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"Boys' mind, girls' heart": Barriers to the realization of the potential in gifted girls – Responding to challenges

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* The views expressed in this paper are those of the author and do not necessarily represent those of the United Nations

In countries like mine, human potential has been often neglected, overlooked or - exported to other countries. The problem becomes far more difficult when gifted girls/women are concerned, because they encounter not only external obstacles, but also some more profound ones (internal, i.e., "hidden" in their minds). The presentation will be focused on a brief overview of internal and external barriers to realization of potential in gifted girls, as well as the issue - what *could be done* to overcome these barriers, through organizing programs for the gifted[1] and/or through introducing other changes in the education system. A clarification of a model of extra-curricular science education of gifted girls will be provided, which (hopefully) might serve as a good practice example (primarily, in transitional countries of Eastern Europe and/or other developing countries).

A vast literature on internal and external barriers to realization of potential in gifted girls might serve as inspiration for practical work – for developing gender-sensitive instruction, supportive environment and continuous encouragement/support to gifted girls, as well as specific counseling services.

Internal barriers to realization of potential – magical circles and "self-fulfilling prophecies"?

Numerous research studies on gifted females that have been done within the last 15-20 years addressed a relevant issue: why some gifted girls have not developed into gifted women who fully realize their potential for professional and creative achievement. Research (some of which was based on longitudinal studies that followed a life-path of gifted girls from adolescence to early adulthood) found numerous internal (psychological) barriers to realization of potential, e.g., a poor self-esteem, a lack of confidence in one's abilities, lower aspirations, and some other factors (See below).

A lack of confidence or doubt in one's own abilities (or even a denial or hiding of own potential, in order to avoid being "different" from peers), as well as **a decline in aspirations between adolescence and early adulthood** were confirmed in various studies, while similar tendencies towards self-denial, self-doubt or self-criticism were found among adult gifted women (Arnold and Denny, 1985; Eccles, 1985; Kerr, 1985; Noble, 1989; Benbow and Arjmand, 1990; Hollinger and Fleming, 1984; 1992; Walker, Reis and Leonard, 1992; Gabor, 1995; Arnold, 1993;1995; Reis, 1998; 2003). Similarly, studies on gender differences in self-esteem in childhood and adolescence, e.g., a survey conducted on 3000 boys and girls found a dramatic decline in girls' self-esteem (i.e., three times greater than in boys), which started at the age of 13 or 14 (American Association of University Women, 1991). Other authors also identified a decline in gifted girls' self-confidence and self-perceived abilities through high school (Kline and Short, 1991; Arnold 1993;1995; Callahan, Cunninghain, & Plucker, 1994). Poor self-esteem and/or a lack of belief in one's abilities should be viewed as highly relevant factors, if we have in mind complex inter-relations between self-concept, aspirations and achievement, which were determined both in gifted and so-called average samples. Relevant analyses of self-concept in general population of adolescents, based on longitudinal data gathered on a large sample, nationally representative of the USA, and other samples of Australian students indicated links between self-concept, educational and occupational aspirations, academic achievement and subsequent university attendance (Marsh, 1991; 1993; 1994). Within this context, lower confidence in one's abilities and/or lower self-esteem, which were often found in gifted female teenagers, might have **long-term impact** on their achievement

[1] Reflections are based on my experience (1990-2002) in working with gifted adolescents, as the Head of Dept. of Psychology, creator of extra-curricular science education programs for the gifted, researcher, instructor in interdisciplinary programs, women's rights activist, and counselor of gifted girls.

in future. As literature mentioned above indicated that self-doubt in gifted girls was associated with a decrease in educational and occupational aspirations, such beliefs might function as a "self-fulfilling prophecy". Interpretation of the latter unfortunate "prophecy" has been based on a theoretical framework of complex inter-relations between global self-esteem, previous performances/achievements (or failures), locus of control and self-efficacy (more explanation will be provided during the presentation).

In addition to the above, researchers (Reis, 2002) listed other factors that might be treated as internal barriers to realization of potential in gifted girls: **confusion about effort and ability** (boys more often attribute their successes to ability and their failures to lack of effort, while girls often attribute their successes to luck or effort and their failures to lack of ability). Further, **perfectionism** in gifted adolescent girls (which might often result from a "learned fear of failure", Kerr, 1985) was found to have both positive and negative impact on their achievement. These perfectionist tendencies ranged from healthy/normal to unhealthy/dysfunctional – the "healthy" perfectionists felt supported by family, friends and peers, worked to do "their personal best" and accepted mistakes as a part of learning, whereas the "unhealthy" perfectionists worked to please others (teachers, parents, peers), and perceived parental expectations as demands to be perfect in everything they did, which led to pressure, self-criticism, self-doubts, repeating work over and over, taking an exceedingly long time to complete tasks, and constant anxiety and worry, as well as a fixation about making mistakes that resulted in a high state of anxiety (Schuler, 1997; Reis, 2002).

