him by about what it was like to play football with George Best.

The young people also had the chance to be photographed with the Premier League Trophy and the 1968 European Cup, a cup which many believe George Best was instrumental in winning for Manchester United. The Group then went on to perform on a specially constructed stage at The Trafford Centre.

Trafford Centre Performance

George Best’s sister Barbara had accompanied the young people on their journey from Belfast, and she took to the stage on the

Trafford Centre to initiate proceedings by offering some reflections on the life of George and introducing the project. It must be appreciated that this was extremely difficult thing to do as it was the second anniversary of George’s Funeral.

In parallel with the dance programme, MoveIt! Belfast 2007 had a small media team of students attached to it. This team had recorded a significant amount of video footage throughout the rehearsal and early performances, which along with a commentary was added to footage from the funeral, of George’s playing days and a number of recordings from George’s family life – some of which had never been seen in public and the family had given permission to air for the project. The end result was a most moving feature which was shown on a massive video screen behind the stage in the Trafford Centre to introduce the dance sequence.

It is difficult to describe the spectacle of the dance programme involving dynamic movement and sound using words alone. The dancers were wearing costumes which had been specially commissioned for the event. Half of the dancers wore green with a large number 7 on the back to represent George’s Northern Ireland team colours and the number he played under and the other half wore red with number 11 to represent George’s Manchester United days.

A lively Irish jig type set started the sequence to the music ‘George the Belfast Boy’ to be followed by a high energy performance to Bonnie Tyler’s ‘Holding Out for a Hero’. This in turn gave way to Queen’s ‘Don’t Stop Me Now’ before finishing with a sombre and reflective end piece ‘You Raise Me Up’ by Brain Kennedy, which had been performed at the funeral.

The culmination event brought together over 60 young people from diverse backgrounds in Belfast to perform together in Manchester as one body celebrating the life of one of ‘Belfast’s sons’. Their performance represented the end of what had been two months of intensive work and they were physically exhausted. However, throughout the performance the memorable aspect was the sheer sense of exhilaration on the faces of all the young people as they performed.

Project Outcomes

The project concluded with a presentation evening for the young people and their schools on 22 May 2008 – again a significant date as it would have been George Best’s Birthday and 2 years since the local

airport had been renamed in his honour. The date was also to prove memorable as in the early hours of that day Manchester United won the European Cup in Moscow during extra time.

At one level the project had brought an industry standard dance workshop to Belfast. However, the benefits accrued from the project go much deeper. Unplanned spin offs from the

project included the young people establishing a dedicated website – ‘Bebo’ (www.bebo.com) a social networking internet site that continues to be maintained by one of the students, and it is clear that with an eclectic mix of young people being part of the project, ongoing friendships were established and continue to be maintained; transcending the social and political divisions normally found in the city.

Method

Research design

Discussion with the organisers at the early stage of project initiation had revealed that none of the ProExcel projects had been researched from an academic perspective, and it was agreed that it would be beneficial to conduct a detailed research project to accompany the dance and media project. In order to take account of ethical considerations letters were sent to participatory schools, the students and their parents to outline the research project and seek written informed consent for engagement in the research.

Participants were guaranteed anonymity throughout the research and no concerns were identified in terms of the research that would pose any risk to participants. Signed consent was received from students and their parents and a 100% response rate was achieved with no parent or young person indicating at that stage that they did not wish to participate in the research.

The consent included the option for future interviews should the research develop into a longitudinal study and the opportunity was given to leave the research at any stage. In total, three questionnaires were given to the students, at different time points; completed questionnaires totalled 60, 57 and 48, respectively.

Of the final number received 45 questionnaires contained valid responses and it is this number that has been used throughout this report. Each questionnaire was coded with a unique identifier number and where a response was not made to all three questionnaires their data was removed from the study as it had been agreed that students could opt out of the research process at any stage; failure to complete was therefore regarded as an expression to disengage.

The research method adopted was one of participative research (Porter and Lacey, 2005). An important aspect of the research design was that it should not be invasive or detrimentally impact on rehearsal or performance time. The first questionnaire was administered to students who through audition had been offered a place on the workshop week and was completed on the first day of rehearsal. The second questionnaire was administered at the end of the workshop week and the final questionnaire was administered on the aircraft as they returned home from Manchester.

Questionnaire one

The questionnaire utilised a mixed methods approach with a number of open ended qualitative response options and quantitative responses using Likert scales to determine measures of participant attitude. The questionnaire consisted of 11 pages and sought responses to a number of areas as shown in Table 1 below.

Table 1: Questionnaire one structure and questions (Art).

Main Areas	Questions	Type
Personal details.		Open Ended
Family and siblings.		Open Ended
School and transfer test information.		Scaled for grade achieved & Open Ended
School life and friendships, including perceived gifts and talents.	<ul style="list-style-type: none"> • Perceptions of how good the student is in a range of school subjects. • Actual or perceived grades in General Certificate in Secondary Education (GCSE) examinations (Year 12 public examination). • How the student perceived themselves to work at the subjects. • Feelings about school. • Learning styles. 	Likert Scale Open Ended Likert Scale Open Ended
1. Talents.	• Response to talents in sport, drama, art, music and other.	Open Ended
2. Skills.	• Response to a range of creative areas.	Likert Scale
3. Personality.	• Choices from a range of options.	Open Ended
4. Self-esteem.	• Responding to a number of statements.	Likert Scale
5. Role models.	• Choosing role models.	Open Ended
6. Relationships and lifestyle.	• Responding to statements on relationships, smoking, recreational drugs and alcohol.	State
Project engagement.	• Response to a range of issues regarding the project.	Open Ended
Dance.	• Responses to a number of questions on talent and previous experience of dance.	Open Ended
The future.	• Response to what university or vocational pathway the student wished to undertake.	Open Ended
Other areas.	• Open response for additional student information.	Open Ended

Note: Within Northern Ireland pupils at the age of 11 have the opportunity to sit an academic test which consists of questions on Mathematics, English and Science. Pupils are then awarded a grade of either A, B1, B2, C1, C2 or D and the results are used to determine whether or not the pupil can access a grammar or secondary school place. This test was contentious and was subsequently ended by the Education Minister in November 2008. Students were asked to respond whether they entered the test, what grade they achieved and choices as to whether the grade was what they expected, if it was or worse than expected.

Questionnaire two

This was a short 1 page questionnaire which sought student views on how they perceived themselves to have changed over the workshop week as follows:

- What have you enjoyed about taking part in the project this week?
- What have you not enjoyed?
- What have you learned about yourself this week?
- Have you made any new friends this week?
- Who were they and why did the friendship develop?
- In what ways have your dance skills improved?
- What other skills have you developed?
- What have you learned?
- Is there anything else you would like to say about yourself? And
- Have you answered all the questions honestly?

Questionnaire three

This questionnaire also utilised a mixed methods approach with a number of open ended qualitative response options and quantitative responses using Likert scales to determine measures of participant attitude. The questionnaire consisted of 10 pages and sought responses to a number of areas as shown in Table 2 below.

Table 2: Questionnaire three structure and questions (Art).

Main Areas	Questions	Type
Personal Details		Open Ended
	What have you gained from participating in the project – please give as much detail as possible	Open Ended
	What have you learned about yourself?	Open Ended
	What difficulties have you faced in being part of the project and how did you overcome them?	Open Ended
New Friends Made	A table was presented and the students asked to complete a number of questions in relation to friendships. What is similar and what is different about this person to you, Do you intend to maintain this friendship, Have you met with (friends) outside project times (where, when what did you do, how many times).	Open Ended
School Subjects	The same table as presented to Questionnaire 1 (part d) was represented and students asked to complete again to seek to identify what had changed	Likert Scale
Behaviour	Three questions were posed in relation to times when the students had to be ‘told off’ in terms of how they felt, whether they considered it fair and what was learned from the experience of being told off.	Open Ended
Learning Styles	This was a repeat of Questionnaire 1 (Part d) to seek to identify changes.	Statement Response
Listening and concentration	Response to statement to seek to identify perceived improvements.	Statement Response
Improvements in Schoolwork	Students were asked to respond to whether they felt their schoolwork had improved as a result of the project.	Statement Response
Achievement	Students were asked to consider what they felt they now could achieve.	Open Ended
Skills	The same table as presented to Questionnaire 1 (E2) was represented and students asked to complete again to seek to identify what had changed.	Likert Scale
Personality	Questionnaire 1 (E3) repeated.	Statement Response
Self Esteem	Questionnaire 1 (E4) repeated.	Statement Response
Role Models	Questionnaire 1 (E5) repeated.	Open Ended
Project Costs	Responses sought in terms of costs in a range of areas – Church life, clothes, family life, Friendships, Homework and other costs.	Open Ended
Costumes	Response to feelings about costumes.	Open Ended
Music	Response to feelings about choice of music used in the project.	Open Ended
Lessons Learned	Responses to 18 different aspects in relation to the project. For example, George Best, sponsors and organisers.	Open Ended

University	Responses to feelings about students attending university and whether the project had altered opinion.	Open Ended
Flight Costs	Students were asked to suggest the cost of a return flight between Belfast and Manchester.	Choose one of 15 different options
Staff	Students were asked to provide their opinions of all staff involved in terms of skills, organisation, listening ability, being helpful, knowledge, understanding, making things happen, intelligence, being easy to understand, expertise and being able to sort out pupil problems. A likert scale was used with 1 being the lowest and 5 being the highest from which a total score was calculated	Likert Scale
What was the number one highlight of the project for you?		Open Ended
What was the lowest point of the project for you?		Open Ended
What would you tell your friends about the project?		Open Ended
Where do you see the project going in the future?		Open Ended
Questions in relation to taking the project further		Open Ended

Research Findings

Survey one analysis

The total number of respondents who completed all three surveys was 45 with an age range of 11-18 years old and an average age of 14.62 years old. Respondents represented a total of 9 schools, shown in Table 3. The descriptors of schools has been discussed previously by Ryan (2006, p.11) controlled schools are managed and funded by boards, Catholic Maintained Schools are managed by the Council for Catholic Maintained Schools (CCMS) and financed by boards, Voluntary Grammar Schools are self-managed and directly funded by the Department of Education. Grant Maintained Integrated Schools are self-managed and funded direct from the Department. Irish Medium Schools may be considered as either independent schools or controlled.

Table 3: Students by school type.

School Type	Number	% of total
Controlled Secondary School for Girls – East Belfast.	9	20.0
Voluntary Grammar School for Girls – East Belfast.	5	11.1
Maintained Secondary School for Boys – West Belfast.	3	6.7
Controlled Secondary School for Girls – North Belfast.	10	22.2
Coeducational Integrated College – North Belfast.	6	13.3
Maintained Secondary School for Girls – North Belfast.	6	13.3
Coeducational Special School for Pupils with Emotional and Behavioural Difficulties – North Belfast.	1	2.2
Maintained Secondary School for Girls – North Belfast.	4	8.9
Voluntary Grammar School for Girls – South Belfast.	1	2.2
N = 45		

Academic ability

In order to determine the academic ability range of the students, a question was posed in terms of what grade was achieved in the Transfer Test. This test is used in Northern Ireland as a basis of academic selection, largely to determine whether a pupil will go to a grammar or secondary

school after primary education. A total of 45 participants responded to questions on the transfer test, of which 35 had taken the test at age 11. The data shows that over half the students (51.4%) achieved a grade D. There were two grammar schools in the cohort where traditionally pupils with Grades A and B would attend, whereas traditionally secondary schools (the rest of the cohort) would take pupils with Grades C and D and this may account for the high percentage of D grades.

Table 4: Transfer test grade obtained.

Transfer Test Grade	Number	Percentage
A [1]	4	11.4
B1 [2]	2	5.7
B2 [3]	1	2.9
C [4]	10	28.6
D [5]	18	51.4
	N = 45	

Perceived talent in dance

Questionnaire 1 administered at the start of the project highlighted that although around 26 (55.3%) of the students were already involved in dance performances or lessons; 19 had no previous exposure to dance. The students were also asked to describe their dance talent using one of a number of descriptors – ‘excellent, very good, good, average, poor, not very good’. Table 5 illustrates that no-one described their talent as being either ‘poor’ or ‘not very good’ and almost 70% suggested they were either ‘excellent’ or ‘very good’. Given the competition for places on the project (over 300 auditioned for 60 places) it was surprising that 2 students described themselves as being ‘average’.

Table 5: Perceived talent in dance.

Description	Frequency	Percentage of Respondents
Excellent	14	31.1
Very Good	17	37.8
Good	12	26.7
Average	2	4.4
	N = 45	

Future prospects

Participants were asked three questions about their future: what they would do when they leave school; which course they would undertake; and what career they would like in the future. The results are shown in Table 6.

Table 6: Perceived university destination.

When left school		Course to undertake		Career planned	
Response	N / 43	Response	N / 39	Response	N / 42
1. University		1. Drama	/	1= Performing Arts	
	2	Performing Arts	2	1= Dance Teacher	
2= Dance		2= Dance	4	3= Choreographer	
2= Performing Arts		2= Don't Know	4	3= Professional Dancer	

Questionnaire two analysis

This survey was completed at the end of the workshop week.

Question One: What have you enjoyed about taking part in the project this week?

In total 10 participants responded that they enjoyed everything about the project, the ‘*whole experience*’. Thematic analysis showed that respondents enjoyed dancing (N=10) and learning new

moves, routines and choreography (N=16). The opportunity to make new friends and meet new people (N=20) was valued. The respondents also enjoyed being and experiencing professionalism (N=3), working as a team (N=2) and being energetic (N=2).

Question Two: What have you not enjoyed?

Most respondents indicated that there was nothing they did not enjoy during the project (N = 18). Some responded that they did not enjoy sweating (N=5), tiredness or muscle pain (N=3). Perhaps a surprising finding, given the age of the participants was that of a dislike of *'people not listening [and the] lack of discipline'* (N=8). Lastly a couple (N=2) of respondents cited that they did not enjoy the hard work or repetition, but realised it was *'worth it'*.

Question Three: What have you learned about yourself this week?

Many respondents believed that the project afforded them an opportunity to realise that had the ability to dance/dance better and pick up new routines (N=9), three believed they could now dance for longer. Others believed they could do better through trying (N=13), for example one response was that *'I am more capable than what I think'* and another was *'if I push myself I can achieve so much more'*. The gaining or recognition of confidence was important (N=7), as was learning to work as part of a team (N=5) and the need to listen more and be quiet when necessary (N=4). Only one person said they did not learn anything with an additional person responding that they learned that they could not dance.

Question Four: In what ways have your dance skills improved?

A total of 13 respondents believed that their dance skills had improved in many ways, for example, one stated that their skills had improved *'dramatically'* and two felt they had improved in *'every way'*. For those who provided a more detailed response their improvements lay in various areas: 8 believed their confidence had improved and 9 felt their energy levels had improved, with one stating that they had greater *'flexibility and energy, power in dance'*, and another that *'I've built up my stamina'*. A further theme was that respondents had learnt more dance moves and styles and become better performers (N=13) with respondents stating that: *'New steps learnt, can freestyle better'* and *'I feel like a better performer. I have learnt to "show off"! Ha! Ha!'*

Question Five: What other skills have you developed?

When asked what other skills they had developed a total of 9 respondents mentioned either teamwork or discipline and one reported that they had learnt to *'appreciate (the) work of others like the choreographers'*. Confidence (N=7) was gained by some respondents, even those who believed they were always confident: *'even though I was quite confident I have gained more through this experience'*. Respondents also believed that their communication (N=4), listening (N=8) and *'friendship building'* (N = 3) skills had improved. Lastly, participants felt that they had developed more energy and a greater level of fitness (N=4) as a result of taking part in the project and had become so skilled in the moves, which were learned quickly (N=2) that as one stated *'during warm ups positions aren't that sore any more'*.

