Meeting the needs of gifted adolescent girls

Marcia Schrader Hoffman

University of Northern Iowa

Copyright ©1998 Marcia Schrader Hoffman

Follow this and additional works at: https://scholarworks.uni.edu/grp

Part of the Curriculum and Instruction Commons, Gender Equity in Education Commons, and the Gifted Education Commons

Recommended Citation
Hoffman, Marcia Schrader, "Meeting the needs of gifted adolescent girls" (1998). Graduate Research Papers. 862.
https://scholarworks.uni.edu/grp/862

This Open Access Graduate Research Paper is brought to you for free and open access by the Student Work at UNI ScholarWorks. It has been accepted for inclusion in Graduate Research Papers by an authorized administrator of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.
Meeting the needs of gifted adolescent girls

Abstract
Guiding high ability girls during their middle school and high school years has been as complex and enigmatic as the subjects themselves. This review attempted to synthesize information concerning characteristics and needs of adolescent girls, gifted adolescents, and gifted adolescent girls. Those specific needs would help determine what programming options could be implemented in the secondary schools to help gifted females reach their potential. The conclusions drawn from the literature point to a smorgasbord of programming options that can be implemented through collaboration among talented and gifted programs, school-wide efforts, and community-wide strategies.

Environments that provide encouragement and opportunities may help gifted adolescent girls who are "caught in the middle" to continue their journeys toward the tops of Maslow's Hierarchy of Needs and Piirto's Pyramid of Talent Development. Several recommendations for further research and additional efforts are given, including more advocacy for gender and giftedness in the school reform movement.

This open access graduate research paper is available at UNI ScholarWorks: https://scholarworks.uni.edu/grp/862
MEETING THE NEEDS OF GIFTED ADOLESCENT GIRLS

A Graduate Review
Submitted to the
Division of Education of the Gifted
Department of Curriculum and Instruction
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts in Education

UNIVERSITY OF NORTHERN IOWA

by
Marcia Schrader Hoffmann
August, 1998
This Review by: Marcia Schrader Hoffmann

Titled: MEETING THE NEEDS OF GIFTED ADOLESCENT GIRLS

Has been approved as meeting the research requirement for the
Degree of Master of Arts in Education.

8/5/98
Date Approved

William Waack
Graduate Faculty Reader

8/4/98
Date Approved

Peggy Ishler
Graduate Faculty Reader

8/14/98
Date Approved

William P. Callahan
Head, Department of Curriculum and Instruction
ACKNOWLEDGEMENTS

To Dr. William Waack, I extend my sincere gratitude for his time, knowledge, and expertise in this effort. His thoughtful dedication, patience, encouragement, sense of humor, and modeling throughout the pursuit of this Masters degree have been appreciated and valued.

To Bob, Kyle, Colton and Nikayla, I extend my thanks and love for their patience and understanding during long hours away from family and for their support of my endeavors to make a difference.

To my colleagues in the Newton Community School district for their help, encouragement, interest, words of wisdom, friendship, and support, I give my sincere thanks and esteem.

To the Johnston group, without whose support and encouragement I would never have persevered, I extend my absolute gratitude and admiration. They define collaboration, community, and team work. The suns of community and chance have been shining brightly on us.

To Darrell and Delores, whose little tomboy turned into a woman with thorns, I extend my love and thanks.

To the gifted adolescent girls in my world, I humbly ask their forgiveness for past oversights and wish them mountain tops of achievement among the inevitable valleys. May all the suns shine brightly upon their journeys.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE PAGE</td>
<td>i</td>
</tr>
<tr>
<td>APPROVAL</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>iv</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>vi</td>
</tr>
<tr>
<td>I. INTRODUCTION AND PURPOSE</td>
<td>1</td>
</tr>
<tr>
<td>Problem and Rationale</td>
<td>2</td>
</tr>
<tr>
<td>Statement of Purpose</td>
<td>2</td>
</tr>
<tr>
<td>Methodology</td>
<td>3</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>3</td>
</tr>
<tr>
<td>Definitions</td>
<td>4</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td>6</td>
</tr>
<tr>
<td>Girls During Adolescence</td>
<td>8</td>
</tr>
<tr>
<td>Self-esteem of Adolescent Girls</td>
<td>8</td>
</tr>
<tr>
<td>Socialization of Adolescent Girls</td>
<td>10</td>
</tr>
<tr>
<td>Achievement of Adolescent Girls</td>
<td>11</td>
</tr>
<tr>
<td>Characteristics of Gifted Adolescent Girls</td>
<td>12</td>
</tr>
<tr>
<td>Being a Gifted Adolescent</td>
<td>12</td>
</tr>
<tr>
<td>Being a Gifted Adolescent Female</td>
<td>14</td>
</tr>
<tr>
<td>Characteristics of Gifted Girls</td>
<td>14</td>
</tr>
<tr>
<td>Achievement and aptitude</td>
<td>14</td>
</tr>
<tr>
<td>Career aspirations</td>
<td>18</td>
</tr>
<tr>
<td>Course selection and placement</td>
<td>19</td>
</tr>
<tr>
<td>Underachievement</td>
<td>20</td>
</tr>
<tr>
<td>Work ethic</td>
<td>20</td>
</tr>
<tr>
<td>Socialization of Gifted Girls</td>
<td>22</td>
</tr>
<tr>
<td>Socialization in schools and classrooms</td>
<td>22</td>
</tr>
<tr>
<td>Socialization in society</td>
<td>24</td>
</tr>
<tr>
<td>Self-concept of Gifted Girls</td>
<td>28</td>
</tr>
<tr>
<td>Changes in self-esteem</td>
<td>29</td>
</tr>
<tr>
<td>Relationship of self-esteem to achievement</td>
<td>30</td>
</tr>
<tr>
<td>Gifted girls’ attitudes toward ability and effort</td>
<td>31</td>
</tr>
<tr>
<td>Needs of Gifted Adolescent Girls</td>
<td>32</td>
</tr>
<tr>
<td>Maslow’s Hierarchy of Needs</td>
<td>33</td>
</tr>
<tr>
<td>Piirto’s Pyramid of Talent Development</td>
<td>34</td>
</tr>
<tr>
<td>Encouragement, Opportunities, and Environments</td>
<td>40</td>
</tr>
<tr>
<td>Programming Options for Gifted Adolescent Girls</td>
<td>41</td>
</tr>
<tr>
<td>Talented and Gifted Program Efforts</td>
<td>42</td>
</tr>
</tbody>
</table>
ABSTRACT

Guiding high ability girls during their middle school and high school years has been as complex and enigmatic as the subjects themselves. This review attempted to synthesize information concerning characteristics and needs of adolescent girls, gifted adolescents, and gifted adolescent girls. Those specific needs would help determine what programming options could be implemented in the secondary schools to help gifted females reach their potential. The conclusions drawn from the literature point to a smorgasbord of programming options that can be implemented through collaboration among talented and gifted programs, school-wide efforts, and community-wide strategies. Environments that provide encouragement and opportunities may help gifted adolescent girls who are “caught in the middle” to continue their journeys toward the tops of Maslow’s Hierarchy of Needs and Piirto’s Pyramid of Talent Development. Several recommendations for further research and additional efforts are given, including more advocacy for gender and giftedness in the school reform movement.
CHAPTER I
INTRODUCTION AND PURPOSE

It is commonly known that adolescence is a time of great change and turmoil. Developmental changes create a preoccupation with the self, which is growing and changing each day. Physical, emotional, intellectual, academic, social and spiritual changes confuse teens and adults alike. Adolescent females are particularly enigmatic. Girls are reaching puberty earlier and earlier; and these changes, which do not always happen in tandem, can create havoc for girls. "Emotions are extreme and changeable" (Pipher, 1994, p. 57). One minute a 13-year-old might be planning her career as a marine biologist, and the next she might be crying because she broke a fingernail.

In addition to the personal struggles that she is facing, she receives mixed messages from society concerning what females should be like. Our world has become smaller, with media promoting gender role stereotypes, consumerism and lookism (Pipher, 1994). Girls are bombarded with conflicting messages about what it means to be female. Females are portrayed as aggressive yet passive, independent yet dependent, focused on achieving yet focused on attracting males.

What about gifted girls? Because of their high intelligence, their potential for success, and their unique characteristics, are they even more susceptible to the gender biases of our culture? Are gifted girls given a "double whammy"--being both female and "smart"--two disadvantages in a culture that values neither females nor intellectualism? This writer has seen numerous examples of smart girls who seem to go into hiding during adolescence. They stop
answering questions in class, stop working to their potential, change from being "tomboys" to acting feminine, change their academic or career goals, and go undercover. What do gifted adolescent girls need in order to reach their present and future potential?

The Problem and Rationale

As a teacher of gifted and talented students in middle school and high school, the writer of this review has seen many gifted girls struggle intellectually, socially and emotionally, with a relatively large number falling into a path leading to underachievement. Since many of the choices girls make during adolescence may determine the likelihood of future successes, understanding the cognitive, social and emotional needs of gifted females presents a special challenge. The task of guiding gifted girls is anything but straightforward. Thus, as programming options and curriculum for the gifted continue to be evaluated and developed, it becomes apparent that an analysis of existing information would help determine what services and/or interventions might help meet the needs of students who are both gifted and female.

Statement of Purpose

This review of the literature focused on the characteristics of adolescent girls and the differences in the way they are socialized in schools and in society in order to determine the specific needs of gifted girls. Such a knowledge of those specific needs, in turn, will help to determine the programming options that might best meet the needs of gifted adolescent females. This review centered around the following questions: (a) What happens to girls during adolescence? (b) What are the cognitive, social, and emotional needs of gifted
adolescent girls? and (c) What programming options might help to meet needs of gifted adolescent girls?