Previous and more recent reviews of research studies (e.g., Reis, 1991; 2002) also implied other internal barriers, including **absence of planning or poor planning for the future, unrealistic expectations of future careers, external locus of control, a fear that professional decisions will interact with both relationships and motherhood, a fear of success or a fear of failure, and the impostor syndrome**. Further, researchers notified **confusion about passivity and assertiveness** and ambivalence about ambition and accommodation - gifted girls might experience a conflict between their own wishes to express themselves and expectations of their immediate surrounding, which are based on stereotypic gender-role beliefs, so girls might refrain from "speaking out", in order to avoid being perceived as too aggressive or too ambitious. In addition, other factors have been identified: **lack of independence and lack of support for one another, feelings of loneliness, dilemmas and frustrations related to pursuing a gift to its fullest level and simultaneously caring and supporting the loved ones** (i.e., they understand that if they develop their own talents, there will be an impact upon those they love), **lower opportunities to develop self-efficacy, difficulties related to multipotentionality** (high potential and multiple interests often lead to multiple academic, professional and leisure possibilities, so decision making becomes difficult, as it is not possible to do all they would like to do and are capable of doing), etc. Some of the above-mentioned factors require additional clarification, e.g., the impostor syndrome implies a low sense of self-esteem that occurs when females attribute their successes to factors other than their own efforts and see their outward image of a bright successful achiever as being undeserved or accidental. Researchers reported that girls far more often than boys attributed their accomplishments to external factors and not to themselves, i.e., they tended to attribute successes to effort or external factors (such as luck), while failures have been explained as internal faults or as due to lacking certain abilities; on the other hand, boys attributed their success to their own capabilities and failure to external factors (Dickens & Cornell, 1993; Callahan, Cunningham, & Plucker, 1994; Heller & Ziegler, 1996). A "fear of success" (a belief that they will be rejected by peers or appear undesirable to the opposite sex if they are too competent or successful) has been regarded by some authors as an obsolete conception, while others re-interpret this as ambivalence toward success, due to problems/fears related to balancing success with other personal and/or romantic interests and plans (Reis, 2002). The latter authors stress that fear of success at an early age may

lead to a change in confidence in one's ability and can have devastating effects. As mentioned above, poor self-confidence can further lead to lowering aspirations and changing professional plans. Researchers also identified various factors that might be beneficial in supporting gifted girls to overcome these barriers: providing mentors and positive (female) role models, intervention programs focused on specific needs of gifted girls, and offering possibilities to them to test their capacities in a supportive environment.

Taking all previous considerations into account, the following implications for interventions and research can be identified.

- Adolescence could be viewed as an appropriate (or, even, critical!) period for providing support, encouragement and (possibly) counseling services to gifted girls, as overwhelming "open issues" and unresolved problems that occur in teenage period could follow some of gifted girls throughout their life path, or even progress. The latter assessment has been consistent with research findings that *the conflicts and barriers become more apparent as gifted girls mature* and face decisions at critical junctures in their lives. In fact, the intersection of these factors (ability, age, career choice, and personal decisions relating to marriage and children) may result in *additional internal barriers* (Reis, 2002). Consequently, it might be suitable to:

a) Organize well-designed extra-curricular programs that would address specific needs of gifted girls and provide challenging learning opportunities to them (an example of such program is provided below; See chapter: "Beating the odds"). This does not imply organizing single-sex programs (i.e., solely for gifted girls). Although some research studies have found certain positive outcomes of single-sex programs, especially in math and science, my previous experiences in gifted education have not supported such ideas (the latter inference might pertain at least to countries with no tradition and practice of single-sex regular schools).
b) Encourage gifted girls' involvement in programs for gifted on math and science and (possibly) introduce affirmative action measures for enrollment of girls in such programs;
c) Design intervention programs and/or counseling services aimed at supporting gifted girls to overcome barriers to realization of potential.

- Having in mind that research studies on barriers to realization of potential in gifted girls/women mostly have been done in USA, and that barriers might be **culturally specific** (at least, to some extent), additional surveys focused on gifted girls in various countries (preferably, by using longitudinal studies) and **cross-cultural comparisons** are needed. Further case studies of gifted girls/women might be also revealing, with a specific focus on talent development and successful **resilience strategies** (strategies that have helped gifted girls/women to overcome internal and external barriers/obstacles). Similarly, analysis of previous research implied a need for re-examining a concept of "achievement", "success" and "giftedness" in order to better account for specific needs of gifted females.