Question Six: What have you learned?

When asked what they had learned through participation in the project 17 respondents mentioned that they had learnt new moves and dance skills, whilst 4 simply stated they had learned *'loads'* and 5 believed they had learnt teamwork: *'no matter how good you may be you need to work as a team'*. A total of 7 felt that they had learned *'to listen'*. Additionally 6 respondents noted that they had learnt to *'push myself and I will achieve'*.

Question Seven: Is there anything else you would like to say about yourself?

When asked if there was anything else respondents would like to say a total of 7 took the opportunity to say thank you for being able to participate in the project. An additional 9 respondents mentioned that they had really loved taking part in the project and had *'found an even greater love for dancing'*.

New friends made from project

Participants were asked to state details of friends they had made during the project and a total of 40 responses were valid. The number of friendships developed ranged from 1-7 and the mean number was 4.2.

Statements true to respondents

Participants were asked to choose statements that were true for them for two questions: about listening and concentration skills; and about schoolwork and homework. A total of 45 responded to each statement. Means were used to calculate which statement was most popular. For the first statement the mean (M=1.15) indicated that respondents believed *'My listening skills and concentration skills have improved'* (N=41) and for the second the mean (M=1.80) response was that *'My schoolwork and homework have stayed the same'* (N=23). Interestingly, recent research has suggested that involvement in physical activities can enhance academic performance (Marley, 2007, Frankel, 2007). However, this does not appear to have been substantiated through this research. However, it may be the case that if parents to teachers were asked to comment that alternative findings may have resulted.

Questionnaire three:

Question One: What have you gained from participating in the project – please give as much detail as possible.

The most frequently cited gain from taking part in the project was confidence (N=29), for example: *'I have gained lots of confidence cause I love to dance and I used to hide from dancing and since this came along it has brought me so far'* and *'I shouldn't be so afraid to stand out in a crowd and to show my abilities to others'* The making of new friends was also well cited (N=25) with statements such as: *'I have gained lots of friends'* and *'I have also gained new and wonderful friends'*. Dance, fitness and performance skills (N=22) were mentioned almost as many times as the making of friends: *'I have become a far more professional dancer....I have performed in fantastic places, on TV! And become fitter', '[I have]...a whole new view on dance and fitness'* Teamwork and mixing with peers from other schools was highly cited (N=14), for example the following comments were made: *'Learned to dance with others and not just for myself'; 'Different schools can mix and learn energetic dance routines'* and *'How to work in a team with people I don't know'*. A total of 12 people took the opportunity provided by this question to say how they felt the project was *'A great experience'; 'Great fun and laughs';* and *'I have gained so much responsibility and independence, because you're doing things like without your parents. And I have met wonderful people. It's such a brilliant opportunity. I'm just sad it's over'*. Four people also cited more interpersonal gains from taking part in the project: *'I have learnt a lot about my "limits" and how I should not be so negative'; 'Overall, I'm able to concentrate more than before'* and *'to work hard and you know you will achieve something'*.

Question Two: What have you learned about yourself?

A large number (N=21) of participants answered that they realised through the project *'That I can do what I want if I just put my mind to it and work hard'; 'I have learned that I can push myself harder'* and *'Also how far I can go physical when I put all my effort into it, even if I'm tired and hungry'*. Related to this realisation participants recognised some interpersonal qualities, for example, *'I get stressed easily'; 'I'm patient....I'm not as loud as I thought'; '...I can relate to others';* and *'I have learnt that if I work hard and listen and respect others then they will treat me the same way as I treat them'*.

Again, confidence was well cited (N=12), for example, *'I'm not as shy as I used to be'* and *'That I have more courage in myself'*. Eight participants learned that they are good at dance, with comments such as: *'I pick up steps quite quickly'* and *'I have learned that I am a good dancer'*. Lastly, five people again cited teamwork with large groups and people previously unknown to them for example, *'I have learned how to work in very large groups'* and *'[I] can work well with others'*.

Comparison of learning styles

Table 7 shows the percentage of respondents (N=47) who selected each learning style in questionnaires one and three. The McNemar chi-square test for dichotomous nominal data was employed but no statistically significant differences were found.

Table 7: Learning style comparison between questionnaires one and three.

Learning Style	Survey One Yes Responses (%)	Survey Three Yes Responses (%)
Listening to a teacher talking.	48.9	51.1
Watching a demonstration.	61.7	72.3
Reading a book.	21.3	12.8
Working with a group of friends.	72.3	74.5
Looking at photographs.	31.9	36.2
By solving a problem.	25.5	25.5
By school visits.	55.3	53.2
By experimenting, trial and error.	53.2	53.2
Figuring out how something is done yourself.	42.6	42.6
Doing worksheets.	21.3	29.8
Using the internet.	40.4	38.3
Listening to info e.g. on iPod or MP3.	38.3	36.2
By hands on doing.	42.6	55.3
By asking others.	14.9	27.7
By drawing a memory map.	23.4	21.3
Other.	21.3	14.9

Comparison of self-esteem

Ratings of self-esteem in surveys one and three were compared using a paired samples t-test. No statistically significant differences were found. Table 8 shows the means and standard deviations. This was somewhat surprising as one of the suggested benefits of engagement in talent development projects with high levels of public exposure was suggested as being enhancement of student's self-esteem.

Table 8: Comparison of self-esteem between questionnaire one and questionnaire three.

	Self-Esteem Questionnaire One	Self-Esteem Questionnaire Three
<i>M</i>	3.85	3.83
<i>SD</i>	0.615	0.442

Conclusions

This project had small beginnings but grew into something larger than could have been envisioned. The growth was spurred on by the enthusiasm and dedication of the students which became infectious. The original aim was simply to bring a talent development project to Belfast that had not taken place previously, and at the end of the project it became clear that a flame had been lit, or as was stated in the vernacular 'the project grew legs'.

The time commitment to the project was substantial and went beyond what was originally envisioned, and the costs in financial terms high, working out at almost £600 sterling per student. However, the benefits were deemed to

far outweigh the costs, with many young people reporting enhancements in their dance ability, self-esteem and ability to make new friends across social and political divides.

A substantial amount of data was gathered in parallel to the project and this paper summarises a small part of that data. Unfortunately funding is not available to fully analyse the data gathered or continue with longitudinal studies. It would be highly interesting and informative to have gained responses from teachers and parents on what they felt the gains were during and after the project. For example, those children who recognised that they were impatient might have

learned to be more so, or academic results might have improved statistically. Also, questionnaires were completed during and immediately after the project, when children were still involved in the experience. It might be worthwhile to ask those children to take a retrospective viewpoint of their experience; when they have had time to think about it and realise any long term impact it might have had.

For example, are the students still friends with those they met on the project? A number of the students left compulsory schooling at the end of June 2008 and either moved onto the world of work or university. It would be interesting to follow up on these particular school leavers in the future in order to determine what the medium and long term impacts of the project are.

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Creative Abilities and Styles as Predictors of School Success

Maciej Karwowski; Izabela Lebuda; and Ewa Wisniewska

Abstract

The article presents results of research conducted on a large sample (N=1,316) of youths of both sexes (49% men and 51% women) from two categories of schools – public or state (68%) and non-public or private (32%). Participants' creative ability and style of creative functioning was assessed using Urban & Jellen TCT-DP (to assess level) and Kirton Adaption-Innovation Inventory (to assess style). GPA served as an indicator of the effectiveness of school functioning, which overall was found to be weak. It did correlate significantly and positively with creative ability levels, but not innovativeness-adaptiveness. Positive correlations exist between GPA, originality and efficiency as determined by the KAI subscales. Interesting differences exist between the two types of schools. A creative thinking and originality style of functioning influenced grades significantly in public schools. In non-public schools efficiency of functioning was more important to school success. Creative innovators appeared most efficient in public schools, compared with non-creative innovators. Adaptors in non-public schools tend to be slightly more efficient, especially if they are creative. The results are discussed in terms of the assumed independence of creativity level and style formulated by M. Kirton (1976, 2003) and sources of school success in different types of schools in Poland.

Keywords: Creativity, creative abilities, creativity style, school success.

Introduction

Both among specialists who analyze the conditions for the development of creative potential and among laymen, a “Romantic stereotype” of an eminent creator is strong (see Sawyer, 2004). According to this stereotype, creative people are those who break the mold, boldly questioning the *status quo*. They are the revolutionists who make far-ranging changes in the nature of their domain of interest. Yet, despite the authenticity of this view -especially in terms of the most eminent creators, it does exclude all other creators working steadily on some form of creation. Although they contribute to the culture in far less spectacular ways, frequently, their contribution is no less significant.

The picture is important and helps in this analysis. It turns attention away from the predominant perceptions of what it is to be highly creative, i.e., having strong creative abilities, and more towards the style of creating, i.e., *how* people create. After all, getting to know how people create shows not only the level of creative abilities, but also how specifically their creativity may be expressed.

This study is based on the Kirton Adaption-Innovation theory. The key assumption of Kirton's (1976, 1987) theory may be stated thus: human beings solve problems

and therefore create but they may be placed on a continuum where one pole is defined as adaptiveness and the other – innovativeness. In his classical text and basing his views on the work of Peter Drucker, Kirton (1976) argues while adaption is connected with the tendency to “do something better,” innovation implies a preference to “do something differently.” The result? Ultimately those preferring an adaptive functioning style operate skillfully within the frame of an existing paradigm, attempting to change things systematically, step-by-step. Their change evolves. Innovators, on the other hand, with their pressing tendency for revolutionary change, do not look for the improvement of a paradigm, rather its complete rejection. It must be replaced with a new one that has a character which clearly destroys the *status quo*. Deepened characteristics of adaptors and innovationists can be found in the works of Kirton (1976, 1987, and 2003) as well as in numerous allied discussions (Isaksen & Dorval, 1993, Tokarz, 2005).

In order to conduct research into cognitive styles connected with creativity, Kirton (1976, 1987) proposed use of a short questionnaire, i.e., the *Kirton Adaption Innovation Inventory (KAI)*. The KAI is composed of 32 items, with a 5-point Likert-type scale

ranging from 1 (very hard) to 5 (very easy). Numerous studies have implemented the KAI and they typically indicate a three-factor structure. However, in some studies a four-factor solution is also postulated (Taylor, 1989a, 1989b). The three singled-out factors are described as: a) sufficiency of originality (SO), b) efficiency (E): and c) rule conformity (RC). Kirton (1987) is convinced innovators are characterized by high level of the sufficiency of originality (SO), but low levels of both efficiency (E) and rule conformity (RC). On the other hand, adaptors are characterized by high levels of efficiency (E) and rule conformity (RC), but low levels of the sufficiency of originality (SO). The special way of calculating raw results in KAI scales allows use of the total score to indicate either innovativeness (high scores) or adaptiveness (low scores).

Kirton's questionnaire is characterized by acceptable reliability that ordinarily fluctuates between Cronbach's $\alpha = .80$ or $.90$ (Kirton, 2003), though detailed scales are slightly less reliable. Most publications using KAI report the one indicator, i.e., the total result. There may be an argument in favor of treating results this way. During factor analysis, the first non-rated factor featured all positions on the scale with a loading of no less than $.3$.

The range of theoretical results for the KAI range between 32 and 160 points with a theoretical mean of 96 and an almost identical empirical mean of $M=95.5$ (Kirton, 2003). For the most part, research data show total results for the KAI the scale characterized by normal distribution, making it useful even for the very demanding statistical analyses.

While KAI data do show men usually achieve higher indicators of innovativeness than women, Kirton (2003) finds a lack of other explicit and unambiguous interrelations between innovation-adaptation, specifically between age, education or profession. This valid and reliable method makes it possible to verify to what extent hypotheses about the independence of level and style, as formulated by Kirton (1987), are confirmed. He treats these two dimensions orthogonally and a significant body of research, conducted both by Kirton and other researchers (e.g., Torrance, 1982; Torrance & Horng, 1980), generally confirms this ascertainment. Exhaustive discussion in research with respect to the level-style problem can be found both in the works of Kirton himself (2003) and his acolytes (Isaksen & Dorval, 1993, Mudd, 1996). Mudd (1996) in his study of relationships between creativity level and style, relies on the

research based on factor analyses which ordinarily indicate level (e.g., results in such creativity tests as TTCT) and style (KAI, or the MBTI creativity index) typically load on different factors. Results like this are provided by Kirton's (1987) re-analysis of data provided by Torrance and Horng (1980), where independence of level and style was confirmed – despite a rather small sample ($N = 33$). Similar research was conducted using a larger sample by Tefft (1990). Results also showed that KAI creates a factor much like in the MBTI described as “style”. The measurements of fluency, flexibility and originality of thinking, however, prove to be connected with a different factor. Results of factor analyses conducted by Isaksen and Dorval (1993) also confirm the postulated independence of level and style.

Bearing this research in mind it seems reasonable to assume that most studies support Kirton's (1987) view of level and style as independent dimensions of creativity. Mudd (1980) provides the most spectacular confirmation in this regard. In his research he divided the 27 measurements ordinarily used in research into five groups (1-creativity level; 2-creativity style; 3-mixed style; 3-creativity level/style; 5-other measurements). He was able to prove that six out of seven level measurements did not correlate with KAI at all. On the other hand, he did discover slight differences and usually stronger relations in correlations between KAI results creativity measurements. Goldsmith (1984; Goldsmith & Matherly, 1985) too found significant and moderately strong connections between KAI and the scale of creative motivation ($r=.46$) in addition to other self-descriptive measurements of creativity.

Selected conditions of school success

Which particular conditions lead to educational success or failure is a matter of constant debate in the educational world. In this context, it is worth pondering on: a) what ways individuals find most effective and dependable as they function in a school; and b) how some students accomplish good grades while others only manage failing grades. These are very important issues, because school achievement is one of the most important predictors of professional career and success in life (Karwowski, Lebeda, 2007). To discover what provides optimal conditions for student success also justifies development of elaborate profiles on good students, methods of remediation and

other appropriate educational programs that support the process of learning-studying (Kossowska, 2004).

Ideally, school achievement should reflect levels of intellectual development. However, in practice, educators may measure school achievement more by high grade point average, contests won and high level performance in subject-related Olympics (Karwowski, 2005). Ultimately, school success seems to be determined by how a child behaves and is able to balance school requirements with achievements. How this balance is achieved provides insight into ways students function in, and adapt to their environment; their frame of mind while at school; and gain acceptance by teachers and peers.

Various factors influence school success. These include: intellectual, personality, motivation-emotional, and environmental conditions, in addition to creative ability. According to Kupisiewicz (1988) three groups of factors in particular determine school success, i.e., social-economic, biological-mental and educational factors. Generally, these three factors may be divided into: a) the intrinsic, i.e., aspects connected with mental and physical development of a child as well as his or her individual characteristics; and b) the extrinsic, i.e., aspects connected with the child's living conditions, nearer and more distant environment or the educational care and work family and school ensure. It is important to note the intrinsic and extrinsic aspects are very closely interrelated.

School achievement seems to be a significant phenomenon as far as the issue of giftedness is concerned. Often giftedness is defined by eminent school achievement (Marland 1972) with students who get good grades being perceived as gifted. In real settings especially important are interactions between giftedness in the school and creative giftedness in real life, or translation of the potential into its' realization (i.e. Renzulli, Reis, 1986, 1997).

In truth, because of the diversity of giftedness, the creation of an overall profile of a gifted person is problematic. It is variously understood as having high levels of intelligence, being widely accepted as creative, and, or having some form of special ability (Gardner, 1983; Marland, 1972; Sternberg, 1997a). According to famous report developed by the team of Marland (1972), gifted individual is one who possesses high levels of ability in at least one of such areas, as intelligence, creative

abilities, the fine arts or music, school achievement, leadership and psychomotor abilities.