Methodology

A review of the literature was initiated in the following areas: gifted, education, and gender. The author conducted an ERIC search using the descriptors gifted females, adolescents, and gifted female adolescents. A search of the Donald O. Rod Library at the University of Northern Iowa for articles and ERIC documents was undertaken. Other sources used were the Internet, MAS Magazine Article Summaries (EBSCO-CD Publishing) and Sirs Researcher on CD rom at the Newton Senior High Library Media Center. The descriptors education, girls, gender, and gifted were used in various combinations.

Additional sources included bibliographies and suggested reading lists from various articles and books examined as part of the research. Articles, journals, and books were used from the Newton Public Library, Heartland AEA’s professional library, Newton Community Schools’ professional library, materials from previous classes and workshops, materials from Berg Middle School’s Talent Development Suite, and several book stores. Notes were recorded, text highlighted and an outline of pertinent information was developed.

Limitations of the Study

The study was limited to a review of the literature which was published from 1985 to the present, although some selected sources that provided historical perspectives were also consulted. The review was focused on this
time span because the major interest of the writer was in current research and the present culture in which gifted girls live.

Definitions

For the purposes of this review of the literature, the following terms are used:

**Adolescence** refers to the transition period between puberty and adult stages of development. For girls this was commonly considered from ages 12 - 21 (*American College Dictionary*, 1963). However, for this review the age ranges defined in *Rudolph's Pediatrics*, 20th edition (1996), will be used:

- Early adolescence - ages 10 - 13
- Middle adolescence - ages 14 - 16

**Puberty** refers to the biological process of sexual maturity. It should be noted that girls are menstruating much earlier now than during the colonial era, and even earlier than in the 1950s. Some girls menstruate at age nine (*Pipher*, 1994).

**Gifted** (or Gifted and Talented) refers to “children who are identified as possessing outstanding abilities and who are capable of high performance.” This includes children with demonstrated achievement or potential ability, or both, in any of the following areas or in combination: general intellectual ability, creative thinking, leadership ability, visual and performing arts ability, or specific ability aptitude (*Iowa Code 442.33, from Marland 1972*).

**Self-concept** refers to the general notion of one’s identity; perception of self.
Self-confidence refers to confidence in one's own judgment, ability, power, etc.

Self-esteem and self-efficacy are used here interchangeably, although some researchers tend to distinguish between the two. They both refer to pride in oneself, a favorable opinion or judgment, respect or regard for oneself.
CHAPTER II
REVIEW OF THE LITERATURE

When looking at the history of women in American education, one might think of the phrase, "They've come a long way, baby." But have they? Compared to colonial times when girls were barred from school, females have gained ground in receiving formal education. However, one might argue that it has been slow going.

As democracy developed in the late 1700s, the notion that girls, as well as boys, should receive an education also was beginning (Axtell, cited in Sadker & Sadker, 1994). During this period, for example, a school in Providence, Rhode Island, began teaching reading and writing to girls outside the regular school day in the mornings and evenings. Throughout the 1800s seminaries for girls were common, initially following the curriculum of morals, mind, manners, and motherhood. Eventually the seminaries began providing students with an intellectually challenging program and developed teacher preparation programs for women. Females were welcomed to the teaching profession because there was a desperate need for teachers and women could be paid significantly less than men.

During the Civil War the loss of male students put economic pressure on colleges to create openings for women. In the early 1900s the vocational movement encouraged education for females, but in a separate track, one toward domesticity and motherhood. Throughout the 1940s, 50s and 60s opportunities for women were limited compared to those for men (Sadker & Sadker, 1994).

Then, in 1972, Title IX made sex discrimination in schools illegal. The Women's Educational Equity Act of 1974 provided funds to help schools
eliminate sex bias and encourage women in science, mathematics and non-traditional careers. In 1978, the Civil Rights Act was broadened to include educational services to eliminate sex bias. Even in 1980, the National Institute of Education was providing funding to investigate the nature of sex bias in schools. Interestingly, between 1972 and 1991, "no school lost a single dollar of federal funds because of sex discrimination" (Sadker & Sadker, 1994, p. 36). It would appear that schools were providing equitable education for both males and females.

Yet, as the end of the century approaches, questions of gender equity are still unresolved. There has been much debate in educational circles and in the media about whether girls are getting a "fair shake" in our schools and in our American culture. Mary Pipher's book, Reviving Ophelia (1994), hit the best seller list shortly after the American Association of University Women [AAUW] issued a report, How Schools Shortchange Girls in 1992. At the same time Myra and David Sadker wrote Failing at Fairness: How Our Schools Cheat Girls (1994), documenting gender bias in education. The media give much coverage to Take Your Daughters to Work Day and allegations of gender bias in standardized tests and athletic programs and the women's studies sections of book stores are filled with literature that addresses many issues related to gender.

In the field of gifted education and talent development, gender differences among gifted students also have been the focus of much research and debate. What are the factors that contribute to these differences? It would seem that adolescence is a crucial time for highly capable girls. What, if anything, can be done to help gifted girls reach their present and future potential?
As one examines what happens to girls during adolescence, the reviewed literature focused on three main areas of interest: self-esteem, socialization, and achievement.

**Self-esteem of Adolescent Girls**

While researching the literature on adolescent girls and gifted girls, one key area of concern emerges time after time: self-esteem (American Association of University Women Educational Foundation [AAUW], 1992; Callahan, 1991; Callahan, Cunningham, & Plucker, 1994; Gilligan, 1982; Howard-Hamilton & Robinson, 1991; Kerr, 1985a, 1985b, 1991a, 1991b, 1994; Pipher, 1994; Reis, 1987; Reis & Callahan, 1989, Sadker & Sadker, 1994; Siegle & Reis, 1998; Silverman, 1986, 1993, 1995). Adolescent girls struggle to find themselves. This conflict of conformity versus individuality is played out in their emotional, social, and academic endeavors. They shift from an orientation toward achievement to one of affiliation (Pipher, 1994). Adolescent girls desperately want to fit in, to find a community, to be like their peers and role models. The “quest to belong” is central to adolescence (Buescher, 1991). In fact, Manaster & Powell (1983) noted that all adolescents face the dilemma of striving to fit in, rather than be fused or lost as anonymous faces in adult society. Yet, girls struggle to be individuals. Adolescent females feel social pressure to distance themselves from family, make their own decisions, experience some freedom. Still, who is this individual, this self? Which is her “true self” (Pipher, 1994)?

Many characteristics that relate to self-esteem have been documented in the research. Adolescent girls lose their resiliency and optimism. They become
less curious, take fewer risks, and lose their assertive, energetic "tomboyish" personalities. Girls become more deferential, self critical, and depressed. They are unhappy with their bodies and feel pressure to be popular. In short, girls "emerge from adolescence with diminished sense of their self worth as individuals" (Pipher, 1994, p. 63).

Gilligan (1989) also noted that girls often become silent during adolescence. She observed that 11-year-old girls will hold out for their own point of view, while 15-year-olds will yield. Older girls keep quiet, or say, "I don't know," or go along with other people's views because they value the connection with others more than being right. Gilligan described adolescence for girls as follows:

Adolescence is a critical time in girls' lives--a time when girls are in danger of losing their voices and thus losing connections with others; and also a time when girls, gaining voice and knowledge, are in danger of knowing the unseen and speaking the unspoken and thus losing connection with what is commonly taken to be 'reality.' (pp.24-26)

Self perceptions differ between genders. As boys go through school, they do better and feel better about themselves. Girls' self esteem and opinions of their sex decline. "Girls are more likely to attribute their success to luck; boys are more likely to attribute their success to ability" (AAUW, 1992, p. 121). The opposite is true also. Boys attribute their failures to external factors, but girls feel their failures are due to internal factors, i.e., lack of ability. Boys maintain their confidence, even with failure, but girls' confidence is chipped away with each failure. All these subtle influences stop girls from wanting to be astronauts and brain surgeons. Indeed, girls are more likely to say that they are not smart enough for their dream career (Pipher, 1994).
It would appear that gender has an impact on the self-esteem of adolescent girls.

Socialization of Adolescent Girls

Studies recently have documented what many have always known: Girls are treated differently from boys in schools (AAUW, 1992). One area of differential treatment is sexual harassment. The 1993 American Association of University Women [AAUW] study, Hostile Hallways, documented sexual harassment in schools, claiming that classrooms and hallways are the most common sites for sexual harassment. The survey found that seventy percent of girls experience harassment, and 50% experience unwanted touching in their schools.

The American Association of University Women’s 1992 report, along with Sadker & Sadker’s Failing at Fairness (1994), are credited with having brought gender bias in schools to the attention of the public. These studies compared differences in gender in areas such as attention received in the classroom, role models in class materials, and self perceptions.

According to the AAUW report, boys are twice as likely to be seen as role models, are five times as likely to receive teachers’ attention, and twelve times as likely to speak up in class. The instruction boys receive from teachers is more detailed, and they are asked more abstract, open-ended and complex questions. Boys are praised for academic and intellectual work. Girls are more likely to be praised for clothing, behaving properly or obeying rules. Boys are criticized for their behavior; girls are criticized for intellectual inadequacy (AAUW, 1992).

In textbooks, one-seventh of the illustrations of children are girls. Boys
are portrayed as clever, brave, creative and resourceful. Girls are shown as kind, dependent, and docile. Girls are exposed to almost three times as many boy-centered stories as girl-centered stories. They read six times as many biographies of males as females (AAUW, 1992).

An inference to be drawn from the reviewed literature is clear. Gender makes a difference in the way adolescent girls are socialized in schools.