External barriers to realization of potential – stereotyping and "double messages"

Research studies also identified other, external barriers (socio-cultural and interpersonal) to realization of potential in gifted girls, including (but not restricted to): influence of teachers, parents and peers, a lack of adult female role models, sexism and stereotypic gender-role beliefs expressed in school text-books, curricula, hidden curricula, media and public, etc. (Kerr, 1985; Kaufman, 1981; Hollinger and Fleming, 1992; Arnold, 1993; Sadker and Sadker, 1994; Reis and Callahan, 1996; Reis, 1998; 2001). Some authors also emphasized that most role models portrayed in media have often been "too stereotypical" and too different from gifted girls'

wishes, and that girls have been bombarded with unrealistic and superficial images that put pressure on them to be physically attractive (Hanson, 1995; Heller & Ziegler, 1996; Randall, 1997; Reis, 1998; 2001). One relevant study (Noble, 1989) summarized interpersonal obstacles in the following manner: rejection by family, teachers, and peer groups; growing up in impaired families; and underestimation of abilities by families, while among socio-cultural barriers, "double messages" were notified, i.e., those which "posit inconsistent and mutually exclusive expectations for gifted individuals and for women". "Double messages" received by gifted girls have been somewhat differently described in other studies: to strive for excellence - but not to stand out too much; to do their best - as long as their best isn't better than everyone else's best; to excel in school - but not to enter careers that are traditionally male (Bell, 1989; Callahan, Cunningham, & Plucker, 1994). In addition to "double messages", authors also noted difficulties to reconcile messages gifted girls receive from different environments (home, school and society as a whole). Some authors also mentioned that religious background and religious training, received in childhood and adolescence might be associated with confusion and concerns whether pursuing one's talents should be considered "selfish" and contradictory to religious beliefs (Reis, 2002).

Influence of school and teachers: Teachers may send encouraging but also discouraging messages to gifted girls, through a variety of behaviors (including non-verbal ones), such as amount of attention given to students of different sexes, attribution of their successes either to ability or effort, willingness and skill to recognize talent/gift and respond to students' needs, etc. A few illustrations of research studies will be provided in order to reveal how teachers might become "mediators" of stereotypes. One study implied that teachers judged both gifted girls and boys to be gifted in stereotypical areas. Boys were judged gifted in physical, technical, and in strategic areas; girls were judged gifted in artistic and in social/emotional areas (Gagne, 1993). In particular, teachers' expectations and attitudes towards girls' achievement might have a profound impact in subjects like math and science. Girls talented for math and science thus could be confronted with stereotypic perceptions of their ability or internalize lower expectations of teachers. Evidence on stereotypic teachers' beliefs regarding attribution of success in math was found in some studies (e.g., Fennema, 1990); i.e., teachers attributed success of their most capable male students more often to ability, and less often to effort, while the pattern was reverse for attribution of success of the most capable girls. Further, other studies indicated that boys dominated classroom communication, including the number of times teachers call on them and the amount of time they talk, whereas "high achieving girls receive the least attention" (Callahan, Cunningham, & Plucker, 1994). Another study, however, implied interesting differences across gender in perception of teachers' attention – boys perceived inequities in the classroom to a greater extent than did girls. Gifted boys reported that the assertive, academic behaviors of boys received more attention of the teacher, while gifted girls perceived no difference in attention given by the teacher (Feldhusen and Willard-Holt, 1993). Content analyses of school text-books from gender equality perspective often implied numerous examples of stereotyping (e.g., Sadker and Sadker, 1994). Similar analyses on portrayal of women in school text-books were conducted in counties of Eastern Europe, e.g., Croatia, Montenegro, Serbia and revealed intriguing examples of stereotyping (Baranovic, 2000; Plut, 1994; Jaric, 1994; Kovacevic, 2004; Women Action, 2004).

Parental influences: Various studies analyzed profound parental influences on development of gifted girls. Parents may engage in three unhealthy approaches to dealing with their daughter's giftedness: a) some parents deny their daughter's giftedness in an attempt to give her a "normal" life; b) other parents don't talk to their daughter about her gifts and talents because they are afraid it will "swell her ego"; c) still others acknowledge the giftedness but try to "put her in her place" so she won't think she is better than others" (Kerr, 1985; Davis & Rimm, 1994). Callahan et al. (1994) analyzed influences of family on the ability of gifted