Sternberg (1985) understands intelligence as the mental ability to adjust and change one's behaviors depending on context. It therefore encompasses the ability to deal with new situations. It may seem obvious that intelligence is crucial when it comes to school achievement, yet this relationship does not always prove significant and strong. Intelligence is, of course, a necessary factor, but it does not explain the overall phenomenon of school success (Gardner, 1983, Firkowska-Mankiewicz, 2002; Necka, 2002; Strelau, 1997). Many study results point to dependence between levels of intelligence and school success (Terman, Oden, 1959). However, although some researchers claim the relationship between intelligence and school success is weak, there may be a positive and significant relationship during the initial years of education.

Personality is also one of the predictors of school success. It may exert a modifying influence on all levels of information processing and what follows as a result of studying. For example, conscientiousness may influence the way of analyzing information, and intelligence may influence speed and effectiveness of its processing (Karwowski, 2005).

A large body of research also highlights the influence of metacognition on school and academic achievement in gifted people. Metacognition is understood as knowledge of one's own cognitive processes, the way one functions and how one can be steered. It has been proved that gifted students differ with respect to metacognitive functioning from average students (Jausovec, 1994).

Meta-memory seems key, in that gifted students use more diversified strategies of memorization, and are able to separate significant from insignificant information more deftly and effectively. In addition, they are characterized as having a better metacognitive understanding, a greater stock of knowledge, an ability to find indispensable information more effectively, and solve complex problems more spontaneously and with greater ease, all of which may strongly influence achieving better results while studying.

The relationship between creative abilities and school achievement in different areas of student endeavor is seemingly significant (Karwowski, 2005, Turska, 2006). However, data from research conducted in this area are contradictory, proving relations

between these variables to be little and insignificant. Creative ability is, in fact, an aspect of giftedness, but it often seems to be connected with extra-school activity. Borzym (1984) in her research postulated a lack of any relation between the level of creative abilities and learning results. This may reveal how the contemporary school, with its preference for passive acquisition and re-gurgitation of knowledge, fails to embrace the creative ability of students. In these conditions creative students are not able to make use of their potential capabilities (Turska, 2006).

Research conducted by Karwowski (2005) found a connection between school achievements and creative abilities and attitudes showing students characterized by high levels of creative attitude may boast of higher achievements at school. Students characterized by a creative attitude also scored higher grades, presenting their abilities better by applying such features as cognitive curiosity, originality of thinking, or openness while problem solving. Other research shows also

positive connections between intuition and giftedness, as measured by GPA and teachers' nominations (Karwowski, 2008).

Many researchers claim ability tests are a highly imperfect predictor of success in life. In particular, according to Sternberg (1997b), abilities explain only a small part of individual differences within the frame of school achievements. He points out the necessity to concentrate not only on abilities, but also on thinking styles preferred by people that enable management of one's own cognitive stock in different ways. These thinking styles appear to mediate between abilities and their implementation via particular actions, creating a peculiar synergetic effect as a result of the "cooperation". Sternberg claims that close and specific consideration of human functioning in the context of best educational practice is especially important and may be rich with new educational solutions generally, (Sternberg, 1997b; Sternberg & Zhang, 2001), and with regards the education of gifted children specifically (Sternberg & Grigorenko 1993).

Method

Sample

The sample is comprised of N=1,316 students (49% men and 51% women) from 32 Polish schools. Approximately seventy percent (68.4%) of the sample attend public or state schools and 31.6% attend non-public or private schools. Sixty-one percent of students were recruited from middle schools (13-16 years of age) and 39% from high schools (17-19 years of age).

Instruments

1. To evaluate the level of creativity the Polish adaptation (Jaworowska, Matczak, & Stanczak, 1996) of the *Test for Creative Thinking-Drawing Production* TCT-DP (originally by Urban & Jellen, 1996) was used. The TCT-DP is a drawing test developed to measuring creative abilities and is based on a component model of creativity by Urban (1996). It encompasses six groups of components including: divergent thinking, general competences, specific knowledge and abilities, task-oriented engagement, motives and tolerance of ambiguity. The subjects are asked to complete a framed incomplete drawing that already includes six graphic elements.
2. To evaluate the style of creativity, Kossowska's (2005) non-authorized Polish translation of Kirton's (1976) *KAI Adaption-Innovation Questionnaire* was used. The questionnaire is composed of 32 statements, self-descriptive in character, for example: *enjoys detailed work, has fresh perspectives on old problems, proliferates ideas, is methodical and systematic, fits readily into 'the system', is predictable*. Its aim is to measure cognitive styles of adaption-innovation treated as opposite poles describing a single dimension. The following three sub-scales compose KAI: sufficiency of originality, efficiency, and rule governance.
3. To evaluate the school effectiveness the Grade Point Average (GPA) was used.

Hypotheses

H1: There is a positive relation between the effectiveness of functioning at school and the adaptive style of creativity as well as creative abilities. At the same time the correlations between school

success and creative abilities (level of creativity) are stronger than in case of adaptiveness-innovativeness (style of creativity) and GPA.

H2: Whereas in non-public (private) schools, high achievements are associated with creative ability and innovative style of creativity, effectiveness of functioning in public (state) schools is associated with low levels of creative ability and adaptiveness.

H3: Non-public school students are characterized by greater school achievement, more innovativeness and a higher level of creative ability than the public school students.

Results

A correlation analysis was conducted in order to verify the first hypothesis which posits an association between the effectiveness of functioning at school, styles of adaption-innovation, and creative abilities. As noted in Table 1, the effectiveness of functioning at school as measured by GPA is statistically weak, yet positively and significantly correlated with creative abilities. No relation was observed between GPA results and styles of adaption-innovation. The correlation between the KAI sufficiency of originality (SO) scale and the effectiveness of functioning at school is statistically significant but weak. The efficiency (E) scale correlates very weakly and negatively. The first hypothesis about the relations between results and style was therefore rejected. It proved, however, that relations do exist between school results and the sufficiency of originality (characteristic for the innovation style), and efficiency (characteristic for the style of adaption).

Table 1: Results of the analysis of GPA correlation with creative abilities and adaption-innovation styles.

		<i>M</i>	<i>SD</i>	2	3	4	5	6
1	GPA	3.80	.76	.17***	.04	.10***	-.07**	.01
2	TCT-DP	21.28	10.27	1	.11***	.05*	.05^	.08**
3	KAI	95.55	6.72			.33***	.60***	.79***
4	O (KAI)	46.61	6.25				-.35***	-.22***
5	E (KAI)	17.40	4.21					.58***
6	RC (KAI)	31.54	6.72					

Note: ^ $p < 0.1$, * $p < .05$, ** $p < .01$, *** $p < .0001$, In E and RC of KAI scoring is inverted.

In order to examine whether differences exist between the results of students from public and non-public schools, comparison was conducted between group means. Membership in individual types of schools (public, non-public) was a dependent variable and functioning at school, creative abilities, and the adaption-innovation scales were factors. The results were concordant with the hypothesis. Non-public school students achieve higher results within the frame of functioning at school, creative abilities and cognitive styles of adaption-innovation than the students of public schools. The third hypothesis has been confirmed. (See Table 2).

Table 2: Comparison if mean results within the frame of functioning at school, creative abilities, and adaption-innovation styles in groups of students from public and non-public schools.

Type of school	<i>M</i> & <i>SD</i>	GPA	TCT-DP	KAI	O (KAI)	E (KAI)	RC (KAI)
Public	M (SD) 3.67 (.7)	20.48 (9.8)	93.99 (8.3)	46.27 (6.0)	17.06 (3.9)	30.66 (6.1)	
Non-public	M (SD) 4.07 (.7)	23.01 (11.0)	98.92 (12.0)	47.35 (6.7)	18.13 (4.9)	33.44 (7.5)	
Total	M (SD) 3.80 (.8)	21.28 (10.3)	95.55 (9.9)	46.61 (6.3)	17.40 (4.2)	31.54 (6.7)	
Significance of differences	$F(1,1243)=8$ $p=.0001$ $\eta^2=.06$	$F(1,1305)=17$ $p=.0001$ $\eta^2=.01$	$F(1,1310)=74$ $p=.0001$ $\eta^2=.05$	$F(1,1310)=8.5$ $p=.004$ $\eta^2=.01$	$F(1,1310)=18$ $p=.0001$ $\eta^2=.01$	$F(1,1310)=51$ $p=.0001$ $\eta^2=.04$	

Note: ^ $p < 0.1$, * $p < .05$, ** $p < .01$, *** $p < .0001$; In E and RC of KAI scoring is inverted.

Correlational analysis rendered interesting results with respect to type of schools. In the case of public schools, as Table 3 indicates, both the creative abilities and the KAI SO scale correlate weakly, but significantly, with the success of functioning at school. In the case of non-public schools a positive relation has been observed between the effectiveness of functioning at school and KAI E scale. GPA results again correlate weakly, but positively with the results within the framework of creative abilities.

Table 3: Results of the analysis of the correlation between functioning at school, creative abilities and adaption-innovation styles in the division into public and non-public schools. Above diagonal – public schools, below – non-public schools.

	GPA	TCT-DP	KAI	O (KAI)	E (KAI)	RC (KAI)
GPA	1.00	0.15***	0.00	0.10**	-0.08**	-0.04
TCT-DP	0.13**	1.00	0.10**	0.04	0.06^	0.05
KAI	-0.06	0.07	1.00	0.28***	0.55***	0.74***
O (KAI)	0.05	0.05	0.39***	1.00	-0.43***	-0.33***
E (KAI)	-0.15***	0.00	0.64***	-0.28***	1.00	0.53***
RC (KAI)	-0.04	0.07	0.83***	-0.09^	0.62***	1.00

Note: ^ $p < 0.1$, * $p < .05$, ** $p < .01$, *** $p < .0001$, In E and RC of KAI scoring is inverted.

The interaction *level x style* is significant only in public schools ($F(1,838) = 6.58; p=.01$). It is also evident that the effectiveness of functioning in public schools is different depending upon the level of creative abilities and adaption-innovation style. In public schools, those who achieve high results within the framework of creative abilities and innovation style, i.e., creative innovators are most effective at school. At the same time, non-creative innovators, i.e., those with lower levels of creative abilities are less likely to achieve success at school. In non-public schools, adaptors seem to be more effective, especially creative adaptors. The 3-way interaction (*type of the school x level of creativity x creativity style*) is close to be marginally significant $F(1,1233)=2.6; p=.11$. In ANOVA there is also observed significant main effect of the school type $F(1,1233)=77.52; p=.0001$, indicating higher grades among private school students.

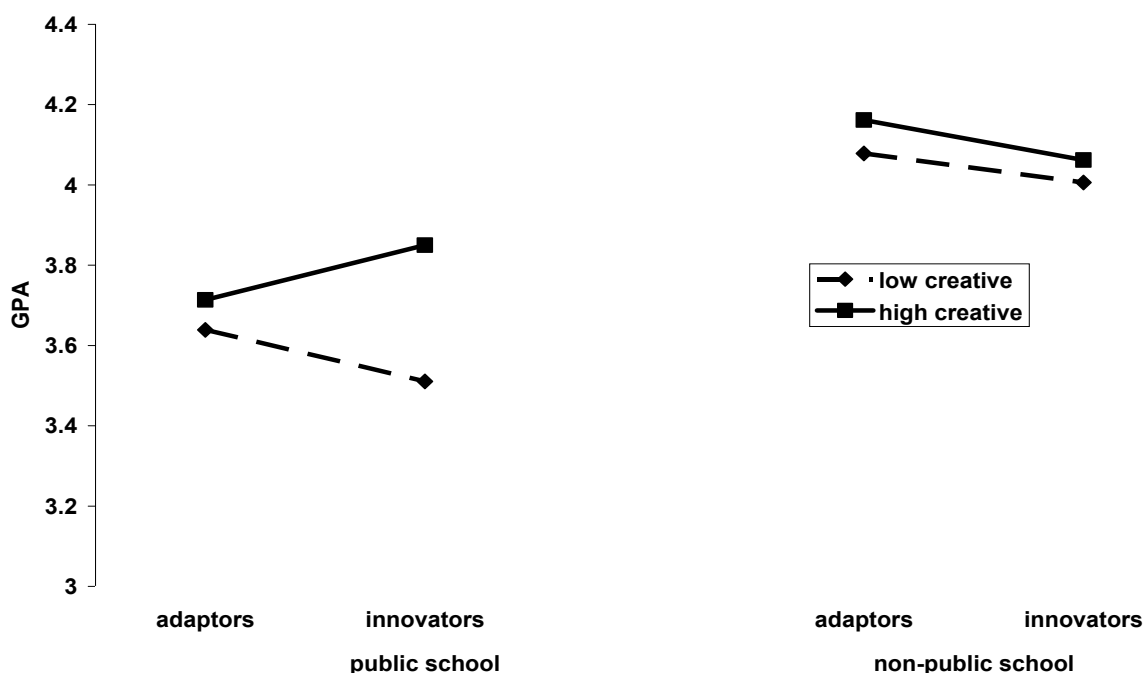


Figure 1: Comparison of mean results of the effectiveness of functioning at school (GPA), depending on the level of creative abilities (TCT-DP) and functioning styles of adaption, innovation (KAI).

Discussion

Results indicate there is a positive relation between learning abilities and school achievements as measured by GPA. However, there is a lack of relation between school results and adaption-innovation styles overall. There is a weak but positive relation between the effectiveness of functioning at school and individual KAI scales – sufficiency of originality and efficiency. One may therefore conclude that creative abilities are related with the effectiveness of solving tasks schools demand of their students. This is reflected in school grades. It is possible that in order to achieve school success, the means and style of solving problems is less important than the effect itself, i.e., do whatever it takes to get results.

Data analysis indicates non-public school students achieve better results, and are characterized by higher level of creative abilities and adaptive creativity styles. One might suppose that such a finding springs from the nature of Polish non-public schools. In comparison with public schools, these institutions provide greater chances for multilateral stimulation of students, more diverse experiences and smaller groups in which teachers are more easily able to notice,

appreciate and stimulate the special abilities of individual students.

In public schools, students characterized by high level of creative abilities and high sufficiency of originality on the KAI scale are better students. Compared with public school, in non-public schools a positive and stronger relation exists between the effectiveness of functioning at school, creative abilities and efficiency on the KAI scale. It is therefore reasonable to conclude that high level of creative abilities facilitates dealing with school situations whatever the type of school. However, in public school in order for students to achieve good results they must also stand out in terms of their style of working. In public schools, creative innovators achieve the highest results, whereas other innovators obtain the lowest. This means that the ability to introduce, create newness, and solve problems in a non-typical way is appreciated in these schools, but only when these are accompanied by creative ability. Despite a lack of statistical significance in case of the results in non-public schools, it is worthy of note that creative adaptors are more effective, while non-creative adaptors obtain the lowest results.

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Child Prodigy in Astronomy: A Biographical Study from the Sudan

Omar Khaleefa

Abstract

Although many studies have been conducted in the West regarding child prodigies, no such studies have taken place in indigenous Arab cultures - particularly not in Sudan. The present study attempts to bridge the existing gap in this area by focusing on a Sudanese child prodigy with extraordinary inclination towards astronomy. It is a qualitative follow-up study from birth to the age of 10 years. The study showed that the child has many talents or intelligences. Focus on this child represents the first attempt of identification of gifted children in the Sudanese "Simbir Project". His identification coincides with a time when the importance of identifying and recognizing gifted children is starting to emerge in the Sudan.

Keywords: Child prodigy, astronomy, biography, Sudan.