Achievement of Adolescent Girls

Differences between the genders in adolescents have also been documented in academic areas. The IQ scores of early adolescent girls drop, and their mathematics and science scores plummet. In junior high school, girls fade academically and hide their academic accomplishments (Pipher, 1994). “High school girls are choosing math/science careers in disproportionately low numbers” (AAUW, 1992, p. 45).

Carol Gilligan noted that girls excel in elementary school when factual knowledge is presented, but the shift to interpretive knowledge in the junior high curriculum is fatal to their self-confidence. Girls do not trust their interpretative powers because their own interpretations differ widely from the male perspectives presented in textbooks (Gilligan, cited in Silverman, 1995).

There are areas in which females seem to do better, if only on the surface. “There is considerable evidence that girls earn higher grades than boys throughout their school careers” (AAUW, 1992, p. 34). However, despite the fact that girls maintain higher grades, boys outperform girls on SAT, ACT, and College Board Achievement Tests, thereby securing admission to the most selective colleges and obtaining a substantial proportion of scholarships (Sadker & Sadker, 1994). In fact, according to Noble (1990), being female means that even if she gets A’s, her career will not be as important as that of a
boy who gets B's.

Silverman (1995) summed it up well. "Whether one looks at achievement scores, curriculum design, or teacher-student interaction, it is clear that sex and gender make a difference in the nation's public elementary and secondary schools" (p. 143).

Characteristics of Gifted Adolescent Girls

As females, gifted girls are likely to go through many of the same struggles and pressures that every adolescent girl experiences. At the same time, they are dealing with other issues specific to their giftedness. Results from both earlier and recent studies show that gifted girls' failures to realize their potential is a very complex problem. Recent trends in intelligence research, in gifted females' behavior, and in the values of society as a whole have brought about rapid changes in how we perceive, teach and guide gifted girls (Kerr, 1991). It is impossible to address the needs of gifted adolescent girls without first discussing their characteristics.

Being a Gifted Adolescent

Just what does it mean to be a gifted adolescent? Students who have been identified as gifted and talented have outstanding ability or are capable of high performance. In fact, by definition, gifted students are different from their peers, requiring differentiated services (Iowa Code 257.44; Marland, 1972; National Excellence, 1993). Unfortunately, in our society and perhaps even more so in the culture of adolescence, these abilities and differences are not always valued. To any adolescent, "being different is being inferior" (Buescher, 1991, p. 388). In fact, being labeled "gifted and talented" in America today is a
prize that often comes with strings attached (Higham & Buescher, 1987).

Talented adolescents might experience increased expectations, jealousy or resentment from friends, dissatisfaction with past and present accomplishments, or anxiety about the future. "Talented adolescents are at constant risk of having their abilities remain undeveloped or, even worse, become completely lost during the adolescent years" (Buescher, 1991, p. 398).

As gifted adolescents search for their own identities, denial or doubt about their talents is common. They may wonder whether these talents truly belong to them or to others. It is likely that they see their talents not as "unique gifts," but as signs of being noticeably different (Buescher, 1991). In addition to this inability to accept ownership of their exceptional talent, adolescents often have chronic experiences of low self-esteem or emotional neglect and develop habits for socializing and seeking acceptance that minimize the importance of developed talent (Buescher & Higham, 1989). "The most seductive defense for talented adolescents is to give up their own talents and individualities and simply blend into the crowd at school or in the community" (Buescher, 1991, p. 399).

The hope for gifted adolescents is that they will move through a process of identification by others to self exploration and personal acceptance. The real goal is to know and accept one's own true identity, but gifted adolescents can become impatient with the time consuming process of defining themselves and accept a "premature identity" (Buescher, 1991). By doing this they risk closing important doors to opportunities that might stretch and fortify their multiple talents (Delisle, 1985).

Buescher (1991) asserted that talent costs every adolescent something. Talent demands time, talent requires perseverance, and talent necessitates
coping strategies. These coping strategies can range from accepting and using talents to masking talents so that no one is aware of them to avoiding any programs or opportunities to develop talent. Interestingly, in one study on coping strategies (Buescher & Higham, 1989), more boys than girls arrived at age 16 with their talents intact and development well underway. "It appears that adolescent girls were more at risk for losing earlier momentum for talent development" (Buescher, 1991, p. 395).

**Being a Gifted Adolescent Female**

"Adolescence seems to be a time of crisis for gifted girls..." (Kerr, 1994, p. 123). Obviously, gifted girls are unique individuals, each with individual special talents, background, motivation, learning style, interests, and passions. However, in spite of individual differences, the reviewed literature demonstrated many common characteristics among gifted adolescent girls.

**Characteristics of Gifted Girls**

The characteristics of gifted adolescent girls fall into five main areas of concern: achievement and aptitude, course selections and placement, career aspirations, underachievement, and work ethic.

**Achievement and aptitude.**

Although there is much we do not know about the characteristics of gifted girls during adolescence, the literature does show some specific tendencies in relation to their achievement and aptitude. While girls enter school developmentally ahead of boys, they often leave high school lagging behind. The steady decline in achievement is well documented (e.g., Benbow &
Stanley, 1983; Kerr, 1991b; Silverman, 1990a; Terman, 1916, 1925). As early as 1916, Terman reported that when the first 1,000 Stanford-Binet tests were administered, "there was found a small but fairly constant superiority of the girls up to age thirteen. At fourteen, however, the curve for the girls dropped below that for boys" (p. 70).

Over the last two decades much research has been done concerning gender differences: in abilities, in achievement, in preferences and interests, in career aspirations, in academic behaviors, and in work ethic. The study of Benbow and Stanley (1983) showed that there were extreme sex differences favoring boys at the highest levels of mathematical reasoning among gifted seventh graders as measured on the SAT-mathematics test. It is interesting to note here that the SAT was considered a test of mathematical reasoning ability, rather than a test of mathematics achievement [italics added] and that the gender differences occurred in spite of the fact that the seventh graders had had similar course experiences.

In Linda Silverman's (1990a) clinical practice research, she found that gifted girls do not differ substantially from gifted boys in the visual and spatial abilities, but that what differentiates girls from boys is their mathematical achievement scores. Their similar abilities do not translate to performance on achievement tests. Therefore, one might expect to find a girl with an IQ of 145, straight A's in mathematics, but only an average score on mathematics achievement.

More recently, Benbow and Lubinski (1993) found that, at age thirteen, gifted males and females do not appear to differ in terms of the complexity of their general intellectual repertoire, (i.e., g), but only on abilities involving content in numerical and spatial symbolic systems. The gender differences
favored males in mathematical reasoning, but not in verbal reasoning. (Benbow, 1988; Lubinski & Benbow, 1992). At the end of high school and college, these differences remain but become accompanied by gender differences favoring males in mathematics and science achievement test scores as well. Benbow & Lubinski (1993) noted the following:

These disparities result in greater numbers of males than females who are highly talented in mathematics. The net consequence of this trend is that there are far fewer females than males who qualify for advanced training in disciplines that place a premium on mathematical reasoning, which are the scientific disciplines. (p. 91)

Finally, Benbow and Lubinski (1993) found that there were gender differences in both ability and preferences. In their study, males were more likely to display ability and preference attributes that would be appropriate for studying and excelling in engineering and physical sciences. Differences also appeared in attitudes toward work, with 95% of males and 55% of females planning to work full time. Such attitudes, Benbow and Lubinski stated, result in gender differences in achievement. Consequently, females as a group, tend to find and seek personal fulfillment along somewhat different lines than will males.

A study by Colangelo, Assouline and Lu (1993) corroborated this, demonstrating the same gender differences in younger students as well. They found that the quantitative and verbal abilities are different for elementary school boys and girls, with girls earning higher scores in the verbal areas, and boys in the quantitative area. Science reasoning did not show differences in gender; however, the boys did display a more positive attitude about science. The researchers hypothesized that this may have an effect on science
performance in the later grades.

Other studies have documented gender differences in achievement. While Gallagher (1985) found that gifted girls outperform gifted boys on achievement tests throughout elementary school, lower scores for females on SAT, PSAT, ACT and the College Boards Advanced Placement (AP) Program show clear differences. In comparing ACT scores, Kerr and Colangelo (1988) found that males outperformed females on all areas except the English subtest. In fact, in another study, Kerr (1991b) found that five times as many males as females achieved perfect scores in mathematics, three times as many in natural sciences, and two and one half times as many in social studies.

Hyde and Fennama (1990) reported that, "The more highly selective the sample, the larger the gender difference favoring males" (cited in Callahan, 1991). In support of this theory, Subotnik and Strauss (1995) found that of the 16,313 United States students who took the Advanced Placement BC examination, only 5,820 were females. Rosser's (1989) research confirmed that the higher the grade, the greater the gender gap. Girls who had grades of A+ scored 23 points lower than boys on the SAT-verbal and 60 points lower on the SAT-math.

One impact of girls' lower scores on the SAT, PSAT or ACT tests is that this tends to limit their selection for acceleration and enrichment programs. For example, the 1987 John Hopkins summer program invited 2,594 boys and only 1,082 girls (Callahan, 1991).

One of Julian Stanley's (1993) studies with mathematics students from second grade through high school analyzed gender differences. He found that "as the age of the examinees increases, differences grow larger on many tests, especially for those used for selection and placement" (p. 145). Through
programs such as EXPLORE, Mathematical Olympiad, and MathCounts, he consistently found gender differences appearing as early as second grade. The greatest discrepancy of all probably has occurred in the International Mathematical Olympiad (IMO). No girl has ever qualified for that team.

**Career aspirations.**

Gifted females seem to lower their expectations and aspirations during adolescence, although there is some evidence that improvement is being made in this area. Barbara Kerr (1985) noted that a steady lowering of career aspirations beginning in adolescence is marked by choosing moderate rather than high prestige careers, attending less selective colleges, and dropping out of graduate and professional training more often than is characteristic of men. However, Kerr and Colangelo (1988) also noticed that young women were beginning to choose professional careers in almost equal proportions to gifted young men. Business replaced education as the most popular choice and the only area that showed sharp disparities was engineering.