teenage girls to face and cope with barriers to their achievement that have been identified in the literature. They noted several factors that had favorable influence in a process of overcoming these barriers. In particular, the modeling of discussion, debate, and decision-making, mothers as female role models, and early encouragement of independent problem-solving behaviors led to greater effectiveness in compensating for these barriers. Some authors emphasized that mothers had a particular influence on their gifted daughters, e.g., talented girls with career-oriented mothers tended to develop a variety of talents and interests early in life and felt less conflict about growing up and becoming independent, autonomous women (Reis, 1998). On the other hand, it was also reported that relevant attributes found in older talented women, such as determination, commitment, assertiveness, and the ability to control their own lives, have been in a sharp conflict with messages conveyed by some parents as "desirable" ways of behavior for girls (ibid.). Further, studies found that parental expectations had impact on girls' beliefs about their abilities more than the girls' own past performance - how parents viewed their daughter's abilities and chances for success were stronger predictors of how she would view her abilities and chances for success than her own past successes (Terwilliger and Titus, 1995; in: Randall, 1997). In addition, some findings implied that, when gifted girls have succeeded, parents attributed it more often to hard work and luck, whereas when boys have succeeded, parents tended to attribute it to special ability. Parental goals for sons involved choice of a career; while parental goals for gifted daughters were to attend college (Reds, 1995; Walker, Reis, & Leonard, 1992). Parents' attitudes could also influence academic course selection. Olszewski-Kubilius and Yasumoto (1995) compared students and parents on the variables of gender, race, ability, previous educational experiences, student interest, and parental attitudes as these related to course selection. Of all the variables examined, parents' attitudes were the strongest predictor of course selection.

Peer pressure: Various studies reported that gifted girls often tended to hide their potential in order to conform to the norms of peer group and to avoid "being different" from peers. Survey of factors related to enrollment in programs for the gifted, conducted in 142 school districts in USA (Read, 1991; in: Nelson and Smith, 2001) ranked peer pressure as the number one factor discouraging girls' participation in gifted programs in high school, followed by parental pressure and attitudes of the school staff. Interviews with middle school gifted females revealed that they avoid displaying outstanding intellectual ability and search for ways to better conform to the norm of the peer group (Callahan et al., 1994).

Implications for creating educational policy in the future might require re-thinking the serious challenge – how to organize a school environment that would provide both excellence and equity? In order to assure that **all girls** might grow up in non-stereotypic school environment, and to address specific needs of **gifted girls**, prospective actions could be organized in two directions.

- Although identification of gifted persons based solely on IQ scores has become obsolete long ago, practitioners, i.e., teachers in schools often equalize giftedness with high ability. Consequently, it would be helpful to organize university-level programs for future teachers, and in-service teachers' training programs focused on identification of gifted students in regular schools, as well as on recognizing specific needs of gifted girls (including methods of support/encouragement suitable for helping them to overcome external and internal barriers to realization of potential).

- Introducing policy measures that would increase gender awareness of teachers and policy makers (and create a girl-friendly school environment), as specified in the Chapter: Policy proposals. A brief description of the program aimed at introducing a gender-sensitive approach to teaching in regular schools is provided in the chapter: Teaching for Equality.

"Beating the odds" – extra-curricular science education programs

In a view of the previously-described findings, my experience (in the period 1990-2002) in addressing needs of gifted girls might be summarized as follows – how I as practitioner (creator of programs for gifted students and counselor of gifted girls) attempted to deny predictions, which I made as a researcher (and predictions of other researchers). Overview of studies on external and internal barriers clearly indicate a necessity to support some gifted girls to overcome, for instance, a feeling of deep self-doubt and to develop their talents, in spite of obstacles they face in the immediate surrounding (e.g., parental underestimation of their abilities, hostility of the peer group, etc). In other words, how to help some gifted girls (who are faced with difficulties) – to "beat the odds" and struggle against "self-fulfilling prophecies" mentioned above?

Support to gifted girls was provided within the model of advanced extra-curricular science education of the gifted, developed in Petnica Research Center, the first alternative educational center (outside of the regular school system and independent of educational authorities) in the former Yugoslavia. The Center organized educational programs, primarily for high school students, but also for university students, and teachers, as well as research studies in different scientific disciplines. It is worth notifying that the Center was initiated more than 20 years ago by a group of young experts and students who were not familiar with theoretical conceptions of giftedness (although the model developed in the Center have had certain resemblances with Renzulli's conception of giftedness). Even, the policy of the Center implied avoidance of the very term "gifted" in official contacts with schools and during implementation of the programs; expressions like "highly interested for additional learning" or "highly motivated for science" were used instead. Such policy was based on a belief that labeling students as gifted might impose on them adults' expectations and plans (which could differ from students' own expectations and plans).

Several aspects of the programs proved to be beneficial for providing supportive, but also challenging environment for development of gifted girls.