Introduction

A child prodigy may be defined as less than 10 years old but able to perform either like an adult (Morelock & Feldman, 1999) or culturally relevant tasks at levels rare even among highly trained professional adults in their field (Ruthsatz & Detterman, 2003). In Western cultures a number of studies have been conducted with respect to such children (Feldman, 1980, 1986, 1991, 1999; Howe, 1999; Levitin & Bellugi, 1998; Morelock & Feldman, 1991, 1999, 2000; Treffert, 1989). Although child prodigies were found in domains such as music, chess, mathematics, visual arts and writing, none were found in the domain of natural sciences, generally, or physics specifically (Feldman, 1986, Morelock and Feldman, 2000). In contrast, in the Sudanese Arab culture, a child prodigy has been found in the domain of astronomy. A study of this child forms the basis of our paper.

Ultimately what defines creativity and giftedness in any culture is determined by the particular needs of that culture. Thus each Arab culture needs to be understood on its own terms (Khaleefa, 1999a, 1999b, Khaleefa & Ashria, 1995; Khaleefa, Erdos & Ashria, 1996a, 1996b, 1996c, 1997).

No studies of child prodigies have been conducted in indigenous Arab cultures, particularly Sudan. In the Arab culture, there is a single biographical case study which was conducted on the development of the Bahraini

child "A'ya", who had been diagnosed at the age of 7 as a mentally retarded child, but whose case has been identified by Khaleefa (2000) at the age of 14 as a gifted child with multi-intelligences or multi-talents.

The present study attempts to bridge the existing gap in this area by focusing on Simbir, an extraordinary Sudanese child – a prodigy in astronomy. The name "Simbir" is not the real name of the child, only a pseudonym. This qualitative study is biographical in nature. It describes the development of, and comments only on, certain aspects of the child from birth to the age of 10 years.

Aims of the biographical study

- (1) To collect biographical descriptive data about the role of the supportive family in the promotion of the child's talents.
- (2) Determine how the child was identified as gifted.
- (3) To survey and analyze the child's multi-intelligences or multi-talents.
- (4) To investigate the child's obsession/fascination with astronomy.
- (5) To raise awareness in the Sudan with respect to the importance of accelerating gifted children in general, and child prodigies in particular.

How Simbir came to be selected for this study

In 2002, an ambitious project regarding the identification and promotion for gifted children was initiated in Khartoum, Sudan. The project was named “Simbir Project” after the famous Al-Simbir bird in the Sudan (It signifies a good omen, marking the arrival of autumn and the beginning of the planting season). During the first year of the project, 2003, a group of 30 gifted children were identified (21 females and 9 males) through a matrix based on the IQ, academic achievement, and mathematics grades.

In the second year of the project, 2004, a group of 55 gifted children were identified. This group included Simbir (after the name of the project), who was at the time 8 years, 8 months old. This time the researchers used a matrix incorporating five methods of assessment: IQ, creativity scores, academic achievement, checklists as well as mathematics grades.

In the year 2005, the Ministry of Education in Khartoum State initiated a huge program for the identification and promotion of gifted children. A group of 150 gifted children were identified in Greater Khartoum. Three special schools for gifted children have been established in Khartoum in November 2005.

Just as there are obvious differences between gifted and normal children, there are differences among the 55 identified gifted children in “Simbir Project”. They scored high on various components of the matrix and presented different interests. For example, one gifted female child obtaining high scores gave a talk on first aid; another female child who obtained the highest scores on the creativity test gave a talk on controlling malaria.

Simbir stood out. He obtained the highest scores on the general matrix with an average of 350 points. In the Sudan, such a high score is a powerful indicator of giftedness. He also was the top in mathematics, intelligence (Standard Progressive Matrices) as well as academic achievement (Atta’ Alla, 2004). On the WISC-111, his scores were as follows:

- 148 (verbal intelligence).
- 118 (performance intelligence).
- 146 (verbal comprehension).
- 122 (perceptual organization).
- 137 (freedom from distractibility).
- 94 (information processing).
- 137 (full score intelligence).

He presented his talk on the solar system. His talks far surpassed the rest. He appeared different quantitatively as well as qualitatively in his multi-talents particularly his passion for astronomy. He was chosen for the study.

It is interesting to note here that Simbir’s grandfather’s was also noted for his interest in astronomy as was well documented by the Sudanese writer Najeela (1971). Simbir’s extended family and clan has produced extremely gifted individuals for generations. They have numbered among the most gifted and talented individuals in the country. His great grandfather, for example, was known as *Nazir* or leader of the tribe. He was a member of parliament who seconded the suggestion of independence for Sudan from British rule. Other extremely gifted individuals from Simbir’ extended family have included a Minister of Justice, a critic and Minister of Education, a geologist, a pathologist, a civil engineer, and a computer programmer.

Method

Data collection

In order to collect objective data for the present biographical study of Simbir we have relied on six sources (1) Four intensive interviews with the child's supportive family; (2) The school records of the child for three years; (3) Results of psychological tests carried out by a qualified Sudanese psychologist; (4) Some of the child products like, poems, essays, drawings, and presentations; (5) Experts' judgment; and (6) Some personal observations.

Simbir's birth and early childhood

Many investigators debate the importance of the supportive family or environment for the promotion of extraordinary talents (e.g., Feldman, 1986, Howe, 1990, Ruthsatz & Detterman, 2003). In this part of the study, we investigate the birth and early childhood of Simbir and look at the intervention of his supportive family. It is important to note that Simbir's parents carefully documented the child's development. This form of extensive documentation of Simbir's activity is rare in the indigenous Sudanese culture. Few families, particularly from the upper middle class, and even those with a significant educational tradition, have the awareness to document a child's development so carefully. Their care and attention to detail is reminiscent of the huge efforts by the famous developmental psychologist Piaget during his acute, careful observation and follow up of his three children as they grew up in Geneva (Piaget, 1947).

The child was born on Sunday, 25 June 1995 in the United Arab Emirates (UAE). His father was a teacher of Arabic language in school and his mother was a housewife. Both parents are university graduates and are related second cousin belonging to the same extended family. At the time of birth, his father was 34 years old and his mother was 31 years old. At birth, the child weighed 2.6 kg. Some milestones in his early development are noted, for example, at the age 6 months he was sitting; at 10 months he was crawling; his teeth appeared at 11 months; at 12 months he was speaking; he started walking at 15 months and began forming short sentences accurately at 18 months. At the age of two, he was able to differentiate between Arabic alphabetic letters correctly. His younger brother was born when he was 28 months old. He used to insist on holding and playing with him and was rarely hostile to him.

Between the age of 2 and 4, his mother used to read stories to him before going to bed. He demanded more stories, at least three or

four each night. He was allowed to listen to short stories recorded on cassette before sleeping. He was able to focus clearly on the events of the stories, and could repeat each story almost in its exact words. At the age of 3, he was able to attach a name accurately to a list of twelve boys and girls he knew and remember the full name of around 40 family members. These skills indicate the strength of his memory and concentration and were further improved through educational games provided by his supportive family.

At the age of 4, he pretended to read a short story from a book. This made him feel very happy. He also acted out some of the roles in these books. Among his favorite stories were "Long-Necked (Rabbit?) *Stretch*" - the very first story to be read to him, and the Small Lion and the Young Chicken. At the same age, he showed a particular inclination towards a specific Arabic magazine called "Majid".

Articles in this magazine first drew his attention to the world of astronomy and supplied him with information in that field. It is pertinent to ask whether the short stories read to the child at such an early developmental phase played a significant role with respect to his later development. Did the stories he heard and the articles he read help the child's imagination and thus contribute to his early fascination with astronomy?

Admission to kindergarten and school

At the age of 3 years 3 months, Simbir was put in an English kindergarten in the United Arab Emirates. According to his family, the reason for choosing an English school as opposed to one that was Arabic was because there was a lot of fighting amongst children at the Arabic school. His parents considered this was risky for a child with such a peaceful and forgiving nature. He stayed at the school for six weeks but was faced with too much homework. The muscles of his hands were simply not sufficiently developed to enable him to grasp a pen and so his parents removed him from the school.

When he was five years old Simbir joined the preliminary level of an Indian kindergarten in the UAE where English was taught. After one month, his mother noticed that he had mastered reading and writing the English alphabet in addition to numbers from 1-100. He was well ahead of the other children having mastered in one academic year what is usually taught in two.

During this period the family supportive role was still significant, particularly in teaching him Arabic, his mother tongue, in ways appropriate to his age. Video tapes and CDs were employed for that purpose. It was observed by his parents that the child responded to these educational tools very positively, and mastered reading and, to a lesser degree, writing skills at an early age.

At the age of 6, i.e., the usual age for initial school entry for children in Arab countries, he was admitted into the private school in the United Arab Emirates (UAE). With hindsight, if there had been an early identification of his giftedness, and if the regulations had been agreeable, it might have been more suitable to let him enter the school earlier at the age of five.

In school he had a group of friends with whom he enjoyed some friendly competitive interaction. He was also observed telling his friends about the world of astronomy even from the age of 6. However, his parents noted that in public places, like parks, he would often prefer to stay by himself and be immersed in a particular game away from other children. On the other hand, they also noticed that he enjoyed sitting and engaging in conversation with people older than himself. A possible explanation of this particular phenomenon could be a predisposition towards reflectivity and a need for having his own personal space in order to fulfill his contemplative tendencies while also needing real people to share and test out his contemplations and reflections. It could also be that Simbir possesses, what Gardner (1983) termed in his Multiple Intelligence theory, *intrapersonal* intelligence. Whatever the case, researchers consider it difficult for some very young yet highly talented children to maintain a balance between individuality and socialization (Khaleefa, 2000, 2002).

Early elementary years and academic acceleration

Simbir's family returned from the UAE to the Sudan. At that time he sat for an aptitude

test at Al-Doha School which he passed with distinction. As a result of scoring full marks in the test and fulfilling school conditions, he was accelerated directly to the third primary grade, skipping the second grade. After that he moved forward to the fourth grade at a school in Khartoum North. Yet again, his academic distinction allowed him to be accelerated; this time to 6th grade, skipping fifth grade entirely. At this point it may be useful to present some additional observations and explanations with respect to this particular move.

The international view of academic acceleration, enrichment and counseling is that they comprise the major support system for the promotion of gifted children (e.g., Proctor, Black and Feldhusen, 1986; Stanley, 1989; Van Tassel Baska, 1981, 1986). Acceleration, however, it is considered by the Sudanese Ministry of Education as *gonha* or of questionable significance (Omar, January, 2005). In fact, it is viewed with some skepticism and apprehension (Jarwan, 1998, 2002), and at the present no legislation exists concerning acceleration whether it relates to early admission to kindergarten or school or to skipping different grades in school.

From the perspective of criteria set in other international jurisdictions, Simbir fulfilled the conditions of acceleration (e.g., Brody & Benbow, 1987; Gross, 1992; Pollins, 1983, Stanley, 1978, 1989). First, Simbir had a total IQ of 137 in the WISC-111, when typically acceleration usually requires an IQ of 130 (Khaleefa, 2005). Second, his academic record showed a significant advancement compared to his peers during the previous year in the different school subjects. Specifically, after studying the major fifth grade subjects, i.e., math, English, and Arabic, for just one month, Simbir performed outstandingly in his examinations. Third, there are neither gaps in his academic skills, particularly reading and writing, nor between his capabilities and those of his 6th grade peers. Fourth, he adapts well socially to his peers. And fifth, he has unusually aware parents who provide strong support.

It is feasible that children with multiple talents or multiple intelligences receive no benefit from remaining in normal classes, and by *not* accelerating a child like Simbir disastrous consequences can result.

For example, boredom sometimes leads to dropping out from school. It has also been

observed that many gifted children find it difficult to tolerate the relative slowness of their peers in regular classes. It has long been known that a child with an IQ of 140 may waste as much as half his time in a regular class waiting for others to catch up (Hollingworth, 1942). This can easily lead to the depression faced by the children and their family.

In Simbir's case, the academic acceleration process, despite his young age, certainly had no detrimental effect on his motivation. On the contrary, it suited him well and may have resulted in an enhancement of his motivation level. He maintained a huge level of energy, mental stimulation and self-confidence (Davis & Rimm, 1989). It represented a challenge for him. He was stimulated to achieve and succeed. His school performance was excellent and he continued to progress consistently.

In fact, not only was he able to compensate quickly for the skills he had not studied, but also created good relationships and maintained a very good status among his peers. This is not to say other children would not be as able to undergo this process of acceleration as well as Simbir. However, in this case his mental and social abilities responded to the experience in a particularly harmonious way. It should also be noted that in Simbir's case, he was self-motivated – he did not require a special tutor or gifted program coordinator.

An additional benefit was observed for Simbir and his family, i.e., the acceleration procedure was able to reduce tuition costs (Jarwan, 1998, 2002). Children who study in a private school pay approximately \$600 annually, with a total of \$4800 for the eight years of the primary level.

However, as a result of accelerating three times, Simbir saved no less than \$1800 for his poor but supportive family. This would be true for the families of all accelerated children in governmental schools, even taking into account the differences in tuition fees between the governmental and private schools. In this context, it is extremely important to emphasize how significant this would be if the Sudanese Ministry of Education created new policies promoting acceleration for academically gifted children (Khaleefa, 2005).

Looking at Simbir's multiple-talents and productivity

All the information collected via his school record, interviews with his parents, products such as poems, essays, drawings,

talks and experts' judgment point to Simbir as a child of multiple gifts or multiple intelligences. From Renzulli's Three-Ringed Concept of Giftedness (Renzulli, 1979, 1986; Renzulli & Reis, 1985) perspective, Simbir unquestionably possesses above average ability, creativity and task commitment.

According to this definition a gifted and talented child possesses, or is capable of developing, this amalgam of traits which may be applied in any aspect of human endeavor deemed potentially valuable. The interaction of the three components is complex but may ultimately be reflected in multiple talents. Sometimes the interaction results in what is referred to as schoolhouse giftedness, i.e., the high levels of academic achievement (Renzulli, 1978).

Additionally, his talents can also be understood from the perspective of Sternberg's Triarchic Theory of Intelligence (Sternberg, 1986, 1997). In this context, Simbir showed high levels of all three intelligences described by Sternberg - analytic, creative and practical intelligence or what Sternberg refers to as *successful intelligence* (Sternberg, 1986, 1997).

From the perspective of Gardner's (1983, 1999) Theory of Multiple Intelligence (MI), Simbir can be seen as possessing many intelligences. According to Gardner intelligence can be manifested in a number of different ways in each person.

In Simbir's case, all the evidence, e.g., participation in certain school activities like school radio, high levels of deliberate practice and performance, and contests involving the English language, point clearly to a particular high level of verbal/linguistic intelligence.

The memorization and recitation of the Quran by heart without making a single mistake is highly valued in the indigenous Islamic culture and considered a form of *tamayyuz* or excellence (Khaleefa, 1999, Khaleefa, Erdos & Ashria, 1997). He participated in two contests for learning and reciting the Quran, where he obtained second and third places consecutively, even though he was the youngest of contestants.

Simbir's poems

Simbir, when only six years old, came top of all his academic classes. In addition, at that time he also wrote poems illustrated with drawings which despite their lack of artistry perhaps showing a lack of spatial intelligence, were expressive.

When he was not yet 7 years old, he wrote a marvelous poem dedicated to one of his female teachers. It was an excellent expression

of his verbal/linguistic intelligence. Below follows the English translation of the poem by Nada Wadi.