There has been some debate about whether the career goals that girls identify are, in fact, true goals in which they have an honest interest. Kerr (1991b) noted that young gifted women are deeply concerned about their role expectations and often confused and unclear about their goals. Nevertheless, many feel a need to claim impressive-sounding career goals like business management, when in fact they have little interest in that goal or knowledge of how to pursue it. “Young gifted women today seem to feel pressure to be highly achieving and work oriented but have not learned the deeper lesson of the women’s movement: that they are in charge of their own lives” (pp. 403-404).

More recent literature supports the notion that gifted girls are lowering
their aspirations. Kerr (1991b) reiterated that adolescence brings changes in gifted girls' aspirations, expectations, attitudes and achievement. It is more subtle than 50, 20 or even 10 years ago. Nevertheless, the declining involvement with former achievement goals is still present.

**Course selection and placement.**

There seems to be a consensus that, in choosing courses at the secondary level, gifted girls select less rigorous courses than gifted boys. In fact, they may suffer from inappropriate placement and/or grouping. Olszewski-Kubilius and Yasumoto (1993) found that females are less likely to choose mathematics or science classes and more likely to choose verbal classes compared to males. This supports previous research that shows gender differences exist in the selection of advanced mathematics and science courses in high school and the pursuit of college degrees and careers in mathematics and science among gifted students (Benbow, 1988; Benbow & Minor, 1986; Benbow & Stanley, 1982; Eccles & Harold, 1992).

Callahan (1991) also agreed that gifted females apparently continue to reject mathematics and science as a course of study, citing the 1989 ACT data. Of the females taking the ACT exam, 1% planned to major in physical sciences, 0% in mathematics, and 2% in engineering or biological sciences. While she acknowledged an increase in adolescent female enrollment in mathematics and science courses from 1969 to 1987, she concluded that females are still lagging in calculus and physics. Kerr (1991b) concurred: "Gifted adolescent females apparently not only take fewer and less challenging mathematics and science courses than gifted males, but also fewer and less challenging social studies courses" (p.405).
Although many of the effects, needs and recommendations will be discussed later in this review, some inferences concerning the ramifications of gifted girls taking fewer and less challenging courses and should be noted here. Many researchers agree that mathematics is the key to numerous high paying, prestigious careers. Kerr (1985a, 1994) suggested that careers in journalism, psychology, law, medicine, engineering, life sciences, and natural sciences all depend on a solid background in mathematics. She says it is unwise to drop out of mathematics because it is hard to go back. This writer would agree that decisions made in middle school and high school regarding courses can severely limit or enhance future opportunities.

**Underachievement.**

How do gifted adolescent girls perform in the classroom? It depends, of course, on how performance is measured. Much of the research (e.g., AAUW, 1992; Sadker & Sadker, 1994; Silverman, 1995) maintained that many gifted girls continue to receive good grades in school. However, they point out that this measure of achievement is relative, depending on the level of advanced courses, depth of content, and pacing. In Silvia Rimm's clinic population, underachievement increased for girls by the middle school and high school years (Davis & Rimm, 1994). Other studies have shown that high potential students are often bored in school and especially affected by lack of challenge in the classroom (Plucker & McIntire, 1996; Reis et al., 1993; Westberg, Archambault, Dobyns & Salvin, 1993).

**Work Ethic.**

The reviewed literature seems to indicate that much of the blame for
adolescent girls' underachievement could rest on the continuous pattern of high grades for minimal effort that began in elementary school. Researchers (Callahan, 1991; Davis & Rimm, 1994; Reis, 1990; Silverman, 1990) seem to agree that ability without effort will not result in the realization of gifted students' high potential. In Carol Dweck's (1986) study of high achieving 7th and 8th grade girls she concluded that girls are not given enough work in elementary school. They never have to stretch themselves in order to learn, so they do not know if they are capable of doing difficult tasks.

Sally Reis said it convincingly at the 1990 Symposium on Girls, Women and Giftedness:

Bright young girls do not learn how to work, when you figure the kind of pabulum they get with the regular curriculum. The basal reading programs in the United States are at least 40% review of the previous years, and you must eliminate at least 50-60% for bright youngsters. (Ellis & Willinsky, 1990, p.169)

During that same round table discussion, Linda Silverman (1990) was discussing the work of Carolyn Dweck (1986). Dweck hypothesized that girls have a perception that intelligence is fixed and unchangeable. If you have to work hard to learn something, it proves you are not smart. This attitude comes from being given such easy work. In commenting on Dweck's research, Silverman made the following observation:

The work that gifted girls are given to do in elementary school is so simple that they could do it blindfolded. For the whole first six or seven years, they haven't a clue about what it means to stretch themselves, or to think, or to challenge themselves. Then when they get into seventh grade, the first time they come across an idea they have to work with,
they are terrified that they are too stupid and they just back away from it. (Ellis & Willinsky, 1990, p. 168)

Socialization of Gifted Girls

Gifted adolescent girls have been exposed to unique socialization expectations since birth. However, during adolescence, the socialization process intensifies. This socialization has been noted in schools and classrooms and in society.

Socialization in schools and classrooms.

"That the experiences of school and classroom instruction are different for males and females has been documented across ages, groups and across disciplines" (Callahan, 1991, p. 294). One area in which gifted girls are socialized differently is in attention received from classroom teachers. For example, it has been found that teachers interact more with boys, particularly high achieving boys. Eccles and Blumfield (1985) determined that of all students in a mixed ability classroom, high achieving girls received the least attention. Sadker and Sadker (1994) confirmed this. They found that bright boys answer the questions in class, and their opinions are respected by the teacher. Low-achieving boys also get plenty of attention, but more often it is negative. In general, girls receive less attention; but unlike the smart boy who flourishes in the classroom, the smart girl is the student who is least likely to be recognized.

Some researchers (AAUW, 1992; Sadker & Sadker, 1994) have found that teachers passively reinforce sex-role stereotypic behaviors, give more negative feedback to girls relative to intellectual aspects of their work, and have less academic contact with girls than with boys. Data from Becker (1981) suggest that in a geometry class the girls received 30% of the encouraging
comments and 84% of the discouraging comments. In addition, sex-role stereotyping is evident in biases in instruction, instructional materials, and media and societal expectations (Callahan, 1991). Teachers do not mean to do it; they simply do not realize they have different expectations for girls than for boys. Siegle & Reis (1998) learned that females are perceived by classroom teachers as working harder and producing higher quality work than males.

The ramifications of classroom bias are extensive. One study seemed particularly revealing in light of the low level of classroom participation from girls. Subotnik and Strauss (1995) found that the most important predictors of AP scores in BC Calculus were ranked. In first place, they placed pre-calculus preparation, as measured by the Calculus Readiness Test. The second most important predictor was mathematical aptitude, as measured by the SAT-math; and third was voluntary participation, i.e., the frequency of interaction with the teacher in calculus class. Thus, if a male student and a female student had equal preparation and aptitude, the female's chances of success on the AP examination would be diminished if she has not had as much interaction with the teacher.

Grouping gifted girls is also a controversial subject. While some research has indicated that classrooms that encourage cooperation result in higher achievement for females in general (Fennama & Peterson, 1987; Peterson & Fennama, 1985), others (e.g., Callahan, 1991) have stated that cooperative grouping is bad for girls. Callahan (1991) affirmed that females are often ignored by males, especially in groups containing only one female.

Recent research in single-sex education has yielded varying results. However, Callahan (1990) has claimed that there is reason to believe that single-sex education is advantageous for females.
While ability grouping is often an appropriate answer to the problem of challenging highly able students, Hallihan and Sorensen (1987) found that girls are less likely to be assigned to high ability groups. Callahan (1991) warned that, if the advantage of ability grouping is instruction at a pace and level commensurate with aptitude, this inappropriate placement of females can mitigate against female achievement. The key, she believed, would be to ensure appropriate placement.

It is appropriate at this point to examine briefly the possible impact of school reform on the invisibility and underachievement of gifted girls as indicated in the literature. Several educators have noticed the invisibility of girls in the current education debate. While the school reform movement has engendered considerable public sympathy for the inequality of educational experiences for poor children, it has demonstrated blatant hostility toward the gifted (George, 1992; Margolin, 1993, 1994; Sapon-Shevin, 1994) and no awareness at all of the inequitable treatment of girls (Silverman, 1995). “Meeting the needs of gifted children is not part of the school reform agenda; neither is sensitivity to gender. The two missing elements taken together spell gifted girl” (Silverman, 1995, p. 144).

Socialization in society.

What do gifted girls learn from societal influences? “One could say that in our society boys are given wings and girls are given roots” (Howard-Hamilton & Robinson, 1991, p. 33). Ours is a society that is deeply conflicted in its attitudes toward women’s roles (Kerr, 1991b). Gifted girls are receiving mixed messages from parents and society as a whole. Parents often teach girls to be yielding, selfless, accepting and nurturing; whereas, boys are brought up to be assertive,
self-reliant, and defensive of their masculine beliefs (Bem, 1974; Sadker & Sadker, 1982). The messages in society are often subtle but clear. The consumerism of stereotypical toys for girls (Howard-Hamilton & Robinson, 1991), the sexuality of advertisements (Pipher, 1994), and the verbal and nonverbal cues demonstrated in adult behaviors (Sadker & Sadker, 1994) are just a few of the examples portraying girls as passive and feminine.