- Beliefs about "giftedness" and selection procedures: Contacts with a majority of high schools at the national level were established, so students from all parts of the country (almost the entire high-school age group) had a possibility to apply. Consequently, programs were highly selective; the number of candidates/applicants was 3 to 10 times larger than the number of attendants (depending on a particular program they applied for). **Selection criteria emphasized the importance of motivation, highly-developed interests and creativity**, rather than merely high ability. Selection procedures were primarily based on: self-reported interests, prior extra curricular activities and self-initiated research projects, prior creative products of any kind, self-reported knowledge beyond the regular school curricula, an essay or a research proposal on self-selected topic, responses to an open-ended questionnaire concerning interests and reasons for applying to the program, as well as teachers' nominations/recommendations, and school psychologists' recommendations (the latter mostly involved IQ-scores and various personality measures). Although IQ-scores, provided by school psychologists, were taken into account, high ability was not an exclusive criterion, and no IQ cutoff scores existed. Selection procedures implied a belief that "giftedness" should not be conceptualized as a "trait" of certain children who possessed a global cognitive superiority or other "attributes"; simply, the staff believed that certain children require and should be provided with advanced, domain-specific learning opportunities that would represent a challenge to them. This implicit conception has some similarities with the so-called "mastery" model (an intriguing debate about a necessity to

shift paradigms in gifted education from "mystery" model to "mastery" model of giftedness has been present in the recent literature, e.g., Matthews and Foster, 2006).

- Organization and underlying principles: Extra-curricular science education programs for gender-mixed groups of students were provided (free-of-charge) in various scientific disciplines – mostly, natural sciences, math, computer science and electronic engineering, but also several fields of social science. Programs were implemented in annual "cycles", consisting of 4-5 mutually-dependent courses, which involved complex content and topics that were not covered in regular curricula (mostly, the **content was far beyond knowledge of regular high school students**). Students spent app. 30 days per year in the Center; thus, their contacts with school-mates and peer groups (and socio-emotional development) were not obstructed, and a possibility of big-fish-little-pond effect (Marsh, 1991; 1993; Marsh et al., 2000) was diminished. Upon finalizing one cycle of programs, students could have applied for advanced-level programs in the same discipline, or nominate themselves for other programs, in different area. Often, students who entered the programs at the first grade of high school, attended advanced-level courses in the same scientific field, and then switched to other discipline (second-time enrollment was highly encouraged, and almost all students who applied were accepted). **Programs relied on formal lectures to a smaller extent**, while various interactive teaching techniques were often applied, supplemented by exercises, informal discussions, problem-solving games, techniques for enhancing creative thinking, and different forms of mentorship. **Interdisciplinary approach** to research problems was encouraged. **The work schedule was very flexible** and no time constraints existed (students could have worked all night if they wanted, as facilities, labs and library were open round-the-clock). Students often stressed that the "atmosphere" in the Center was completely different in comparison to schools. Programs were designed in order to enable students to adopt creative approach to problem solving and learning styles that might enhance their creative productivity in the future. Groups of students were formed based on self-reported interests - such grouping facilitated creation of strong ties among students who expressed similar interests, i.e., group cohesion was established easily. The contacts initiated during the programs were usually continued throughout the year and provided **a powerful source of peer support**, i.e., support by peers who shared similar interests, attitudes and values and thus could help one another in coping with problems in their homes and schools. Having in mind that students in their schools and among school mates often experienced problems common for the gifted – a lack of social acceptance due to "being too different"- these contacts with "similar" peers had favorable impact on socio-emotional development.

- High expectations and demands: The most challenging part of the programs involved **research studies conducted by students (under mentorship/supervision of professional staff and associates)** on self-selected topics or topics suggested by the staff. The students were encouraged to experience "**a spirit of real research**", including both joyful and disappointing aspects of such endeavors. They became deeply involved in all phases of the professional research study (e.g., handling professional instruments, conducting experiments/field surveys, using professional methods and literature), to write the report in a form of scientific article, and to provide a presentation, which further served as a starting point for discussion with an audience (composed of mentors, staff, associates and other students). In general, students were faced with **extremely demanding and complicated tasks**.

- Student-friendly mentorship: Different forms of mentorship were provided to students. Apart from **mentorship by the Center's staff**, **numerous scientists and researchers** from universities and research institutions sometimes also assumed a role of mentors (in addition to participation in the programs as guest lecturers/facilitators). The most interested and

successful **former students** were invited (upon entering the university) to become so-called younger associates, i.e., to participate in educating subsequent "generations" of students, as mentors. This specific form of mentorship proved to have extremely favorable outcomes – these young mentors invested a lot of effort in providing individualized training and support to (slightly) younger students-colleagues; their commitment, patience and motivation was enormous, and often exceeded those of adult mentors. Involvement of younger mentors was, possibly, the most appealing aspect of these programs for the gifted, and contributed to internal dynamics and programs' attractiveness. Further, the mentorship system was "self-generating", as new mentors were appointed each year, while old ones, upon graduation, continued to visit the Centre as guest-lecturers or part-time research associates.

- Girl-friendly environment and its outcomes: Throughout the programs, a special attention was paid to needs of gifted girls, particularly those who experienced difficulties in the family, a lack of understanding and support in their immediate surrounding, or those who encountered numerous other problems, due to low socio-economic status of the family. Further, as mentioned above, most programs were organized in natural sciences and similar disciplines, so girls involved in these programs were often confronted with the conflict between their interests and stereotypic perceptions of their families and peers. Informal discussions about their problems and counseling services were provided; girls were particularly encouraged to gain or maintain confidence in their abilities and keep their educational/professional aspirations.