Oh my dearest teacher
 Fun are your lessons
 Wonderful are your classes
 Studying with you is a joy
 You are the best of teachers!
 My heart overflows with happiness
 Because of you I wrote the most beautiful words
 You took me to the peak of joyfulness
 You taught me the most delightful things
 And made me so happy
 You truly the greatest teacher
 You truly the greatest teacher

يا معلمتي العزيزة
 دروسك لذيذة
 وصفوفك عزيزة
 وأنا بدراستك معك فرح
 وأنت أفضل معلمة شرح
 وصدري بدراستي معك منشراح
 كتبت بفضلك أجمل سطور
 ووصلت بي إلى أقصى سرور
 أعطيتني أحلى أمور
 وجعلتني في كل سرور
 فأنت معلمة الأصول
 أنت معلمة الأصول

Sidiq, (January, 2006) a Sudanese critic, commented on Simbir's poetic effort, bearing in mind the fact that he is only seven years old. He considered the child to be deeply aware of two things he regards as fundamental for the verification of prodigious ability, talent, prowess, competency, skill, i.e., rhyme and the music it produced by way of rhythmic repetition of sounds, words and their relation to the senses. According to Sidiq, Simbir succeeded in rhyming when he made harmony between similar letters. Not only this, but also the child was able to diversify rhymes which is a technique for incorporating the necessary eloquence.

Another thing noted was the lexicon of the child. Although richer than usual for a child of Simbir's age, it could be further developed and enriched. Sidiq envisioned Simbir as capable of reaching the level of the famous Sudanese poet, the late Al-Tigany Basheer.

Mohamed (March, 2006), academician, at the English Department, University of Khartoum added further comments to Simbir's poem. He noted that technically the child uses descriptive writing to talk about his theme: an influential female teacher. He concentrates on her lessons and classes; the way she teaches; what he himself gains and finally her effect and impression on him. Linguistically speaking, the child is aware of how different words can express similar meanings (collocational competence), e.g., dearest teacher, wonderful classes, beautiful words, delightful things. Importantly, collocational competence poses

difficulty for even advanced learners of language. It is a skill to be mastered.

Returning to Gardner's multiple intelligences, Simbir thinks deeply and widely over a great range of topics. In addition to his interest in poetry, Simbir's passions range from the stars to people – certainly indicating *intrapersonal intelligence*. He earned his yellow belt in karate and is very keen on football, both from a theoretical and practical perspective, indicating *bodily-kinesthetic intelligence*. He has independent views on training methods of footballers. He also knows a great deal about the local, regional and international games, in addition to being aware of the players' fees, nationalities, date of registration, and biographies.

Simbir's one weakness from the perspective of the model of the multiple intelligences appears to be in the area of musical intelligence. Gifted children with musical intelligence will play and compose music, but as giftedness in classical music is not highly appreciated in the indigenous culture (Khaleefa, 1999b) maybe this explains an apparent deficit.

Simbir's passion for astronomy

Extremely gifted children usually have an obsession for their favorite talents, for example, painting, chess, mathematics, sports, and mechanics. They may spend a long time in training and persistent to an obsessive degree (Khaleefa, 2002). In the case of Simbir, like his grandfather before him, his obsession is related to the world of astronomy with all its systems, indicating natural intelligence. It seems that

Simbir coincided with this world when he was introduced to the Majid Magazine at a very early stage. Astronomy has captured his imagination ever since. At the age of 6, his interest was intensified after reading a lesson in the Arabic reader entitled "The astronomer".

All the models of giftedness so far mentioned provide a somewhat broad insight into the multi-faceted child. However, because astronomy for Simbir is a very powerful and particular interest, we might look for another way of interpretation. Perhaps, a more precise interpretation of the child's talents might be seen from the developmentalist's perspective. In his comprehensive study of child prodigies, Feldman (1986) argues that giftedness is domain specific rather than generalizable, and manifests itself in the process of development. Additionally, he emphasises the role of the supportive family as well as that played by the social and emotional environment in the promotion and development of the child's talents Feldman (1996, 1991).

It has to be said that Simbir's talks, essays, lectures, discussion, and interests in astronomy are, in Arabic, *khariga* or extraordinary. It can be argued that, in the context of the indigenous culture, Simbir can be safely described as *kharig* or a "child prodigy", specifically in astronomy. In the West, a child prodigy is defined as the child whose age is less than 10 years and who performs adult tasks, or a child who does certain things which are, according to the majority of adults, seem to be outstanding (Feldman, 1986, 1991; Morelock & Feldman, 1999, 2000).

Morelock (1995) found that the IQ for child prodigies is ranged between 120-200 whilst Feldman (1980) observed that studies have not revealed a strong relationship between prodigies achievement and outstanding IQ.

In this study, up until now the word 'child' or 'Simbir' has been used. Based on the previous illustration, it may actually be preferable to use the term *kharig* or child prodigy. It seems more descriptive in his case. As is the habit of some other *khawarig* or child prodigies (Khaleefa, 2000, 2002), Simbir spends a great deal of his time in reading - between 4-6 hours per day. Before Simbir was ten years old his library contained 223 books, ten of which were about astronomy. He has read and re-read them all.

Moreover, his library contains CDs and educational cassettes including languages, biographies, stories and lectures. Before Simbir was nine years old (8 years, 9 months) his

reading level was equivalent to high school level. Even so, despite his love of reading, Simbir tends not to write or document. It is interesting to note that indigenous Arab culture is thought to be more auditory or oral rather than visual or figurative (Khaleefa, 1999a; Khaleefa, Erdos & Ashria, 1996b). This is why he was encouraged by his family to write an essay on 'Stars' in order to foster more positive attitudes towards writing and documentation.

Simbir's essay "The stars"

As mentioned, at the age of 8 years, 9 months, Simbir gave a talk on the solar system to the initial group of 55 gifted children, as part of the first summer enrichment program held in the Sudan on the 25, April 2004 (Khaleefa, 2004). At the age of 9 years and 4 months he authored an essay "The stars". By comparison, in 1895 the genius Einstein, was 16 years old when he wrote his first scientific essay sending it to his maternal uncle. The essay demonstrated how Einstein's was conversant with advanced topics in electromagnetic theory (Miller, 1999). In this context, an overview of Simbir's scientific essay follows. Given his young age, it can certainly be described as 'serious'. This will be followed by shedding some light on the remarkable talks that he presented.

With respect to Simbir's scientific essay, he followed the recognized classic research tradition found in Arabic manuscripts. It was dedicated to his father, mother and brother. He described his essay as a "modest effort" and yet between the first and last page lies evidence of an outstanding ability in research and investigation. He commenced his essay by saying: "*The stars are a fascinating world that calls for contemplation and I will illustrate that in this study*". He ended the essay with statement: "*The research end. Praise be to God and His Guidance on the 2ed of blessed Ramadan, 1425, the 26th of October 2004*".

Simbir provided a table of contents which consisted of 21 subjects, including different aspects of stars. His main topics included; the human study of stars; stars and the Arab; star names; stars pictures; star shapes; stars and their colors; the origin of the universe, the galaxy and the definition of the galaxy; and the difference between planets and stars.

Following the track of *khawarig* or child prodigies (Khaleefa, 2000, 2002) the child researcher posed various questions, e.g., is the

sun a star? How old are stars? How do stars die? When do stars die? However, he does not restrict himself to posing these questions, he also researched references in an attempt to come up with scientific answers for these questions.

He discussed the way stars help map-makers, pilots, and sailors in navigation and in determining the time for planting, pollination, and irrigation. He included a discussion on the history of stellar studies from 3000 years B.C.; a mention of first atlas published as produced by Ptolemy in the second century B.C.; and the issue of the origin of the universe, especially the Big Bang theory. He also provided a glossary for stars, a number of appendices, and the index.

It is interesting to speculate here. Feldman (1986) noted that a prodigy seems unique in having an extremely specialized gift expressed only under very specific, culturally evolved environmental conditions. The Arab civilization has contributed a lot towards the development of astronomy and optics particularly during the Eleventh century (Rashed, 1997, Sabra, 1989). Simbir included in his essay a review the history of astronomy, mentioning in particular the contribution of famous Arab scientists such as Al-Sufi, Al-Bayruni, Al-Khawarizmi, Abu-Alfida, Ibn Hayyan, Ibn Sina, Ibn Batuta, and Ibn-Qurra. Perhaps, Simbir's inclination to the domain of astronomy is part of his great Arabic culture and tradition or a reflection of the value of astronomy in his environment.

Simbir according to the judgement of experts

Simbir's essay was given to five Sudanese scientists for comment and assessment. Al-Mahi (2006), mathematician and Director of Gifted and Matured Project at the Sudanese Ministry of Science and Technology, considered the child's mental age not less than 25 years. Al-Mahi also tells how the child participated in the Seventh Scientific Conference organized by the National Council for Research in December 2005. This is the highest scientific activity in the country. The child was selected as an Honorary Guest of the Conference. He gave two talks, one regarding cloning and the other on the solar system. Participants of the conference were amazed with the systematic information, comparative ability, classical Arabic language and outstanding contribution of the child.

Sirelkhatem (January 2006), a Sudanese physicist comments:

This essay is highly appreciated to be done

by a pupil of nine years old. It is really an excellent work in both organization and ideas. He seems to be extremely intelligent and very interested in the study of the cosmography. He deserves full encouragement and help. (Sirelkhatem, January 2006, personal communication).

In the same vein, Shams el-Din, (January, 2006) a Sudanese cosmologist said the essay on the stars as accomplished by a child only 9 years old is a marvelous piece of work. Despite his age this child followed a perfect scientific methodology. He added: "I believe this study is quite adequate in terms of its contents and presentation" (Shams el-Din, January 2006, personal communication).

Fatahalla, (March 2006), an expert in high energy physics, interviewed the child on Sunday 19 March 2006. He recognized the child's huge appetite for science and learning. He thought Simbir's English language level handicaps him from getting the accurate information available in English. Accordingly, he was recommended at this stage to focus on the English language and to have more training in mathematics. Fatahalla hopes at some point he has his own telescope. Fatahalla concluded that Simbir's scientific mind, knowledge and reasoning are well ahead of any his age in Sudan, perhaps in Africa and the Arab countries.

Shaddad (March, 2006, personal communication), a Sudanese astronomer, met Simbir at the University of Khartoum's Physics Department. The objective of the meeting was to reflect on the essay "The stars" and make a preliminary assessment on Simbir's understanding and conceptualization of what he wrote. The fact that the meeting was very friendly reflected the easiness and the very likeable spirit of Simbir. It also reflected his humility in regards of what he knows and what he does not know. For example, Shaddad found the essay to contain some errors. Importantly, however, in this situation, Simbir sensed where things were not right in the text, and was aware that some of the mistakes could have come from the references he used.

Shaddad concluded that Simbir is clearly a bright child with a mental age is well ahead those at his chronological age, an excellent memory and an obvious ability for analysis, deduction and reasoning. He recognized his large interest in astronomy. As did all the Sudanese experts, Shaddad agreed that Simbir's interest is genuine and recommended that he should be coached,

supported and given tasks to develop his interest and move him to a professional astronomy level at university age.

Personally, when I finished reading Simbir's essay, a question posed itself: did the young researcher really write these 45 pages text all by himself? In an interview with his supportive father, I learnt that his only contribution was teaching his son how to type out his data; but that was the child himself who did the actual search for information from its original sources, as well as classifying it. In my capacity as a supervisor of student researchers at the B.A, M.A and PhD levels in psychology, I can say that in no uncertain manner, that the essay presented by the child on the "Stars" is of similar level, in its overall picture, to the studies presented by BA students, at least in the Department of Psychology at the University of Khartoum, Sudan. This *kharrig* or extraordinary level of refined research at age 9 years 4 months is exactly associated with the definition of the construct "prodigy" a child whose age is less than 10 years and performs the act of adults (Morelock & Feldman, 1999, 2000, Ruthsatz & Detterman, 2003). Simbir's early obsession with astronomy is not only reflected in writing but also in giving adult level talks on the topics.

Simbir and talks on astronomy

In the first talk presented by Simbir in the summer enrichment program for gifted children in 2004 (Khaleefa, 2004), using multimedia projector he disseminated rich information about the solar system. His presentation was stylistic, technically highly organized and coherent. A personal observation of that particular talk was that he always paused to think and contemplate before presenting his ideas. In other words, he is reflective. For instance, when trying to connect between two ideas or concepts in the talk he would say "taking into account what we have mentioned before".

As he addressed his audience Simbir seemed more interested in raising questions than instructing them in a didactic way. He pointed to the data presented on the multimedia projector with his hand in order to maintain his audience's attention. He smiled throughout the talk making it appear as if thought, imagination, and innocence were interacting in him in a harmonious manner. At the end of his talk, he asked his audience for questions. His response to questions was extremely clear and precise. In fact, his

brilliance seemed to reach its peak when responding to questions on his favorite topic.

Before he was 10 years old, Simbir gave a second remarkable talk on the "Stars". This time it was based on research he had conducted and presented at the National Council of Research and was attended by an adult audience. The most impressive moment in this talk was when, in a discussion with a professor of physics on the topic of black holes, he was able to defend his argument intelligently. Simbir really mastered the adults' techniques in the presentation of organized ideas as well as strategies for giving convincing answers to questions raised by an audience whether children or adults.

Simbir gave a third talk 23rd May, 2005 at the first training workshop for teachers of gifted children organized by the Sudanese Ministries of Education and Science and Technology. It was attended by a group of 100 teachers, professors, officials, the Minister of Science and Technology and the, president of the Arab Council for the Gifted and Talented. It was this talk that succeeded in drawing the teachers' attention to the group of *khawarig* or child prodigies. At the end of that fascinating talk, which was appreciated by all the audience, both the Minister of Science and Technology and the Director of the Gifted Program at the Ministry of Education handed Simbir a lap top computer as a gift.

The implications of this particular incidence appear to concur with Feldman's (1986) thoughts on issues of talent and its appreciation, i.e., whether someone is defined as talented or not depends on the culture with which the talent is associated and the precise time it is presented. (cf. Ruthsatz & Detterman, 2003). The indigenous Sudanese culture appreciates Simbir's kind of presentation in two ways. On the one hand, there is appreciation of his chosen field - astronomy. On the other hand, there is much appreciation of his extremely high verbal intelligence, which was manifested in a high standard of classical Arabic or a level of classical scientific Arabic similar to that of gifted adult scientists. This might not be so surprising given his very high scores of the verbal intelligence (148) of the WISC-111 (Atta Alla, 2004).

From a personal perspective, when listening to these talks, it is easy to agree with the judgment of Sudanese experts: the child obviously has an extraordinary ability in

astronomy. Appearing many times in scientific gatherings provided a powerful motive for Simbir to improve the quality of his presentation. This raised the question as regards Einstein in his childhood and whether his activities, e.g., his talks and essays, could shed some light on the paths he took later in his life.

Interestingly, in the case of the young Einstein, his precocity went unrecognized until he was 12 years old. It was then he started to read serious books in physical sciences and showed a high ability in mathematics. Morelock and Feldman (1999) argue that as a child,

Einstein's level of work and thought was not at a level to identify him as a prodigy.

It is possible that he might have been recognized as a physics prodigy if there had been more of his work to assess. Miller (1999) notes Einstein started to enjoy Mozart's violin sonata when he was 13 or 14 years, about the same age he demonstrated the ability to solve difficult mathematical problems posed to him by his uncle Jakob Einstein. By contrast, Simbir's precocity was evident by the time he was eight years old; by then he had read at least two books on astronomy.

Conclusion

This biographical study of Simbir might be of interest and importance for five reasons. First, it is the inaugural study about a topic neglected by Arab psychologists - *khawarig* or child prodigies in the indigenous Arab culture in general and Sudan in particular. Secondly, perhaps, it is one of the rare studies about *khawariq* or child prodigies in the field of astronomy. Astronomy is a very unusual or unprecedented domain in which to find child prodigies.