On the other hand, Howard-Hamilton & Robinson (1991) hypothesized that boys develop a sense of adventure, independence, and risk-taking abilities and have more opportunity to demonstrate their achievement in society than girls. Because girls are not provided similar social learning outcomes, they underestimate their intellectual, psychological and emotional abilities. Since girls are covertly taught to discard the notion of risk-taking and independence, "gifted girls often find themselves in conflict because femininity and giftedness are often viewed as incompatible characteristics" (p. 32).

As early as 1942 Leta Hollingworth stated "gifted girls have...problems to face which arise from the facts that they are able and that they are girls...the intelligent girl begins very early to perceive that she is, so to speak, of the wrong sex" (cited in Klein & Zehms, 1996). Ironically, Pipher (1994) observed that bright and sensitive girls are most at risk for problems. She stated that they are likely to understand the implications of the media around them and be alarmed. They have the mental equipment to pick up our cultural ambivalence about women, and yet they don't have the cognitive, emotional and social skills to handle this information. "It is this attempt to make sense of the whole adolescent experience that overwhelms bright girls" (p. 43).

Silverman (1995) agreed that the turning point for gifted girls appears to be preadolescence and adolescence. She points out that in elementary school
gifted girls shine, exude confidence. Then, without warning, confidence fades and is replaced with self-doubt and lowered aspirations. As girls reach puberty, gender-role socialization makes its mark on their psyches, telling them that they are only valued for their appearance and sociability. Kerr (1985a) confirmed this observation when she said, "It comes as a shock to most gifted girls when the cheering stops for intellectual achievement and is replaced by steady pressure to be feminine and popular" (p. 106). Silverman (1995) drew the conclusion that this realization changes the priorities of gifted girls. She argued that since they are less valued for their achievements than for their attractiveness, they place less value on those achievements themselves. "During this complex period of development, giftedness must struggle to survive amidst strong societal messages that undermine gifted girls' confidence and motivation" (p. 141).

Locksley & Douvan's (1980) research indicated, unfortunately, that few gifted girls have the strength to cope with these social pressures (cited in Silverman, 1995).

Some research has shown that girls hide their ability from the time they are in preschool. This desire to disguise abilities is epitomized during adolescence. In interviews with middle school age gifted females, Callahan, Cunningham and Plucker (1994) revealed avoidance of displays of outstanding intellectual ability and a search for ways to better conform to the norm of the peer group. Kerr (1985a) described this phenomenon rather poignantly:

Most gifted girls are eager to conform and become teenagers almost indistinguishable from the rest. The gifted girl learns to pose as just another pretty, average girl. She may act and look the part so well that she becomes the part. If she knows within herself that she is different, she hopes no one will be able to tell. She debases her vocabulary,
squashes her flow of ideas, and learns to hold back when she has something valuable to contribute. (p. 105)

Kramer (1991) found that an observed group of gifted young women deliberately underestimated their abilities in order to avoid being seen as physically unattractive or lacking social competence. In fact, the reviewed literature showed that all but the most highly gifted, determined young women find it necessary to down-play their intelligence in junior and senior high school (Buescher & Higham, 1989; Kerr, 1985a; Sadker & Sadker, 1994).

This downplaying of intellect would seem to be consistent over time since it has been supported by several research findings from the past decade as well. Benbow and Stanley (1982) reported that, when compared to their male counterparts, gifted girls are less likely to enroll in advanced math classes. George and Denham (1976) saw that gifted girls are less likely to voluntarily enter a gifted/talented program, and Fox and Cohn (1980) made known that gifted girls are less likely to participate in accelerated math courses. In later research, Benbow and Stanley (1984) found that bright girls are less likely to be interested in science and engineering careers even when they are capable of them. Finally, Eccles, Midgley and Adler (1984), in their investigation, recognized that a general increase in negativism toward academic achievement is characteristic even of the better students in junior and senior high school.

Among other obstacles that talented adolescents face, Buescher (1991) noted the need to camouflage their exceptional talent. "Having exceptional ability ceases to be an asset when young people feel compelled to work so hard to cover it up" (p.388-389). He suggested that this leads to such a lack of acceptance of ability that later ownership becomes virtually impossible to
regain. This extreme result is far more common among highly talented girls under the age of fifteen than among boys the same age. Kerr (1991b) agreed that gifted girls evidently are quite concerned about the impact of their giftedness on attitudes of others. She found that females saw more disadvantages to being gifted than their male peers and there was a deep ambivalence about the label of gifted as well as concern about negative images others might hold of that label.

Silverman (1995), in a pointed remark, summed up the social pressure that gifted girls feel:

Essentially, the gifted young woman is faced with Sophie's Choice: if she chooses to be true to herself, to honor her drive for achievement and self-actualization, she breaks some unspoken rule and faces disconnection, taunts, and rejection from both male and female peers. If she chooses to give up her dreams, to hold herself back, to redirect her energies into the feminine spheres--preoccupation with boys, clothes, appearance, observing her tone of voice, choice of words and body language, remaking herself to become attractive to the opposite sex--she is accepted and rewarded for her efforts. Since there is little immediate value in choosing achievement over social acceptance, a girl would have to have incredible self-assurance to make that choice. (p. 146)

**Self-concept of Gifted Girls**

The self-concept of gifted girls during adolescence is a major concern among researchers. The literature documented changes in self-esteem, the relationship of self-esteem and achievement, and gifted girls' attitudes toward ability and effort.
Changes in self-esteem.

The search for one's identity during adolescence is a "rite of passage." Yet, for gifted girls, developing a strong sense of self can be especially difficult. Research completed by Arnold (1993) and AAUW (1992) indicated that gifted females begin to lose their self-confidence in elementary school and continue to do so through college and graduate school. However, Klein and Zehms (1996) reported that while puberty is a crucial time for most individuals, for many gifted girls it is a virtual watershed. It is during puberty that their self-concepts begin to diminish and they become less confident in their abilities. While it is not unusual for the self-concept scores of the general population to decline when middle or junior high school begins, it appears that many gifted girls' self-concept scores continue to erode. Kerr (1985a, 1994) reported that gifted girls seem to restructure their personalities to meet society's expectations far more than non-gifted girls.

Klein and Zehms (1996) contended that there is a relationship among self-concept, gender, and giftedness. Specifically, their research revealed that the total self-concept scores of gifted girls declined significantly between Grades 3 and 8 and between Grades 5 and 8. They also found that eighth grade girls had a much more negative sense of self in the cluster areas of behavior, intellectual and school status, and popularity than non-gifted girls in the same grade.

Silverman (1995) came to the same conclusions: "Elementary school is a time when gifted girls shine. . . . They exude confidence. Then, without warning, confidence fades and is replaced with self-doubt and lowered aspirations. The turning point is often middle or junior high school" (p. 145). The vulnerability of
gifted girls during junior high school has been reported again and again in the literature (Kerr, 1985a, 1994; Pipher, 1994; Sadker & Sadker, 1994; Silverman, 1995). Pipher (1994) witnessed this vulnerability in her clients:

> Often bright girls look more vulnerable than their peers who have picked up less or who have chosen to deal with all the complexity by blocking it out. Later, bright girls may be more interesting, adaptive, and authentic, but in early adolescence they just look shelled. (p. 43)

Silverman (1995) agreed: “Something happens to girls between 11 and 17 that robs them of their sense of power” (p. 141).

**Relationship of self-esteem to achievement.**

Much of the literature emphasized the relationship of self-esteem to achievement. Meece, Blumenfeld & Hoyle (1988) maintained that developing a strong belief in one’s ability is important because children’s perceptions of their ability at the end of elementary school exert a strong influence on their achievement.

In a roundtable discussion, Silverman (1990a) alluded to the relationship of self-confidence and achievement in gifted girls:

> The brighter the girl, the lower the self-concept, the lower her belief in her own abilities, the more she attributes her abilities... to luck and chance. But it is goes much deeper than that. The brighter the girl, the more she is sure that she really is not smart. She avoids in school any opportunity to show how smart she really is. (p. 167)

A study done by Multan, Brown, & Lent (1991) demonstrated a positive relationship between perceived ability and achievement. Kline & Short (1991) studied gifted girls in Grades 1 through 12. They discovered that self-confidence
and self-perceived abilities steadily decreased through high school. While
gifted girls remained competitive and often perfectionistic, they valued their own
personal achievements less. Therefore, it is during adolescence that the
achievement and the self-confidence of gifted females begins to decline.

Bandura (1986) determined that self-efficacy influenced what activities
individuals selected, how much effort they put forth, how persistent they were in
face of difficulties, and the difficulty of the goals they set. Siegle and Reis (1998)
commented: “A key factor in keeping gifted girls involved in higher level
mathematics and science courses is their self perception of ability” (p. 45). In
addition, the work of Eccles (1985) disclosed that self confidence may be a
better predictor of adult achievement than are high grades or high aspirations.

Gifted girls' attitudes toward ability and effort.

Gifted girls lose confidence in their abilities. A number of studies have
documented this. Junge & Dretzke (1995) arrived at the conclusion that gifted
adolescent females were generally less confident about their mathematical
abilities. Buescher, Olszewski & Higham (1987) also divulged that gifted girls
estimate their abilities lower than gifted males (cited in Siegle & Reis, 1998). In
addition, when Siegle and Reis (1998) compared perceptions of gifted students
in Grades 4 through 8, female gifted students viewed the quality and importance
of their work, effort, and ability differently than did male gifted students. Indeed,
a recent qualitative study of five gifted adolescent females, not one participant
attributed her success in school to extraordinary ability (Callahan, Cunningham,
& Plucker, 1994).