Outcomes could be described as encouraging.

In the period 1990-2002, girls made up roughly 50% of program participants (the percentage ranged from 47 to 52). This proportion of girls could be partially attributed to selection criteria (with all other conditions equal, girls were slightly favored in selection procedures for e.g., computer science, physics and electronic engineering, whereas boys had a certain advantage in programs such as anthropology, psychology, and linguistics). Taking into account that programs in natural sciences outnumbered those in social sciences (ratio was nine to four), high representation of girls among the program participants indicated that at high-school level, boys' and girls' interests in scientific disciplines were not consistent with gender stereotyping.

Follow-up activities, aimed at analyzing links between participation in programs for the gifted and subsequent academic achievement, as well as creative productivity, revealed that most of the former female students passed the entrance exam for the university with high success (belonged to top 10-15% of admitted applicants); roughly 50% of them continued contacts or some forms of collaboration with the Center throughout university education, and around 20% were continuously involved in programs for other students and in research activities of the Center (as younger associates), while a smaller proportion of girls obtained scholarships for studies at foreign universities. During their university education, several patterns of behavior were identified. Some former female students demonstrated high efficiency in performing academic tasks and had outstanding academic achievement; they also participated, to a certain extent, in self-initiated activities and, to a greater extent, in research studies led by university members and/or Center's staff. Others were less committed to a diligent study – they prolonged the studies and received high, but not necessarily exceptional academic scores; on the other hand, they displayed multiple interests and became intensely involved in a variety of activities, ranging from self-initiated research projects to artistic pursuits, while a small proportion of girls had difficulties to adapt to the academic environment - they often received lower scores and became confused about their professional plans.

My research related to gifted students (Brankovic, 1995-2002)[2] solved some dilemmas, but led to many other, new dilemmas. Only a sketchy illustration of some research findings will be notified here (more detailed description will be provided during the presentation).

Case studies of gifted girls, focused on non-cognitive factors linked with educational and professional aspirations revealed that some girls had not coped well with external and internal barriers notified above. However, it was found that many of them maintained their plans and dreams, and **demonstrated an enormous courage and strength, even when faced with extremely difficult problems in the family, emotional abuse or different consequences of poor social status.**

Some other research findings (based on quantitative methods), for instance, on relations between ability and self-concept in gifted boys and girls were discouraging - it was revealed that **some girls who possessed a "not-stereotypically-female" structure of cognitive abilities perceived themselves in negative terms.**

Among numerous other research studies, those related to self-concept of different groups deserve to be mentioned here. Gifted students in the Center were compared on self-concept measures with a control group of their age-mates from regular schools, using multivariate analyses. Self-Concept Scale for Adolescents (Opacic, 1995) was applied; this instrument was based on multifaceted, hierarchical model, but also involved sub-scales of three constructs related to self-evaluation (hostility, external locus of control and negative attitude towards ethical principles); its psychometric properties were highly appropriate. An intriguing finding was obtained, which possibly had wider social implications – the greatest difference between gifted and non-gifted, regardless of gender, was obtained on external locus of control (in favor of the gifted). Gifted were also less inclined to express a negative attitude toward ethical principles, perceived themselves as more rational than emotional, expressed lower hostility toward other people, had higher self-esteem and higher Intellectual Self-Concept, but also evaluated themselves as being less accepted in the social environment (primarily, among peers, which indicated that giftedness in our socio-cultural context might imply problems in social relations, particularly with peers), and less attractive.

Across gender comparisons revealed that an **external locus of control was developed to a higher degree in gifted girls than in boys**, which was identified as an issue of concern (literature mentioned above listed external locus of control among internal barriers to realization of potential in gifted girls). On the other hand, some other highly encouraging findings were obtained – in the group of gifted girls, differences were found between those who participated in the program for the first time and those who became involved in the programs for more than one year (i.e., attended advanced-level courses or completed one cycle of seminars and then entered courses in different scientific discipline). **Girls – participants in the advanced and/or second-year courses were less hostile, less negatively oriented toward ethical principles, less external, and their perceived cognitive competence was higher in comparison to "novice" girls**. Although the findings could not be attributed only to effects of gifted programs, they were at least indicative in that respect. Most likely, the most profound (and the least measurable) impact of programs for the gifted has been "hidden" in the psychosocial domain. Well-designed, challenging programs might help girls (and boys) to learn new things, but they could learn new things in school, too. Probably, encouragement, providing positive adult female role models, assuring peer support, and a possibility to improve one's capacities in a supportive, but demanding environment – meant more. Prospective long-term outcomes of such programs might

[2] It should be notified that all research studies in that period (on issues related to giftedness, but also on other topics), were conducted on voluntary basis, without financial support of any institution.

be mediated by non-cognitive factors. However, **conclusive findings could be obtained only through a longitudinal study.**

Further, male and female students who attended advanced-level/second-year courses were more similar than different, i.e., they appeared rather alike with respect to self-esteem and perceived cognitive competence. Results seemed to indicate that gifted programs, which were designed to provide a student with personal research experience **might have** a positive influence on his/her perception of the social environment, and perception of oneself as being an active "actor" in that environment.