Thirdly, an abundance of detailed information and extensive documentation is available about the child since his birth as well as the role played by his supportive family. Fourthly, the identification of the child as *khariq* or a prodigy was associated with the establishment of the first 'gifted' program in the country. Finally, it will provide a chance to share with the reader some thought and biographical information concerning the development of *khawariq* or prodigies of astronomy in a non-Western culture.

Simbir is fortunate in that he has been identified at an early age by using precise strategies and methods for the first time in the history of education in the Sudan (Khaleefa, 2004). In other words, the child was born at a historically significant time (see Feldman, 1986, 1991) when the importance of recognizing gifted children became apparent (A'ta Alla, 2004).

Additionally, the child's identification during the "Simbir project" is significant in the context of psychology in its progress as a science in the Sudan. (Khaleefa, 2004).

From a cultural perspective, the Simbir study is also interesting. Al-Simbir is a bird whose appearance foretells the approach of the rain. Interestingly, the child comes from the Al-Maganeen Tribe in central Sudan where the Al-Simbir bird is seen as a good omen for the beginning of cultivation. In addition, it is interesting to note here that the Arabic meaning of the word "maganeen", is the "mads". However, in this promising era of "Simbir Project" the word 'maganeen' implies something entirely new - *khawarig* or child prodigies.

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Parenting the Chinese Way in America

Echo H. Wu and Holly Hertberg-Davis

Abstract

This paper illustrates a case study on two Chinese American families with gifted children, and the major topic focuses on the influence of parenting beliefs and practices on children's talent development. In-depth interviews were employed to collect data from the Chinese parents who lived in America, and research questions include the daily practice of parenting, and parents' beliefs concerning how to nurture talented achievements among children. This paper starts with a narrative account of cases of two gifted children, and then examines the background of Confucian philosophy of learning and its fundamental influence on Chinese traditional parenting practices. Evidences are provided from the case study on the Chinese parents' beliefs, values, and attitudes regarding their children's talent development. Implications are discussed at the end of the paper, which draws attention to the interesting mixed strategy of the Chinese American parenting which combines traditional Chinese parental expectations with an adopted Western notion of respect for a child's own decision-making.

Keywords: Parenting, Chinese American, Confucian philosophy, decision-making.

Introduction

Jane and Qiang are two Chinese American students. Eight-year old Jane has been living with her parents in the USA since she was three years old. Although she knew no English when she first arrived, she learned to read and write in English so competently that in 3rd grade she was accepted into a gifted class run by her local school district. Jane is a quiet and mature little girl who enjoys playing with older children.

Qiang was born in the USA and is now 12 years old. He attends an advanced 8th grade class and plays "First Violin" in the city Orchestra. He is a self-described "book lover" and striker for his school soccer team. Qiang is a happy, confident boy who is liked by almost everyone around him.

Like Jane and Qiang, many Chinese American students participate in gifted and talented programs or excel in extracurricular activities. This fact raises questions: What has made it possible for a high percentage of children from Chinese families to achieve high performance in both academic and non-academic areas? What role do Chinese American parents play in the development of their children's talents?

With such questions in mind, the authors conducted a pilot case study of two Chinese families living in the US. Each family member was interviewed separately. The main purpose for these interviews was to explore the parental influence and the role of familial environment on their children's high achievements.

Influences of Confucian philosophy on Chinese parenting

The project commenced with a review of literature to better understand Chinese traditional and cultural influences on parenting, especially as it concerns their children's giftedness. According to the literature (e.g., Bloom, 1985; Csikszentmihalyi & Csikszentmihalyi, 1993; Freeman, 2001; Rubin & Chung, 2006; VanTassel-Baska & Olszewski-Kubilius, 1989), parents and, or some other family members, are commonly believed to play one of the most significant roles in the development of their children's talents. However, it is possible that the role of parenting in the context of giftedness may receive greater emphasis from Chinese parents who have been acculturated with a strong traditional Confucian belief about the nature of high achievement.

Confucius (551-479 BC) has been the most influential figure throughout the past two and half thousand years of Chinese history, his philosophy deeply influencing Chinese thought and civilization. Accordingly to Confucian philosophy, success is less the result of the individual's innate ability than it is of the individual's single-minded effort and consistent practice (Tweed & Lehman, 2002). With respect to giftedness, according to followers of Confucius the existence of innate differences in ability does not matter; honoring the requirement to work hard to develop potentiality to its fullest extent is more significant. Education and learning in China, therefore, have always been considered as associated with effort.

Chinese literature and language are rich with sayings and words of wisdom on how to succeed and how to achieve high performance in life. Some examples can be seen as follows:

- People are similar by nature, but through habituation become quite different from each other. (17:2)
- I was not born with wisdom. I love the ancient teachings and have worked hard to attain to their level. (7:19)

(*The Analects*)

- The ancients who wished to illustrate illustrious virtue throughout the kingdom, first ordered well their own states.
- Wishing to order well their states, they first regulated their families.
- Wishing to regulate their families, they first cultivated their persons.
- Wishing to cultivate their persons, they first rectified their hearts.
- Wishing to rectify their hearts, they first sought to be sincere in their thoughts.
- Wishing to be sincere in their thoughts, they first extend to the utmost their knowledge.
- Such extension of knowledge lay in the investigation of things.
- From the Son of Heaven down to the mass of people, all must consider the cultivation of person the root of everything besides.

(*The Great Learning*, Introduction: 4)

- (尔幼学, 勉而致) As you are young, should exert yourselves to achieve.
- (有为者, 亦若是) Those who work hard, will succeed as they do.

(*San Zi Jing*, Chapter 4: Exemplary Behaviors)

- So long as one works hard enough, even an iron pestle can be ground down to a needle / Persistent effort leads to success.
- After poring over ten thousand volumes, you can write like one inspired / Effort and perseverance lead to high achievement.
- With determination and motivation, one can accomplish anything / Where there is a will, there is a way.

(Popular idioms & proverbs)

Although emanating from different dynasties and diverse parts of the country, these similar words of thinking have unanimously underscore the importance of self-effort and hard work. These popular old sayings or proverbs can be found in the first textbooks for children known to almost every family in China, as well as for families of Jane and Qiang. Meanwhile, abundant evidence has shown that Confucian philosophy on learning and achieving has exerted great influence on modern Chinese parenting styles and practice. For instance, a study showed that success is more often attributed to innate ability, while it is attributed to hard work in Asia

(Stevenson, Lee, & Stigler, 1986). Even when Chinese parents live abroad, they tend to adopt mainly the notions and beliefs brought with them from their homeland. A study conducted by Braxton (1999) shows that, in the U.S., home environment and parental encouragement, along with the drive to save a family's "face," are all major issues that affect Asian American students' achievement. The high academic achievement of Asian Americans is frequently related to their cultural influences, and it seems that the talented performance is a result of the interaction among immigration selectivity, higher than average levels of pre-migration and post-migration socioeconomic status, as well as ethnic social structures (Zhou & Kim, 2006). From the interviews conducted in this study, it is apparently true for Jane's and Qiang's families.

Many Chinese immigrants, especially first generation American Chinese parents, may share similar parenting styles with their counterparts in China. However, it might also be reasonable to assume that, while growing up and being educated in the American cultural society, second and third generation Chinese immigrants have been less influenced by the traditional Chinese culture. Consequently their parenting styles might differ from those of the first generation.

Distinction between Giftedness & Talented Performance (TP)

"Giftedness is out of my control; but talent is what can be assured if I am a good parent. Talent can be nurtured and developed; but giftedness might be wasted and turn out to be useless." Jane's mother said confidently.

According to the study of Wu (2005), from a Chinese perspective, giftedness is the potential, or the innate ability that one may have, while talented performance (TP) is the fulfillment, or the talents that have been achieved through the years of hard work and practice associated with supportive family, encouraging schooling, good luck and/or other factors. In this project, Jane and Qiang's parents addressed their understandings of giftedness with the authors and share their beliefs about the distinctions between giftedness and TP. Jane's mother revealed the value she places on nurturing a child's potential. She and her husband believe every child has certain areas of advantage or giftedness, but such giftedness is not as important as having a family who can properly support and nurture the child's potential. In fact, as far as Jane's mother is concerned, all

children have the potential to achieve TP, as long as their talents are nurtured properly. Accordingly, “giftedness” or innate ability is not assigned the same importance or value as are effort and hard work. In her opinion, education and the nurturance of talent, as opposed to giftedness or natural ability, are the sources of high performance and rungs on the ladder to “upward mobility.”

Both Jane and Qiang’s parents also believe that, in addition to appropriate family support and nurturance, the children themselves must display hard work and self-effort. *“I think it’s very important for Qiang to learn to work hard, not only at school, but also at home,”* Qiang’s mother emphasized. *“He needs to know that if he doesn’t put much self-effort into his own work, nobody can really help him.”*

It is interesting that, during the interviews, both Jane’s and Qiang’s parents revealed parenting beliefs and practices that are still deeply influenced by the traditions in their home country, even though they have been living in the USA for many years. They admit American culture may have had some impact on their lifestyles, even thinking styles - especially regarding their children. However, they still consider themselves as “parenting the Chinese way.”

Parental Values: Being More Responsible to Children’s Achievement

“I don’t know how to teach my child; I don’t have time...” Qiang’s father blames himself not being able to spend much time with his son, but he’s grateful that his wife takes good care of the kids and thus his son is performing well at school. Jane’s parents also believe that it is the parents’ responsibility to make sure their children have proper opportunities and a supportive environment to develop their talents”.

A common stereotype of Chinese parents is that they are “pushy” and “controlling.” However, according to current literature, researchers have started to challenge this notion, suggesting that the stereotype reflects only a Western view of parenting. Chinese parents believe – and have been acculturated to believe, the primary responsibility or accountability for their children’s school achievement, either academic or non-academic, falls on their shoulders. The more responsible and supportive they are, the higher the possibility of their children obtaining high achievement. This echoes a major idea of

San Zi Jing, a long poem which consists of three words for each sentence and is considered to be one of the most important literary works that presents Confucian principles. “It prevailed in China over the last 600 years, being adopted as a major elementary guide to knowledge for school beginners” (Lee, 1996, p.26). Briefly stated, the idea is that the parents are at fault if a child is not well educated.

In this study, both Jane and Qiang’s parents consider themselves appropriately concerned about their children’s education, rather than being pushy or controlling. They believe their children’s achievement may well be reflect the extent to which they as parents have given support. Qiang’s parents believe it is the parents’ responsibility to develop in their children recognition of the importance of hard work, motivation, and effort for their own bright futures—indeed, they believe it is the nature and the essence of being parents.

These Chinese American parents are obliged to do as much as possible in order to nurture the talent of their children. They are deeply involved in their children’s education, both in and outside of school, and believe the development of talent in children is first and foremost the inescapable responsibility of the parents. They even wish they could have more time for their children, blaming themselves when they are unable to put adequate energy and effort into their education in and out of school.

Parental attitudes: Being more confident in children’s development

Parents in both Jane and Qiang’s families tend to have strong confidence in their children’s talent development. Interestingly, this confidence is not based on the level of their children’s giftedness or potential, but rather on the level of academic or/and non-academic high performances the children have literally achieved.

Because Jane and Qiang’s parents believe in the importance of the *nurture* of talent instead of the *nature* of a child’s innate ability, they are very confident about their children’s education in school and their future success. They believe as long as they themselves are “good parents,” their children’s own hopefulness will enhance the possibility of their achieving at higher levels. For Jane and Qiang’s parents, being a “good parent” involves participation in and commitment to their children’s study and after-school activities. Jane’s parents take turns driving their daughter to ballet and swimming

lessons, both of which Jane enjoys very much. Qiang's mother also spends a few evenings accompanying her son to violin lessons or soccer practice and games. Apparently parents of both families have been actively involved in

their children's various developmental activities, and these in turn may have offered them more confidence in and hope for their children's future.

Implications

Although this study with the two Chinese American families is only an initial step toward a more comprehensive research project, the findings have already provided some practical implications for parenting and for future studies in this area. A case in point: Strong evidence has been found in one of the interviews to show the significance of Confucian philosophy and its impact on learning, achieving, the practice of parenting and nurturing giftedness and TP in children. Indeed, Confucianism is shown to have guided the direction, strategies, and practice of Chinese parents, as well as educators, when nurturing high achievement among children.

As discussed previously, the influence of Confucian philosophy on learning and achieving is so pervasive that the concept of TP has indeed never been separated from the notion of hard work or self-effort throughout Chinese history. Even today, this basic Confucian belief about talent development is still tremendously influential in modern Chinese societies. The subject is regarded as an interesting topic for future exploration, especially in terms of whether or not a discrepancy exists between the parenting practices of first generation of Chinese immigrants and those of the second or third generation.

An important implication is that the specific sense of confidence as well as the sense of responsibility held by Jane and Qiang's parents can be inspiring to all parents in and beyond a Chinese cultural context. Jane and Qiang's parents' beliefs about the importance of nurture and hard work in the development of talent suggest that high TP can be achieved by

anyone striving for it, rather than being possible only for gifted children. Parents and children may benefit from a sense of optimism about and confidence in the children's futures, and from a sense that they have more control and influence than they thought over these futures!

A third implication is related to future study. Considering the generally high performance of Chinese students in and outside of China in certain academic and non-academic areas, mostly with strong parental and familial support and encouragement, it may be worthwhile for researchers to conduct more comprehensive research studies concerning parenting beliefs and practices of gifted and talented children, and other issues related to nurturance of TP. Such issues can be, for instance, the impact of optimal family environment, the role of hard work and effort, a more detailed investigation into the impact of parental sense of responsibility and confidence on student achievement, and maybe the pattern and nature of effective or "good" parenting practice that might be adaptable and feasible to the general population in various cultural contexts.

Parenting beliefs and values are varied in different ethnic groups and in different countries, and children's high achievements are influenced in different ways by certain parenting beliefs and practices. Although factors contributing to children's TP are complicated and far beyond any single aspect of parenting, it is clear that parental and family support and involvement does not fall in vain in the process of children's development of giftedness and talent.

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Associations among Measures of Perfectionism, Self-Concept and Academic Achievement Identified in Primary School Students in Hong Kong

Ricci W. Fong and Mantak Yuen

Abstract

This study investigated relationships among measures of perfectionism, academic self-concept, and academic achievement in fourth and fifth grade children from selective primary schools in Hong Kong where admission involves strict assessment of students' aptitude and potential. Based on their overall academic performance 331 students were recruited, with half the sample comprising high achievers and the other half lower achievers in their respective cohorts. A 37-item questionnaire adapted from the *Almost Perfect Scale-Revised* (APS-R) (Slaney, Rice, Mobley, Trippi, & Ashby, 2001) and the *Self-Description Questionnaire I* (SDQ) (Marsh, Relich, & Smith, 1983) was administered in a classroom setting. Dependent upon their APS-R scores, participants were sorted into three comparison groups: (i) adaptive perfectionists (ii) maladaptive perfectionists and (iii) non-perfectionists. Pearson correlation, univariate analysis, hierarchical regression analysis and independent-samples t-tests were employed to assess the links among the variables. Results showed perfectionism was directly and indirectly correlated to academic achievement, with academic self-concept as a significant mediator. High achievers were associated with adaptive perfectionism and high academic self-concept. The present findings reflect the distinctive roles of perfectionism in the personal and cognitive developments of primary school students often been downplayed or overlooked in China. Implications for future research and educational guidance are suggested.

Keywords: Perfectionism, self-concept, academic achievement, primary education, Chinese children.