The paradox, it would seem, is that the loss of self-confidence during
adolescence begins a vicious cycle, one in which lowered self-esteem affects
achievement and lower achievement affects self esteem. Silverman (1993) explained: “One factor that clearly undermines gifted adolescent girls' self-esteem is their belief that high ability means achieving good grades effortlessly” (p. 304). A number of researchers have found that gifted girls believe that boys have ability, while girls only work hard (Bell, 1989; Cramer, 1989; Reis & Callahan, 1989; Robinson & Noble, 1991; Sadker & Sadker, 1994). Dweck’s (1986) research with high achieving seventh and eighth grade girls showed that some students believe that if they must work hard, they lack ability. Bright girls attribute their success to luck, chance, easy assignments, or teachers liking them; whereas they attribute their failures to lack of ability. Their confidence is so fragile that they tend to take easy courses and avoid challenges that might make them appear less intelligent. They firmly believe that students who are “really” gifted achieve good grades effortlessly. The mere exertion of effort calls ability into question.

Yet, research showed that true self-esteem comes from overcoming challenges. Csikszentmihalyi & Larson (1984) noticed that “Students who have mastered complex challenges obtain self-confidence and learn new skills to handle complexity that can be exercised again and again” (p. 150). Kerr (1991b) also recognized this in gifted females: “Gifted women are happiest when they are challenging the limits of their intellectual potential” (p. 404).

Needs of Gifted Adolescent Girls

As one looks at the characteristics identified in the literature of gifted adolescent girls, a variety of needs—both general for the collective group and specific for individual girls—become glaringly and subtly apparent. In order to address the cognitive, emotional, and social needs of gifted adolescent girls,
the writer found it helpful to use two models as a basis for discussion.

**Maslow’s Hierarchy of Needs**

The first model is Maslow’s (1968) Hierarchy of Needs (see Appendix A). His well known theory suggested that people can not reach self actualization at the top of the hierarchy without having first met the needs that lie below. Maslow identified the following (from bottom to top): physiological needs, safety needs, belongingness and love, esteem needs, cognitive needs, aesthetic needs, and finally self actualization. The reviewed literature indicated that many gifted adolescent girls are caught in the middle levels of the hierarchy. The physiological and safety needs are indeed a concern for some gifted girls. Sexual harassment in schools, documented in several studies, can cause fear for safety (AAUW, 1994; Pipher, 1994). However, the deficiency needs for belongingness and love; as noted particularly by Pipher (1994) and for esteem were conspicuously obvious; being identified time after time in study after study (AAUW, 1994; Buescher, 1991; Callahan, 1991; Callahan, Cunningham, & Plucker, 1994; Davis & Rimm, 1994; Dweck, 1986; Ellis & Willinsky, 1990; Howard-Hamilton & Robinson, 1991; Kerr, 1985a, 1991b, 1995; Klein & Zehms, 1996; Kline & Short, 1991; Pipher, 1994; Sadker & Sadker, 1994; Siegle & Reis, 1998; Silverman, 1993, 1995). Maslow’s esteem needs included needs to achieve, to be competent, and to gain approval and recognition. Clark (1983) further explained Maslow’s theory, “If needs at any one level remain unmet, energies will be drained off at that level, inhibiting further progress and causing overemphasis on that need level” (p. 121). It is clear that during adolescence many gifted girls are putting their energies into this level.

Some gifted adolescent girls are trying to meet their cognitive needs.
They have a need to know, a need to understand, and a need to explore. However, in this writer's experience, those needs are not often as apparent during adolescence. These subtle needs are often overshadowed by the glaring needs for self-esteem and belongingness and love. It appears that during adolescence those cognitive needs may take a back seat to the esteem needs when faced with the social pressures of their culture.

The same could be said for the aesthetic needs for symmetry and order or beauty. While these needs may differ among gifted girls, and, in fact, from time to time within an individual herself, the need for self-esteem or belongingness and love is often more pressing to the gifted girl (Buescher, 1991; Callahan, Cunningham & Plucker, 1994; Kerr, 1985a, 1994b; Kramer, 1991; Pipher, 1994; Silverman, 1995).

Piirto's Pyramid of Talent Development

Jane Piirto's (1998) Pyramid of Talent Development helps to provide a second unique framework for identifying the needs of gifted adolescent girls (see Appendix B). While each level of the pyramid plus the environmental suns show the developmental influences that affect talent development, they also address the general needs of gifted girls during adolescence.

The base of the pyramid is composed of Genes, the Genetic Aspect. Although new understanding and developments in genetics, biotechnology, and brain research are changing the way we think about nature and the genetic make-up of a person, one could assume that "you get what you are given." Piirto (1998) related, "Talent is probably genetic, but who knows?" (p. 42). Although she has worked for many years trying to minimize the influence of the IQ scores in identification of the gifted and talented, Piirto acknowledged that the genes
are the foundation upon which many other factors are built. Whatever the genetic make-up of a person, subsequent factors will affect the development of potential talent. The challenge, of course, is in identifying the gifts and determining what, if anything, can be done in relationship to those factors in order to develop the talents of gifted girls.

Above the base of the genetic aspect reside Personality Attributes, the Emotional Aspects. Piirto (1998) explained that personality attributes such as creativity, openness, intuition, insight, curiosity, tolerance for ambiguity, passion, drive, and perceptiveness, “may be innate, but they can also be developed or even directly taught” (p.37). While all of the identified traits included in the pyramid are supported by research, the reviewed literature on gifted adolescent girls seemed to focus on self-efficacy, androgyny (the convergence of masculine and feminine behaviors), risk-taking, persistence, perfectionism, and resilience.

(Buescher, 1991), and they need to be more resilient (Kline & Short, 1991; Pipher, 1994). When these and other personality attributes are enhanced, the emotional needs of the gifted girl can be met and the likelihood of reaching her potential is increased.

The third level of the pyramid is Minimum Intellectual Competence, the Cognitive Aspect. Piirto (1998) explained that above average IQ is a minimum criterion for talent development, the mortar and paste. A certain level of intellectual ability is considered necessary for functioning in the world, but studies have repeatedly shown that a high IQ is not necessary for the realization of most talents. Rather, graduation from college seems to be a strong indicator of creative success, and most college graduates have above average, but not stratospheric, IQs (p. 37).

In terms of gifted girls, simply by virtue of being identified as gifted and talented, one can assume that this standard of minimum intellectual competence has been met. However, the goal of education, as most would agree, is for intellectual competence to grow. Since intelligence is not fixed, one can infer that schools and other environments can certainly influence this need, either positively or negatively.

The fourth level is dubbed Thorn, the “Calling” Aspect. For those who create, Piirto (1998) hypothesized, their talent becomes a thorn. To her, the mere presence of talent is not enough. It also requires the commitment to do something with it. Whether one calls it inspiration (Socrates), soul, passion (Jung, 1965), flow (Csikszentmihalyi, 1991) or daimon (Hillman, 1996), the thorn is a talent that bothers enough to lead to commitment (cited in Piirto, 1998). It is a joy and a burden, a pleasure and a pain.

Gifted adolescent girls are likely to have the thorn deep within them,
although it may not pierce them until later in life. Kerr (1994) discovered that assuming responsibility for oneself and the "ability to fall in love with an idea" are distinctive properties of women who achieve their goals and overcome barriers to fulfillment of their dreams. Kerr explained: "Eminent women are cheerfully obsessed with and adamantly committed to their ideas" (p. 89). They have thorns.

The purpose of talent development in schools, then, is to provide students with situations which enhance the development of potential for excellence in their chosen domain (Piirto, 1998). Gifted girls need to be aware of this phenomenon and be encouraged, as Feldman (1997) stated, "to follow their hearts" in the direction of commitment (cited in Piirto, 1998).

The fifth level and peak of the pyramid is Specific Talent in a Domain, the Talent Aspect. Piirto (1998) explained that this is the talent itself—inborn, innate, mysterious—which must be developed. She included as examples the following domains of talent: sciences, dance, visual arts, writing, invention, theater, math, entrepreneurship, academics, music, interpersonal, mechanics, business, spiritual, and athletics. These domains are well-defined academically, and people go to school to study in any of them. Most talents are recognized through "predictive behaviors", for example voracious reading for linguistically talented students. When a child can draw so well she is designated the class artist or when a student is accused of cheating on her short story assignment because it sounds so adult, talent is present.

In relationship to gifted adolescent girls, one can infer that they need to explore many domains and work to enhance their talents in specific domains. Piirto reminded that each school or community has experts in most of the talent domains that students will enter. A broad and rigorous selection of courses
(Siegle & Reis, 1998), mentorships (Howard-Hamilton & Robinson, 1991; Kerr, 1985a, 1994; Klein & Zehms, 1996; Piirto & Battison, 1993) and other activities or programs in gifted education can provide situations in which the potential talent can flourish.

Finally, shining above Piirto’s (1998) pyramid of talent development, are five environmental suns which influence the growth (or dormancy or death) of a talent.

First, there is the Sun of Home, which refers to a child’s being in a positive and nurturing home environment. Silverman (1986, 1995) and Pipher (1994) both affirmed that gifted girls need support in identifying their true selves and help in developing attributes like self-esteem, resilience and curiosity. They need encouragement from home to pursue their intellectual potential and opportunities to develop their talents.

Piirto’s (1998) Sun of Community and Culture would convey values compatible with education and support for the home and school. Kerr (1985a, 1994) and Pipher (1994) discussed the fact that gifted adolescent girls need a community that values them. Adolescent girls need to feel a sense of community. During adolescence, their need for affiliation is great. Many different communities, besides that of their age mates, can help them fill their need for belongingness and love. Silverman (1986), Sadker and Sadker (1994), and others have agreed that gifted girls need to be aware of the cultural influences that show bias and stereotypical expectations towards females in society. They need a community of learners and positive role models. They need a community which provides diverse opportunities to develop their talents.