You could not imagine how happy I was to discover the above. And, while writing this, I have become painfully aware how much I miss working in gifted education.

Teaching for Equality – introducing gender equality issues into regular programs for teachers and students

Educational authorities in Serbia have not prepared specific policy documents related to the integration of a gender equality perspective into programs for teachers, although research studies and content analyses implied a prevalence of gender stereotyping in school text-books and programs (Marinkovic, 1999; Jaric, 1994; Plut, 1994; 2000; 2004). [3] Further, the list of teachers' training programs accredited by the Ministry of Education in the school year 2002/2003 demonstrated a need for organizing gender awareness training for teachers – out of 129 programs (implemented by local and international NGOs, professional associations, institutes and schools), none was related to gender equality in schools and/or gender roles. Research also implied (Brankovic, 2002; 2004b; 2005; Brankovic and Ignjatovic, 2005) that a majority of examined teachers in Serbia did not know a difference between concepts "sex" and "gender". Similarly, a half of them did not know **what the expression "gender equality" actually meant**, so they associated this phrase with other notions (such as, ethnic relations, family relations) or even regarded it as "typographic error". In order to overcome this evident "gap" in in-service training of teachers, and influence changes in educational policy, women's NGOs Belgrade Center for Women's Studies and Gender Research, and Voice of Difference implemented the first project in Serbia, aimed at creating the steps towards integration of gender equality issues in the regular curriculum for students and teachers[4]. The programs for both teachers and students were implemented in 91 primary and secondary schools throughout Serbia (Brankovic, 2005). Programs for teachers were based on an innovative model of training, specifically developed to involve gender-biased examples from current educational programs and text-books. Further, peer education programs (led by university students, who previously attended training of trainers on gender-related topics, as well as programs for the gifted mentioned above) were organized for high school students.

In an attempt to encourage changes in *educational policy and practice*, two manuals were designed, one TOT manual (involving workshops scenarios and **instructions for trainers of teachers -** how to lead and facilitate seminars for teachers; Ignjatovic and Bogdanovic, 2004a, 2004b), and one attractive manual for elementary school teachers, which was delivered to all program participants (Brankovic and Ignjatovic, Eds., 2004). The latter was the first manual for teachers focused on gender awareness/gender equality issues in Serbia. It involved

[3] Situation in other countries of Western Balkans could be described as rather similar; thus, women's NGOs have taken a leading role in introducing changes in school system, educating teachers, or analyzing school text-books. For instance, Croatian NGO CESI has designed programs for teachers and excellent manuals for educators of adolescents.

[4] Donor of the project was Canadian International Development Agency (CIDA).

specific instructions and detailed guidelines to teachers how to integrate gender equality perspective into school practice, e.g. suggestions how to organize workshops and exercises for children on gender equality, and to develop a gender-sensitive approach to teaching during regular school classes on different school subjects, or extra-curricular activities (using interactive teaching techniques, developed within the model of active learning; Ivic et al., 1997). External evaluation (Jankovic, 2005) of the project and the manual, based on a variety of indicators and follow-up analyses of application of the manual in practice, revealed extremely favorable outcomes of the program (more detailed information on this will be provided during the presentation). Further, external evaluation, and analyses of two independent reviewers implied that the manual was well-designed, attractive, useful, inspiring for further implementation and highly applicable in the school practice. Other evaluation analyses (Brankovic, 2005; Brankovic and Ignjatovic, 2005) indicated e.g., that almost all teachers who participated in the programs assessed the suggested model of gender-sensitive teaching as useful and applicable, and 99% of them also expressed an opinion that similar models should be introduced throughout Serbia, at all educational levels.

Workshop scenarios and guidelines for school classes, based on this manual, were developed into **a specific policy proposal** – Ministry of Education was suggested to involve fully-developed scenarios for school classes into regular curriculum for the school subject Civic Education.

One part of this manual (Brankovic, 2004a) was devoted to **specific needs of gifted students, in particular gifted females** – a survey of research on internal and external barriers to realization of potential in gifted girls was provided, including strategies for helping girls to overcome these barriers. Further, different thought-provoking articles were supplemented, as proposed topics for extra-curricular activities that might be organized for gifted students (how to conduct small, independent research studies on provocative issues, which are outside the scope of regular school curricula). Distant learning opportunities were also suggested - readings from the electronic journal "Anarchaeology" that have published intriguing articles on various topics (typically neglected in social sciences), as well as interactive techniques for exchanging ideas[5].