Introduction

In the field of psychology, the term perfectionism refers to an individual's strong desire to always produce very high quality results from his or her efforts. In its most positive or *adaptive* form, perfectionism is reflected in the personal pleasure and satisfaction an individual experiences doing something extremely well. In this case, perfectionism normally results in high motivation to achieve and a positive self-concept. In its most negative or *maladaptive* form, perfectionism presents as a neurotic or obsessive state with individuals never being satisfied or pleased with what they produce: always fearful the results are, or will, be less than perfect. In these cases, perfectionism may actually inhibit motivation, effort and achievement, resulting over time in an adverse impact on self-concept.

For many years, perfectionism has been recognised as a specific personality factor

identifiable with appropriate assessment instruments. Much of the early work was conducted by Cattell (1950) who included perfectionism as one of the sixteen personality traits in his *16 PF* questionnaire. Later, the work of Hewitt and Flett (1991, 1996) resulted in the development of two assessment instruments, both known by the same name, *Multidimensional Perfectionism Scale*. Further research led to the creation of the *Almost Perfect Scale* (APS) (Slaney, Ashby & Trippi, 1995; Rice, Ashby & Slaney, 1998), and subsequently to the *Almost Perfect Scale-Revised* (APS-R) (Slaney et al., 1996; Slaney, Rice, Mobley, Trippi, & Ashby, 2001). This scale addressed more adequately the maladaptive evaluation concerns overlooked in previous measures. In this paradigm, perfectionists were characterised as adhering to high personal standards and order. Within this group, maladaptive perfectionists were distinguished

from their adaptive counterparts by elevated levels of concern over any discrepancy between established (or perceived) standards and their own performance. Such concern is 'maladaptive' in the sense that it can create anxiety and thus has a detrimental impact on an individual's self-concept, motivation and academic progress. Discrepancy has been identified as a reliable indicator of maladaptive perfectionists, with a consistent correlation with maladjustment and psychological distress (Rice, Vergara, & Aldea, 2006).

Investigations of perfectionism suggest the trait is prominent among high-achieving and gifted students (LoCicero & Ashby, 2000; Pfeiffer & Stocking, 2000). Contrary to traditional beliefs, perfectionism was found to impact positively on the high achievers. For instance, Grzegorek, Slaney, Franze & Rice (2004) reported a pervasive correlation between adaptive perfectionism and students' grade point average (GPA). Using the APS-R instrument, LoCicero & Ashby (2000) reported a more adaptive perfectionist tendency among gifted students, with significantly higher standard scores and lower Discrepancy scores than that of the general cohort. Likewise, in Hong Kong, Chan (2007) found positive perfectionism (i.e., the adaptive form) more salient than negative (maladaptive) perfectionism among Chinese gifted students. Other researchers have attributed students' achievement motivation, self-regulatory strategies and psychological well-being - particularly that of high-achieving students - to perfectionism (Neumeister, 2004; Nounopoulos, Ashby, & Gilman, 2006; Schuler, 2000).

In the line of educational psychology research, links between academic self-concept and academic performance have been well documented (e.g., Guay, Marsh & Boivin, 2003; Marsh, Kong, & Hau, 2000; Marsh, Kong, & Hau, 2003; Marsh & Yeung, 1997). Previous academic success is believed to trigger a

significant increase in academic self-concept, which in turn boosts subsequent academic performance. Other researchers found a positive association between higher self-concept and adaptive perfectionism (Grzegorek et al, 2004; Rice & Slaney, 2002). Nounopoulos et al (2006), reported a direct correlational relationship existing between perfectionistic tendencies and students' grade point average (GPA), as well as academic confidence having a possible mediating role in the process. This relationship is considered particularly significant in the Chinese context, where academic success is highly valued and benefits accrue from such accomplishments in selective schools. Moreover, in the Chinese culture, parents and educators generally place a high emphasis on the role of effort rather than ability, thus promoting appreciation of effort in adaptive perfectionistic students and boosting their academic self-concept.

Despite childhood being a key period in the emergence of perfectionist tendencies, research has thus far focused mainly on individuals in late adolescence and early adulthood. As maladaptive perfectionism and unrealistic expectations can have very detrimental effects on a child's emotional and academic wellbeing, detecting such traits much earlier could result in more timely intervention (when necessary) in the form of appropriate support and counselling for children, their parents and their teachers. Data on perfectionism in the primary school population would be beneficial for teachers, enabling them to better understand this personality trait and its influence on some children's aspirations, motivation, effort, and reactions to failure and success. This study therefore aimed to provide such data by investigating the positive and negative impact perfectionism exerts on the self-concept and academic achievement of Chinese primary school students. The APS-R instrument was chosen for use in this study.

Rationale

The study aimed to investigate the degree to which Chinese primary school- aged children in learning environments espousing competition and high academic standards, orientate toward perfectionist traits, and how this orientation may influence their academic self-concept.

Considering the high standards set by selective schools for student admission, it is reasonable to assume most students in these schools are of high ability, including some who could be termed gifted and talented. It is likely that some (possibly many) of these students will exhibit perfectionist tendencies. Based on the findings of other research studies cited above, it was anticipated that positive relationships would be found between adaptive perfectionism, academic

self-concept, and academic achievement. Conversely, it was hypothesized that maladaptive perfectionism would be negatively related to academic self-concept and to academic achievement.

In addition, it was anticipated students showing no tendency toward perfectionism (non-perfectionists) would generally exhibit the lowest levels of academic achievement. The study set out specifically to answer the following research questions:

1. To what extent will significant associations be found among measures of perfectionism, academic self-concept, and academic achievement in this group of Chinese primary school students?
 2. Do significant differences exist between high and low achievers in the strength of the associations among perfectionism, academic self-concept and academic attainment?
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Method

Participants

The 331 fourth and fifth grade students participating in this study were recruited from three well-respected selective elementary schools in Hong Kong. Their age ranged from 9 to 13 years, with 161 males (48.6%) and 170 females (51.4%). To be selected for the present study participants were required to score aggregated academic scores in the most recent examination either above the 80th percentile (high achievers) or below the 20th percentile (low achievers).

Instrumentation

The questionnaire used in this study comprised 21 items adapted from the *Almost Perfect Scale-Revised* (APS-R; Slaney et al., 2001) and 16 items from the *Self-Description Questionnaire I* (SDQ-I; Marsh, Relich, & Smith, 1983). The latter was reported to be reliable for assessing elementary school children (Marsh, Craven, & Debus, 1991; Marsh, Ellis, & Craven, 2002).

The Almost Perfect Scale-Revised (APS-R); Slaney et al., 2001)

This scale consists of 21 items, organised into three subscales representing characteristics of perfectionists, namely, High Standards, Order and Discrepancy. Seven items comprise the High Standards subscale, gauging one's level of performance expectations (e.g., "I set very high standards for myself."); two items comprise the Order subscale, assessing the importance of order to the individual concerned (e.g., "I like to always be organized and disciplined."); and 12 items comprise the Discrepancy subscale, assessing the perceived difference between an individual's performance expectations and performance evaluations (e.g., "My performance rarely measures up to my standards."). Items are rated on a 7-point Likert

scale, ranging from 1 = *strongly disagree* to 7 = *strongly agree*.

Reliability

In this study, the reliability of High Standards and Discrepancy subscales was high, with a Cronbach's alpha of .82 and .92 respectively. The reliability of the Order subscale was lower (but acceptable for an instrument of this type) with a Cronbach's alpha of .66. According to their scores on APS-R, participants were categorised according to the three comparison groups: (i) adaptive perfectionists (ii) maladaptive perfectionists and (iii) non-perfectionists.

The Self-Description Questionnaire-I (SDQ-I); (Marsh et al., 1983)

This scale originally consisted of 76 items with three categories of self-concept, namely academic self-concept (Reading, Math, and General Schoolwork), non-academic self-concept (Physical Abilities, Physical Appearance, Relationship with Peers and Relationship with Parents) and general self-concept. In view of the scope of this study, only Reading (e.g., "I am good at reading."), and Math (e.g., "I am interested in mathematics.") subscales were used. Each subscale included eight items and responses were made on a 5-point Likert scale, ranging from 1 = *false* to 5 = *true*. The reliability of academic self-concept (Reading and Math) subscales were .83, and .95 respectively.

To check that students could read and understand the items in the questionnaire, and to determine the time required to complete the instrument, a pilot study was conducted with 30 third and fourth grade students in the age range 8 to 9 years.

All participants were able to complete the questionnaire within 15 minutes. Although all participants were Chinese, a number of them were expatriates having either an English

speaking parent or Chinese parents with an English-speaking background and with English as their first prime means of communication at home. To cater for such differences in language

preference, bilingual versions of both scales, with vocabulary appropriate to upper primary levels, were adopted.

Academic achievement scores

Academic achievement scores were computed by taking the summation of students' assessment scores in English, Chinese and math attained in the most recent examination.

Procedures

Invitation letters stating the purpose of the research and containing consent forms for participation were sent to targeted schools. School principals and correspondent teachers were later informed in more detail of the procedures for the study. Participants were selected by the schools based on the criteria required (i.e., scores above the 80th percentile or below the 20th percentiles in overall academic scores in the most recent examination). Students selected completed the questionnaire in the classroom under teacher's supervision.

Results

In answer to the first research question, Pearson product-moment analyses revealed that all variables measured in the study were intercorrelated to a small or moderate, statistically significant extent (see Table 1).

Table 1: Correlations of all the variables in the study (N=331).

	1	2	3	4	5	6	7	8	9
1. GRD	---								
2. GEN	-.003	---							
3. HS	.090	.052	---						
4. O	-.150**	.069	.475**	---					
5. D	.230**	-.001	.145**	-.030	---				
6. SSC	-.064	-.005	.207	.312**	-.212**	---			
7. RSC	-.154**	.162**	.252**	.349**	-.194**	.386**	---		
8. MSC	-.126*	-.217**	.298**	.219**	-.114*	.225**	.219**	---	
9. ACAD	.099	.029	.314**	.141*	-.322**	.132*	.242**	.296**	---

Note: GRD = grade level; GEN = gender; HS = high standards; O = orderliness; D = discrepancy; SSC = social self-concept; RSC = reading self-concept; MSC = math self-concept; ACAD = academic achievement. N = 331. **p* < .05. ***p* < .01

Results indicated that, to a moderate degree, the higher an individual's Standards and Order, the higher the academic self-concept and academic achievement. Conversely, the higher the Discrepancy, the lower self-concepts and academic achievement. Note the two processes are not mutually exclusive, as reflected among the maladaptive perfectionists characterised as having both High Standards and high Discrepancy.

A hierarchical regression analysis was conducted to investigate the mediating effect of academic self-concept on perfectionism and academic achievement. Academic achievement was taken as the dependent variable predicted by perfectionism (High Standards, Order and Discrepancy)

at the first level, while academic self-concept was added for prediction at the second level. With both Fs significant, results obtained from the analysis showed all independent variables were good predictors of academic achievement and academic self-concept. At the first level, considering only perfectionism in terms of High Standards and Discrepancy, independent variables were shown to be reliable predictors of academic achievement. This indicated that an increase in High Standards, coupled with a decrease in Discrepancy, would tend to bring about an increased academic achievement score. Here, Order has failed to significantly predict academic achievement. At the second level, in addition to perfectionism, academic self-concept (Reading and Math) was added to predict academic achievement. Results showed academic self-concept appearing as a reliable mediator in the prediction of academic achievement by perfectionism. It is noteworthy, however, that of the two components of academic self-concept, only the mediating effect of Math self-concept was salient. Reading self-concept was marginally significant as a reliable mediator in the prediction (see Table 2).

Table 2: Summary of hierarchical regression analysis for variables predicting academic achievement.

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
HS	2.185***	.306***	.398***
O	-.627	.582	-.059
D	-.922***	.119***	-.381***
Step 2			
HS	1.875***	.312***	.341***
O	-1.078	.584	-.102
D	-.813***	.120***	-.336***
RSC	.438	.256	.090
MSC	.683***	.221**	.157***

Note: N = 331. $R^2 = .24$. $R^2_{adj} = .232$. $\Delta R^2 = .239$ for Step 1; $R^2 = .270$. $R^2_{adj} = .261$. $\Delta R^2 = .031$ for Step 2. HS=high standards; O=order; D=discrepancy; ASC=academic self-concept. *** $p < .001$.

One-way analysis of variance tests were conducted to examine the effects of perfectionism (adaptive perfectionists, maladaptive perfectionists and non-perfectionists) on academic achievement and academic self-concept (Reading and Math). For academic achievement, significant difference was reported only when comparing the achievement scores of adaptive perfectionists with those of the non-perfectionists and maladaptive perfectionists ($F(2, 328) = 13.38$, $\eta^2 = .75$, $p < .05$). The mean scores of the adaptive perfectionists, maladaptive perfectionists and non-perfectionists were 270.24, 250.85 and 242.04 respectively. The higher the scores in the perfectionist subscales, the higher the academic achievement of the participant.

Looking at academic self-concept, significant difference was found only when comparing the self-concept of the adaptive perfectionists and non-perfectionists, i.e. Reading, $F(2, 328) = 8.66$, $\eta^2 = .05$, $p < .05$, and Math, $F(2, 328) = 6.37$, $\eta^2 = .04$, $p < .05$.

Addressing the second research question, results from independent-samples t-tests demonstrated significant differences in the High Standards, Order and Discrepancy scores between the high and lower achievers. High achievers scored higher than low achievers in the subscales for High Standards and Order (with mean differences of 4.95 and 1.21, respectively) while low achievers scored higher than high achievers in the Discrepancy subscale with a mean difference of 10.82. This suggests that high achievers were more inclined towards adaptive perfectionism, and the low achievers tended more towards maladaptive perfectionism. It could be inferred from the results that adaptive perfectionists performed the best academically, followed by the maladaptive perfectionists and non-perfectionists whose performances were statistically comparable.

Further testing showed that high achievers scored significantly higher than low achievers in both Reading and Math self-concepts with a mean difference of 4.16 and 4.91, respectively.

Discussion

As anticipated, correlational analyses demonstrated a positive association between perfectionism, High Standards and Order, and a negative relationship with Discrepancy. It could also be inferred that perfectionism does exert a moderate influence in determining self-concepts and academic outcomes among Chinese upper primary students.

In this study, and consistent with previous findings (Grzegorek et al., 2004), students with higher expectations and better organised practices, i.e., adaptive perfectionists, tended to possess the highest level of academic self-concept. Academically they also performed the best compared to maladaptive and non-perfectionists.

The high standards set by adaptive perfectionists may have facilitated constructive self-evaluation and subsequent self-actualising adjustments of learning strategies rather than aggravating their anxiety levels. Additionally, lower levels of distress over any discrepancy between goals and actual attainment also helped them maintain self-concept and positive academic outcomes.

Despite the advocacy of high standards in maladaptive perfectionists, the present findings showed an insignificant difference between the academic achievement of maladaptive perfectionists and non-perfectionists. This was possibly due to self-handicapping and other avoidance behaviors commonly observed among maladaptive perfectionists staying clear of potential failures. In other words, the slightly stronger negative relationship between Discrepancy and academic achievement offsets the positive strivings brought about by the High Personal Standards and emphasis on Order, thus dampening academic achievement (See Table 1).

Significant differences were found when comparing the academic self-concept between the adaptive perfectionists and non-perfectionists: $F(2, 328) = 8.66$, mean difference = 4.41, $p < .05$ for Reading self-concept, and $F(2, 328) = 6.37$, mean difference = 4.28, $p < .05$ for Math self-concept. As anticipated, students who revealed adaptive perfectionism demonstrated the highest level of academic self-concept among their peers.