The Sun of School is a key factor, especially for students whose other suns have clouds in front of them (Piirto, 1998). When the home environment is
lacking, the role of school and the teacher or coach is to recognize the talent and encourage lessons, mentors, and special experiences. Piirto maintained that "often schools must do what parents cannot" (p. 39). Many gifted girls especially need a positive influence from this environment. Because girls are socialized to be passive and adaptive (Howard-Hamilton & Robinson, 1991), and because gifted girls often go into hiding during adolescence (Silverman, 1995), their talents may go unnoticed. A school environment that values unique talents, provides complex challenges, has a curriculum to develop skills that girls may be lacking, and provides a sense of community will help meet these needs.

The Sun of Gender influences talent development. Piirto (1998) elaborated that while the gender itself is innate and some gender differences are genetic, the influence of gender is environmental. As a major thrust of this literature review, much research emphasized the role that gender plays in influencing gifted girls and the development of their talents.

Piirto (1998) contended that the Sun of Chance or Luck cannot be overemphasized. Chance becomes a factor when, for example, a gifted girl meets someone who can connect her to someone else, helping shape her development in a specific area. Piirto (1998) asserted that "Chance can be improved by manipulating oneself so that one can indeed be in the right place at the right time" (p. 40). This writer's experience substantiates the importance of chance factors and gives credence to the hypothesis that many of the personality traits, such as openness and curiosity, enhance the ability to recognize an opportunity when it presents itself. Gifted girls also need to be made aware of chance factors. Piirto (1998) suggests that chance can be enhanced by knowledge. For example, the chance of college choice can be
enhanced by a counselor who knows the Ivy League. Counseling, connections, resources, or other means can “increase the odds” of chance.

**Encouragement, Opportunities, and Environments**

Taking into account both Maslow’s Hierarchy, Piirto’s Pyramid, and the reviewed literature, the needs of gifted adolescent girls fall into three simple areas: encouragement, opportunities, and environments that encourage and provide opportunities.

Gifted girls need encouragement and support for their unique characteristics and needs. They need positive interventions that will encourage challenging academic course plans, which will maintain the high aspirations of gifted girls’ youth and which will help gifted girls identify and overcome barriers to the actualization of their potential (Kerr, 1990). They need assistance in increasing their social self-esteem, developing their identities, dealing with relationships, and learning to fall in love with an idea (Kerr, 1991a). Also they need support for goal-setting and risk-taking, as well as inoculation against societal pressure to hide their talents. Counselors are needed who are sensitive to the vulnerabilities of gifted teens (Silverman, 1995).

Gifted girls also need a variety of opportunities for growth and skill development. Particularly, they need opportunities in career education. Kerr (1991a) indicated that they need exposure to biographies of eminent women and to successful female role models. Job shadowing or mentorships, special programs, and specific information concerning coursework, goal setting and life planning are needed.

In addition, Silverman (1986) and Kerr (1991a) maintained that gifted girls need a wide variety of opportunities within the school and community that
provide challenging activities, leadership opportunities, and chances to develop decision-making skills. They need differentiated programs for the gifted and talented, such as acceleration, ability grouping, enrichment classes, advanced placement courses, post secondary enrollment options, and gifted girls need to be grouped with other gifted girls occasionally (Silverman, 1995). As Silverman (1995) insisted, “Gifted girls need to be educated together for mutual support. Classes for gifted students, same-sex schools and female support groups should be available options” (p.152).

Gifted girls need environments that encourage their development as individuals and provide opportunities for growth. Home, school and community environments that are free of bias and recognize and value the unique qualities of gifted adolescent girls will enhance their cognitive, social and emotional development. Benbow and Lubinski (1993) asserted that individual differences in abilities and preferences are incredibly vast among the gifted. They reasoned:

For any gifted individual, there is only a limited set of environments that are congruent. We need to help gifted individuals find (perhaps even provide) such environments. Then, we need to implement special educational opportunities that are critical for their optimal development. (pp. 96-97)

Programming Options for Gifted Adolescent Girls

The reviewed literature recommended many options to help meet the needs of gifted adolescent girls that could be implemented within talented and gifted programs, within schools, within communities, or collaboratively among agencies. Cooperation among these may well create the environments that
provide the encouragement and opportunities gifted girls need in order to
develop their talents and meet their potential.

**Talented and Gifted Program Efforts**

Appropriate placement is essential to the cognitive development of the
gifted. Siegle and Reis (1998) explained that gifted students require rigorous
educational programs which challenge them academically in order to develop
skills and work habits that will result in the realization of their high potential.
Such programming strategies generally fall into the following three categories:
a continuum of services, counseling, and mentorships.

**Continuum of Services**

Talented and Gifted programs should offer a variety of programming
options to meet the individual needs of gifted girls. Girls need to be challenged
throughout their educational careers (Callahan, 1990; Reis, 1990; Silverman,
1990a). Acceleration, moving through content more quickly, is a very effective
and efficient way to provide challenges at a pace commensurate with their
needs (Smith, 1998). Acceleration options might include early entrance, grade-
skipping, compacting or telescoping the curriculum, honors classes, advanced
placement, credit-by-exam, or courses offered through correspondence, fiber
optics, or post secondary enrollment. Silverman (1990a) maintained that
acceleration in the early years should be accomplished before age 8 or 9
because at that time peer pressures begin to be so intense that girls are
reluctant to leave their peer group until after junior high. Even so, several
acceleration options during the middle years can be implemented without girls
having to leave their peers completely. At the high school level, many of these
acceleration options are likely available. However, as much of the literature has shown, gifted girls need encouragement to take advantage of these challenges (Kerr, 1985a, 1994).

The reviewed literature indicated that homogeneous grouping is effective for gifted girls. Ability grouping, “instruction at a pace and level commensurate with aptitude” (Koehler, 1990, cited in Callahan, 1991), in addition to meeting the cognitive needs of gifted girls with appropriate, differentiated content and rigor, also can meet the affective needs which are so prominent during adolescence. Cluster grouping in regular classes or ability grouping in small “chunks,” e.g., subject by subject or unit by unit following pre-assessment, are options that will enhance the learning of many gifted girls and provide support (Winebrenner, 1992).

Also consideration should be given to the homogeneous grouping of gifted girls. Silverman (1995) explained, “Gifted girls need to be educated together for mutual support” (p. 152). Female support groups and counselors who are sensitive to the vulnerabilities of gifted teens can provide support for goal-setting and risk-taking and inoculation against societal pressure to hide their talents (Bell, 1989; Noble 1987). In this way girls can be encouraged to take challenging coursework and enroll in four years of math in high school.

Single-sex education is another option that should be made available. This writer feels that even more research is needed in the area of single-sex education; however, some interesting studies have been completed. While some of the research on single-sex classes within co-educational settings has been inconclusive, there seems to be evidence that single-sex schools are effective. Callahan (1990) reported that there is reason to believe that single-sex education is advantageous for females. Riordan’s (1990) research yielded...
several results. The first was that girls in single-sex schools show an average test score advantage of 1/2 grade equivalent over girls in mixed-sex schools. Another was that students from single-sex colleges have been shown to have higher self-esteem and higher sense of control of their environment, and they have achieved higher occupational status. Subotnik and Strauss (1995) found that girls at the independent, single-sex school were more active participants in class than female students in the single-sex experimental class at a laboratory school for academically gifted students.

Enrichment classes for gifted adolescent girls is another method by which to help meet many of their cognitive, social and emotional needs. Curriculum units on decision making (Kerr, 1991a, 1991b), problem-solving (Battle, Grant, & Heggoy, 1995), media influences (Pipher, 1994), service learning (Kerr, 1991a, Pipher, 1994, 1996), biographies (Kerr, 1985a, 1985b, 1991a, 1991b, 1994) and bibliotherapy or book discussion groups (Halsted, 1994) all can provide opportunities for gifted adolescent girls to develop their skills and feel social and emotional support from others like them. Considering the characteristics of many gifted females, allowing time for voracious reading is important. Kerr (1985a) commented, “Most schools allow little time for the intensive reading that gifted girls want; in fact, students are likely to get in trouble for reading outside material” (p. 73).

Individualized instruction, both in talented and gifted programs and in regular classes, is another effective method of reaching gifted girls. Kerr (1985a) had this to say:

The slow pacing and teaching to the lowest common denominator in the regular classroom essentially constitutes a waste of precious learning time of gifted girls. Individualized instruction, especially concentrating in
children's major fields of excellence, is imperative for nurturing intellect and talent in gifted girls. In one-on-one instruction, gifted girls are released from pressures to conform to the group, to act dumb, or to await information passively. (p.73)

Counseling

While the enrichment classes for the talented and gifted might include counseling aspects to address issues facing the gifted, special classes or counseling groups specifically for gifted girls are needed as well. Whether the groups are gathered through the talented and gifted program or through the guidance department, a forum for awareness and discussion is needed. Colangelo (1991) asserted that counseling is a necessary component in the development of talent. Howard-Hamilton and Robinson (1991) suggested that programs and curriculum be developed that do the following: (a) provide opportunities to interact with and be taught by female faculty, (b) allow students to engage in dialogue about gender issues, sexism, sexual harassment, racism, and cross-cultural issues, (c) focus on women in non-traditional careers, (d) take field trips to see women working in non-traditional settings, (e) offer discussions about the hidden curriculum and advertising bias, and (f) help females celebrate, not internalize, their talents. Olshen & Matthews (1987) concluded that raising the self-concept of gifted girls by increasing their awareness of women's issues may be one way to increase the likelihood of their achieving at gifted potential.