Although the model and the accompanying manual have been successfully applied in school practice in targeted schools, further advocacy and lobbying activities would be needed in order to adopt suggested changes at the national level, i.e., make them an integral part of the regular education system. Plans for the future of this program involve enhancing regional collaboration, and implementation of regional projects – aimed at creating a model how to integrate a gender equality perspective into the regular curriculum for both teachers and students, which might be replicable across the region.

Policy proposals

The following proposals may serve as a starting point for a discussion about prospective policy measures.

- Assuring that women's NGOs and gender experts have a "voice" in planning changes in the education system at the national level, e.g., forming a special Gender Task Force at the Ministry of Education, that would involve gender experts and representatives of women's NGOs. Prospective tasks of such body might cover the following: involvement in planning educational reforms and preparing programs for in-service teachers' training,

[5] The journal title is a word game, a mixture of "anarchy" and "archaeology". Readers who speak Bosnian-Croatian-Serbian can see the journal on the following link: www.anarheologija.org

involvement in curriculum planning (integrating gender-related topics into programs for different school subjects), monitoring educational policy at all levels (primary, secondary and university education), monitoring practical work of educational institutions and developing mechanisms for alleviating gender discrimination in educational practice, creating gender-sensitive teaching methods and developing manuals and guidelines for teachers, monitoring the portrayal of women in media, etc.

- Analyzing curricula and school text-books for elementary and high schools from gender equality perspective, and providing clear guidelines/recommendations to future authors of text-books (i.e., introducing a "brand" – "gender-sensitive text-book"). The latter assumes that educational authorities should adopt the guidelines as mandatory for authors of school text-books, and assure that guidelines are implemented in practice

- Introducing gender equality issues and issues related to barriers to realization of potential in gifted girls into curricula at the Teaching Faculty and/or other college/university programs for future teachers

- Introducing gender awareness seminars as integral part of in-service teachers' training (preferably, supplemented with manuals that will provide concrete examples how to implement gender-sensitive approach to teaching in regular classroom)

- Organizing similar programs for policy makers (members of relevant ministries, parliamentarians, members of bodies responsible for developing curricula and text-books), as well as media representatives

- Analyzing the policy of donors in under-developed countries from perspective of gender equality

- Supporting programs of women's NGOs, which are focused on teachers as target group (e.g., programs on prevention of gender-based violence and other gender-related issues)

- Assuring that university programs on gender studies are created (or maintained) as integral part of university education system

- Establishing collaboration between research institutions and women's NGOs

- Conducting research on portrayal of women in media

- Establishing teams in state-run media, responsible for designing and implementing gender-sensitive editorial policy

- Organizing national media campaigns on gender equality

- Adopting and implementing in practice gender-sensitive educational statistics

- Organizing pre-service and in-service training on giftedness for school teachers, pedagogues and school psychologists

- Applying models of identification of the gifted that will take into account interests, independent creative products (artistic, scientific, etc.), essays on aspirations, self-reported engagement in extra-curricular activities (i.e., models that would rely on self-descriptive techniques, and use IQ scores and personality measures only as additional indicators)

- Organizing centers for the extra-curricular education of gifted students (with professional staff previously trained to address specific needs of gifted girls) and/or organizing other sporadic extra-curricular programs, e.g., activities focused on encouragement of gifted girls to conduct self-selected small-scale independent research studies, or artistic projects

- Considering a possibility for affirmative action measures related to participation of girls in programs for the gifted (particularly, in science and math); encouraging participation of girls in all different forms of extra-curricular activities

- Organizing specially designed courses aimed at developing leadership skills in gifted girls

- Developing mentorship programs for girls who are identified as gifted in high school, including mentorship based on peer education model (appointing mentors who are only a few years older than gifted girls)

- Organizing programs for parents that would enable them to identify and encourage girls' interests/needs and question their own stereotypes related to gender roles

- Organizing round tables and/or discussions in regular schools, aimed at providing female role models (e.g., inviting women who succeeded in achieving their own professional and personal goals to facilitate such round tables in schools, and enabling girls to discuss their dilemmas about career aspirations and choices with them)

- Providing distance-learning opportunities for gifted girls; supporting electronic journals aimed at popularization of science and art among young people (that would publish articles on thought-provoking topics beyond school curricula); encouraging establishment of Websites for exchange of experiences between eminent women and young girls

- Providing career counseling at high school age

- Offering counseling opportunities to gifted girls in regular schools, organizing self-support groups for them

- Conducting research on culturally-specific barriers to the realization of one's potential (preferably, by using longitudinal studies), and comparing research results across countries, taking into account class, race, family social status

- Strengthening regional cooperation in the field of gifted education between countries with relatively similar social, economic and cultural conditions

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