Unlike in previous studies, the present study found the self-concept of maladaptive

perfectionists undistinguishable from that of adaptive and non-perfectionists. This implies that with children of primary school age, the effect of excessive Discrepancy is less dramatic than with the older students used in other studies (Flett & Hewitt, 2002; Grzegorek et al., 2004). One possible reason for this difference is that the ability to recognise the importance of any discrepancy between one's achievement and one's ideal standards tends to be developmental and age-related.

To verify this assumption, Pearson correlation analyses were conducted between Discrepancy and Grade. A low but positive correlation of .23 was found, significant at the .01 level; implying maladaptive strivings for perfection may become more pronounced as students grow older and proceed to more advanced grade levels.

Hence, as suggested in the line of self-concept research, a limited awareness of others' strengths and personal weaknesses at primary school age could alleviate or delay onset of the debilitating influences of maladaptive perfectionism.

Closer inspection of the components in academic self-concept revealed that math self-concept was the only significant mediator, with an unstandardized beta of .221, $p < .01$, compared with Reading self-concept which was only marginally significant. This could be attributed to the strength of associations between the domain-specific self-concepts and its corresponding academic achievement.

Results showed a relationship between Math self-concept and math scores ($r = .378$, $p < .01$) stronger than that noted between Reading self-concept and students' academic achievement in Chinese ($r = .299$, $p < .01$) and English languages ($r = .180$, $p < .01$).

In addition, the relationship with the overall academic achievement and Math self-concept ($r = .296$, $p < .01$) was also stronger than with Reading self-concept ($r = .242$, $p < .01$).

This suggests that a favourable perception of self in math domains may induce an exceptional sense of satisfaction and pride which, in turn, contributes to higher academic outcomes.

Conclusion

This study investigated perfectionism and its relationship to self-concept and academic achievement among Chinese primary school students. All in all, considering the dearth of research involving subjects in this age range, the findings have refined our understanding of the role of perfectionism in influencing academic achievement and academic self-concept. While the notion has not been sufficiently investigated in the Chinese child population, the significant correlations of perfectionism with students' self-concept and academic achievement indicate further need to examine the formation of perfectionism from middle childhood to late childhood. It is also essential for counselors to disseminate adequate information to teachers, parents and even the students themselves with regard to the dual nature of perfectionism and its correlates. Educators and caregivers are advised to hold on to the ultimate goal of boosting students' characteristics of adaptive perfectionism and reducing those of maladaptive perfectionism.

Limitations

Owing to the absence of standardized fourth and fifth grade assessment throughout Hong Kong, the present study could only refer for data analysis to students' academic achievement scores (Chinese, English and math) in the most recent examination. Despite the sound reputation enjoyed by the three sampled schools, criteria for the award of academic achievement scores were not standardized. To acquire a clearer picture of the evolution of perfectionism over the childhood years, further investigations should be undertaken involving a larger sample of students from different elementary grade levels and other cultural backgrounds.

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Book Review (1)

Living with Intensity: Understanding the Sensitivity, Excitability, and the Emotional Development of Gifted Children, Adolescents, and Adults

Susan Daniels and Michael M. Piechowski (Eds.). (2009)

Gifted children and adults are often misunderstood. Their excitement is viewed as excessive, their high energy as hyperactivity, their persistence as nagging, their imagination as not paying attention, their passion as being disruptive, their strong emotions and sensitivity as immaturity, their creativity and self-directedness as oppositional. (Daniels & Piechowski, 2009: 4)

In an era when cognitivism closely followed behaviorism, the Polish psychiatrist and psychologist Kazimierz Dabrowski (1902-1980) focused on the significance of emotional development, self-reflection and conflict in a person's psychological growth. Until recently, the richness of his work has not been widely known. However his contributions and theories, namely Overexcitability (OE) and Theory of Positive Disintegration (TPD), represent unique perspectives on personality development which have resonated with many working in the field of gifted education.

For Dabrowski, developmental potential is not reduced to talent and abilities, but requires the manifestation of overexcitabilities and the "third factor" of self-directed emotional growth. All five types of OE (intellectual, emotional, imaginal, sensual and psychomotor) and levels of development (primary integration, unilevel disintegration, spontaneous multilevel disintegration, organized multilevel disintegration and secondary integration) are thoroughly described and constantly referenced throughout the book, along with rich illustrations and detailed applications

Great Potential Press published this book in 2009. It includes chapters by authors instrumental in the initial application of Dabrowski's theories to gifted education. It contributes to the social and emotional domain of giftedness and creativity. Susan Daniels and Michael Piechowski provide a comprehensive discussion of various aspects of emotional development authored by an array of contributors. Overexcitability is described and strategies are provided to help children and adults deal with OE. Essential information about Dabrowski's Theory of Positive Disintegration is imparted and the reader is invited to learn practical methods for nurturing sensitivity, intensity, perfectionism, and much more.

The quotation included above reflects the central argument of this book. It is that gifted children, adolescents and adults and, more generally, the notion of giftedness itself, are often misunderstood. OE manifests itself early in life in the form of authentic dispositions causing gifted children to experience and live life much more intensively – something that can make them hard to live with and hard to educate. They are ahead of their age and ahead of their peers, sometimes even ahead of the adults around them. The authors take on the huge challenge of making us all, parents

and teachers included, aware of how it is to actually live with and near giftedness and all its intensity. It is essential for all parents, teachers and counselors “dealing” with giftedness and intensity.

In part one, “*K. Dabrowski, Overexcitability, Giftedness and Developmental Potential*”, the editors give a general overview in two chapters: (1) Embracing Intensity: Overexcitability, Sensitivity, and the Developmental Potential of the Gifted; and (2) Dabrowski's Levels and the Process of Development. Readers are offered a comprehensive insight into Dabrowski's theory and its important applications for understanding and cultivating talent and creative potential regardless of age, sex, education, and social position. It constitutes a valuable guide for the gifted themselves, their parents and teachers, counselors and psychologists, creativity researchers, social workers, and all others who are interested in or “touched” by giftedness. In fact, it is a useful resource for anyone working in fields that promote and depend on the creative energy of the gifted, for example, in education, business, science and art to name just a few.

In the second part, “*Understanding Intensity: Practical Applications for Parents, Teachers, and Counselors*”, seven chapters provide valuable insights derived from ongoing studies of giftedness, including: (3) Nurturing the Sensitivity and Intensity, and Developmental Potential of Young Gifted Children; (4) Inner Awakening, Outward Journey: The Intense Gifted Child in Adolescence; (5) The Emperor has no Clothes: Exquisite Perception, Stress, and the Gifted Child; (6) Dabrowski's Theory: Possibilities and Implications of Misdiagnosis, Missed Diagnosis, and Dual Diagnosis in Gifted Individuals; (7) Integrating the Intense Experience: Counseling and Clinical Applications; (8) Overexcitability, Giftedness, and Family Dynamics; and (9) Petunias, Perfectionism, and Level of Development.

With chapters covering clinical work with the gifted, family dynamics, issues affecting specifically adults who are gifted, and research studies and applications, the book provides very important and valuable information for any involved in gifted education. It presents a clear and concise overview of the inner and outer world of gifted individuals, how they think and process, how they can and can not express themselves, what is needed in their environments in order for them to thrive and offer up their unique and needed contributions to the world.

In the third part, “*Still Gifted After All These Years -Lifespan Intensity and Gifted Adults*”, the developmental perspective is extended and includes four chapters: (10) Advantages and Challenges of Lifespan Intensity; (11) Annemarie Roeper: Nearly a Century with Giftedness; (12) Living One's Spirit Song: Transcendent Experiences in Counseling Gifted Adults; and (13) What We May Be: What Dabrowski's Work Can do for Gifted Adults.

Two chapters comprise the final section entitled, “*Current Research and Future Directions*”. Chapter 14, Building Firm Foundations: Research and Assessment; and Chapter 15, Under Construction: Continued Applications of Dabrowski's Theory of Positive Disintegration with of the Gifted. This section should be of special interest for researchers and practitioners since it includes a review of the main studies conducted to test Dabrowski's assertions, meta-analyses of researches concerning the levels of development and overexcitability. In this context, according to Susan Daniels, future investigations might include:

- (1) Cross-cultural research to verify the universality of the theory;
- (2) Continued development of a computerized coding system for scoring levels of developments;
- (3) The study of OEs as the earliest indicators of developmental potential;
- (4) The validity and reliability of OEQ-II and OEC-2C;
- (5) OEs and levels of development with diverse populations;

- (6) The effects of gender differences, effects across the lifespan, and family influences on the expression of OEs and level of development;
- (7) In-depth case studies of individuals -through interview and biographical analysis- at higher levels of development;
- (8) Clinical case studies from counselors, psychologists, and psychiatrists applying Dabrowski's TPD with gifted clients in therapeutic frames;
- (9) How information and research can be applicable to counselors, clinicians, educators, and parents.

The presentation of items used in research, typical answers and their significance as well as the two questionnaires developed to assess levels of overexcitability, i.e., the OEQ Short Form and the Revised OEQ (or OEQ-REV) are included in the appendices that can help interested readers in making their own assessments.

Reference

Daniels, S.; and Piechowski, M. M. (Eds.). (2009). *Living With Intensity: Understanding the Sensitivity, Excitability, and the Emotional Development of Gifted Children, Adolescents, and Adults*. Scottsdale, AZ: Great Potential Press. ISBN-13: 978-0-910707-89-3

Book Review (2)

Debating Single-Sex Education: Separate and Equal?

Frances R. Spielhagen (2008)

Coeducational high school classes were a welcome innovation to the early feminist community. Over the course of the 20th century, these classes resulted in greater numbers of girls taking advanced mathematics and science courses and ultimately attending college.

This review provides a snapshot of a new book entitled; “Debating Single-Sex Education: Separate and Equal” edited by Frances R. Spielhagen.

Single-sex education has recently dominated discourse among education policymakers confronting a decline in achievement levels among adolescents. Spielhagen’s *Debating Single-Sex Education* provides both practitioners and policymakers with a timely, detailed, and focused compilation of the issues surrounding single-gender education. It includes qualitative case studies and quantitative evidence of the effects of single-gender education on student achievement. It offers a necessary and objective assessment of an approach that is gaining increased interest among parents and educators. According to Sally Reis, this edited volume is “a must-have resource for any educator interested in single-sex classes and education. It is also a must-read comprehensive introduction to the nuances, complexities, and successes of single-sex classes”.

Even before reading the book itself, the title might cause three questions to come to mind, e.g., What role does gender play in education? What educational environment best meets the needs of both girls and boys? Are single-sex classes better than coed classes? Such questions beg answers and indeed, there is a pressing need for much more research – reliable, science based, well designed – to help educators begin to truly assess what impact single-sex classes have on student performance, school culture, and institutional structure.

Spielhagen attempts to both answer these important questions and delineate questions yet to be fully explored. Single-sex arrangements are examined through many different lenses. The authors of each chapter provide in-depth analyses of their experience with real and recent single-sex classes. The case studies detailed in this book should be read carefully by any school or district exploring implementation of single-sex options.

In chapter two, “Jumping into the Fray: How to Implement Single-Sex Classes,” Deborah E. Marks and C. Sloan Burns recount their experiences in scheduling single-sex classes in their middle school. They chronicle how they managed these single-sex classes and how they handled the responses of parents, teachers, and students to the arrangements. They point out that: “three important results in our experience with single-gender grouping were exposed: better grades, better attendance, and better behaviour” (p. 14).

In the third chapter, “Bumps Along the Way: Mistakes Made and Lessons Learned,” Suzanne Schwarz-McCotter examines the points of view teachers’ and administrators’ who expressed their feelings about single-gender classrooms after their involvement in an initiative to start single-sex classrooms in an urban middle school.

In chapter four, “Having it Our Way: Students Speak Out on Single-Sex Classes,” Spielhagen shifts the focus to the viewpoints of the students in small urban middle school located in a larger rural geographic area. She concluded “the younger the students, the more likely they favored the single-gender classes”. In her study, sixth grade students, both boys and girls, reported satisfaction. Seventh grade boys were negatively disposed, while eighth-grade girls maintained single-sex classes were better for academic achievement but that they preferred to “be with the guys.”

Preparation of teachers for teaching in single-gender classes is critical in the success of such reform. In chapter five, “Going the Distance: Strategies for Teacher Preparation,” Margaret Ferrara tackles the issues surrounding the assignment of teachers to single-gender classes in the complex environment of public middle schools. Teacher awareness of differences in interests, learning styles and expressive styles among boys and girls emerged as a critical issue in ensuring the success of these classes.

In the next chapter, “Does It all Add Up? Single-Sex Classes and Student Achievement,” Spielhagen examines the effects of single-gender classes on standardized test scores in a small middle school. She found specific gains in test scores among both girls and boys.

Discipline of students is an urgent issue. In chapter seven, “Good News and Bad News: Student Behavior in Single-Sex Classes,” Margaret and Peter Ferrara joined forces to examine the disciplinary issues in single-gender classes in a small middle school.

In chapter eight, “For Better or Worse: Classroom Dynamics in Single-Sex Science Classes,” Karen B. Rogers presents a comprehensive study of the effects of single-gender classes on middle school mathematics and science classes. She found substantial differences in classroom climate, instructional presentation, students’ questioning/ learning behavior, and students’ attitudes about single-gender classes. Rogers’ work also focuses on a specific segment of the student population, i.e., those who are highly able and are considered gifted. Based on the findings of previous research, Rogers made a number of predictions, including:

- Placing gifted girls and boys in single-gender classes will improve math and science achievement
- Placing average -ability girls and boys in single-gender classes will improve math and science achievement
- Placing gifted boys and girls in single-gender classes will improve self-efficacy and attitudes towards math, science, and learning
- Placing average-ability boys and girls in single-gender classes will improve self-efficacy and attitudes towards math, science, and learning
- Teachers of single-gender classes will use different instructional management and delivery strategies for math and science instruction.

In chapter nine, “We’ve Always Done It this Way”: Single-Sex Classes in Kenya, Robin J. Kohl examines the question of single-gender classes in Africa and explains the ways in which these classes are organized in Kenya. Through her interviews with girls in that country, Kohl found they were highly motivated to achieve academically and routinely studied for at least 6 hours every day.

All girls she interviewed indicated that they planned to postpone marriage and motherhood to attend university. The majority of them expressed an interest in pursuing careers in law and economics.

The authors of this book have shown how single-gender classes affect the academic achievement and the social development of young adolescents. In chapter ten, "Now What? Practical Implications," Karen B. Rogers concludes with a summary of the implications. She provides the reader with a nexus of conclusions drawn from all the studies as well as potential avenues for future research on this topic. She lays out the advantages and disadvantages of placing middle school learners in single-gender or mixed classrooms for their learning as follows:

- Boys interact differently in single-gender and mixed class placements. Furthermore, boys react within single-gender classrooms in considerably different ways than do girls in these classrooms;
- Girls interact differently in single-gender and mixed class placements and the interactions are consistently more positive in single settings;
- Middle school student choice of classroom setting (single-gender or mixed) is critical when considering the affective outcomes of school;
- Higher academic achievement can be an outcome of single-gender classrooms, but cannot be guaranteed as a sure outcome of single-gender placement alone;
- Age and developmental level can affect the success of single-gender classroom placement to some extent. "One wonders, however, if the benefits reported in this book for grades 6 and 7 in middle school should be happening much earlier in the school years, perhaps even as early as the primary grades, if the full affective and academic benefits of single-gender classrooms are to be realized." (p.130);
- Teachers teach differently in single-gender settings, regardless of their preparation to do so;
- Administrative leadership has much to do with the success or lack of success when single-gender classes are implemented. "The lack of teacher preparation, when coupled with changes in administrative leadership and subsequent changes in priority, ultimately resulted in the withdrawal of single-gender classes when new administration came in" (p.132).

Reference

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