Much of the encouragement gifted adolescent girls need can be provided by counseling. Howard-Hamilton and Robinson (1991) declared, "It is important that there be an exhaustive effort to enhance the level of self-esteem and
encourage androgynous behavior in gifted females" (p. 35). Androgyny may equip young women with healthy resistance, as a continuum of behaviors and attributes will be at their disposal. The gifted girl must be encouraged to celebrate her intellectual ability, individuality, and androgynous behavior. Kerr (1991b) concurred:

Gifted girls need to be encouraged to develop not only those instrumental characteristics associated with masculinity, but also the expressive characteristics associated with femininity if they are to be highly achieving as well as socially confident. Gifted girls need to understand that they do not need to reject the nurturing, caring side of them in order to be bold and achieving (p. 407).

Girls need to be taught to have confidence in their abilities and believe that their efforts are effective. Special counseling services can help in the development of such confidence.

Bell (1990) suggested that we encourage the gifted girl to strive for her “personal best,” to keep striving, persisting and not giving up, by comparing herself not with others as much as with herself. Kerr (1991b) agreed that we should nourish the growth of self-esteem but de-emphasize the pursuit of popularity. Both Kerr’s (1985a, 1994) and Kaufmann’s (1981) longitudinal studies of eminent women divulged that good social adjustment in adolescence was not a prerequisite for eminence.

Pipher (1994) advocated that during the period of adolescence when confidence is often eroded, gifted girls need to be encouraged to persevere, calm down, and believe in themselves. They need permission to take their time and make mistakes before solving problems, and they need to learn relaxation skills. While one would hope this type of encouragement would be provided
across curricular areas, counseling or peer support groups can be an important vehicle for intervention strategies. As much of the literature has emphasized, girls’ perception of abilities influence course selection which in turn influence future college and career selection (e.g., Siegle & Reis, 1998).

In addition to increasing self awareness and building self-esteem, counseling can provide information that will be helpful for future planning. Many gifted girls deal with issues of multipotentiality. While girls should keep all their options open, Kerr (1985a) recommended that we can deal with multipotentiality issues by teaching them focusing, values clarification, and goal setting skills in junior high and high school. Also, counseling can prepare students for what lies ahead and teach coping strategies. They should be aware that age at marriage and early birth of children are important predictors of achievement. Also, Buescher (1991) emphasized that gifted adolescents should realize that a willingness to sacrifice (e.g., postpone personal lives, live in poverty as graduate student) and postpone gratifications may be necessary.

Counselors and teachers can act as advisors in the areas of course selection and career planning for gifted girls. Much of the reviewed literature emphasized the importance of mathematics and science (Kerr, 1991b; Noble, 1987; Siegle and Reis, 1998). Parents and educators need to continue to stress the importance of mathematics and science (Siegle & Reis, 1998) and help gifted girls understand the consequences of academic decisions (Kerr, 1991b). Reis & Callahan (1989) found that female participation in advanced mathematics and science classes could be successfully increased through intervention such as counseling and infusion into the curriculum of female accomplishments. They must know the “absolute importance of math to future goals” and teachers should “emphasize the value of taking the most
comprehensive and rigorous curriculum available" (Kerr, 1991a, p. 411). Females should be encouraged to “take credit” for their successes and recognize the skills they’ve developed (Siegle & Reis, 1998).

Kelly and Hall (1993) reported that talented students need ongoing support of counselors, educators, and parents to maintain appropriately high levels of occupational aspiration. Noble (1987) agreed, saying that secondary school counselors particularly should make a concerted effort to keep gifted females apprised of college scholarship and grant information, notify them of college fairs and recruiters, and encourage them to apply to “academically elite” colleges and universities.

Kelly and Hall (1993) made several recommendations for the career counseling of gifted girls: (a) Provide information to students about high-level occupations to which they aspire (e.g., nature, academic training requirements, selection or colleges and college majors, preparation for graduate and professional training), (b) Help students maintain appropriately high aspirations, and (c) Be aware that gifted girls seem to experience the same gender-role restrictions on career interests as their average-achieving peers. “Counselors should assume that academically talented girls require active encouragement and support to pursue nontraditional careers” (p. 452).

Mentorships

Mentoring is beginning to receive more public attention, thanks to the efforts of many organizations. A mentor is defined as a wise and trusted counselor. Mentorships can take on many forms, from casually meeting a couple times per week for activities and conversation, to well structured lessons for high school or college credit. Whatever the mentorships look like, the
common feature is that a trusted, caring adult offers time and guidance to the adolescent.

Marcia Smollen of the Long Island Mentoring Partnership (cited in Echevarria, 1998) claimed that mentored teens are 46% less likely to start using drugs, 73% more likely to upgrade their personal goals, and 52% less likely to miss a day of school than teens who do not have mentors. Yet 98% of our young people are not receiving the benefits of mentoring.

Mentorships can provide gifted girls with the emotional support needed to boost self-confidence and provide valuable experiences to enhance career planning. Several researchers have noted the importance of mentors to gifted girls. Howard-Hamilton and Robinson (1991) maintained that supportive adults can help raise the self-concept of gifted girls. Klein and Zehms (1996) discussed connecting girls to caring adults. Buescher (1991) mentioned the need for trusted adults who are sensitive to young people's vulnerability. Pipher (1994, 1996) spoke of intergenerational connections through activities such as mentoring or service/volunteerism as effective ways of supporting girls during adolescence. Piirto & Battison (1993) found that creative writers were encouraged by a teacher or mentor, and Kerr (1985a) noted mentoring as one of the commonalities among eminent women. One of Kerr's (1991b) findings was that an "outsider" lent the eminent women freedom to develop independent opinions and free-ranging intellects.

Mentoring programs for gifted girls are important in order that a vicarious learning experience can commence (Howard-Hamilton & Robinson, 1991). They can present opportunities for a gifted girl to observe behaviors exhibited by androgynous professional females. By matching them with professional women in the community, information can be shared regarding family and
career integration. Kerr (1985a) said, "Mentoring provides the important link between education and a career for eminent women. A good mentor is a model, sharing trade secrets and protecting the protege from sex discrimination" (p. 73).

Finally, Buescher (1991) in a study of gifted adolescents, came to the following conclusions:

The difference between talents discovered, developed and becoming substantially productive at the conclusion of the adolescent passage and those unknown, discarded and lost en route can be traced to a few trusting, caring and supportive adults. While a great deal has been written about the valuable role mentors can play in the drama of talent development, far too little has resulted in substantial programs that carry out the concept. It is no accident that young adults who have seen the first fruits of their productive talents welcomed by others always point clearly to trusted teachers, coaches, parents and friends for buoying up their courage and sustaining their determination in adolescence (Bloom, 1985)....Significant adults who can listen with great care to these young people, respect their attitudes and values, provide sensitive insight for their questions and issues, and above all, sustain involvement in their world make a substantial impact on their future lives and happiness. (p. 399)

Many sources are available that might help guide the establishment of mentorships. One source that outlines step-by-step strategies to develop a structured mentorships for secondary students is Reilly's (1994) article, "Developing Mentorships for Secondary Students." This type of mentorship for advanced learners is generally for credit, for students who need an
apprenticeship experience in the area of the mentor's expertise.

A recent book, *For All Our Daughters: How Mentoring Helps Young Women and Girls Master the Art of Growing Up* (Echevarria, 1998), offers parents advice on how to use mentoring to support girls during adolescence. The support would come in five essential areas: physical development, intellectual development, emotional development, spiritual development, and financial accountability.

**School-wide efforts**

The reviewed literature revealed many other programs and strategies that could be implemented school-wide to help meet the needs of talented adolescent girls. Two such areas that should be addressed school-wide are curricular decisions and teacher preparation.

**Curricular Decisions**

Callahan (1990) suggested that educators re-evaluate curricular decisions. The current system (PK-12) is based on a male development model. Writing is taught when boys have the physical skills to learn how to write, not when girls have the physical skills to learn how to write. She advocated more research in this area to determine which curricular decisions are appropriate for which groups at which times.

Callahan (1991) later discussed the behaviors and skills that young children possess when they arrive at school. We commonly remediate boys in the early years, focusing on language skills, small motor practice, development of impulse control techniques. However, according to Greenberg (1990), those skills which girls need, i.e., investigation, discovery, exploration of space and 3-
dimensional objects, practice at large motor skills, and assertive behavior, form no part of most school curricula. "The assumption that addressing male needs is the same as addressing everyone's needs is not a novel assumption. Ignoring the educational needs of gifted girls is not news either" (cited in Callahan, 1991).

Gleason also debated the issue of funding remedial programs, pointing out that as educators,

We have discovered that boys learn to read more slowly and suffer from more reading disabilities such as dyslexia while girls fall behind in mathematics. Our response has been that we rush in reading teachers to do remedial reading, and their classes are almost all boys. We do not talk about it; we just scurry around getting them to catch up to girls. (cited in Shapiro, 1990, p. 57).

Silverman (1995) recommended that there should be as many remedial mathematics teachers available to adolescent girls as there are remedial reading teachers available for young gifted boys.

Another area of curricular decision making is the removal of bias from the education of gifted girls. Kerr (1985a, 1994) advocated removal of boy-centered textbooks, literature and activities. She also pointed out that often gifted girls read adult literature. Educators should discuss the recreational reading materials with bright girls, pointing out stereotypes of women and girls in popular literature.

Teacher Preparation

Programs that prepare teachers to reduce bias in the classroom can have direct positive effects on gifted girls. Both Kerr (1991a) and Sadker and
Sadker (1994) found that even brief training workshops for teachers were effective in improving equitable behavior. Teachers can learn to call on girls as often as boys; give girls informative responses, praising and criticizing in detail; reward girls' assertiveness in the classroom; and resist "overleaping" girls by giving them answers or solving problems for them.

One training method specifically designed for classroom educators is Lee Canter's (1995) video series, *Motivating Unmotivated Learners: Increasing Motivation Through Gender Equity*. In it Myra and David Sadker discussed six areas in which they discovered gender differences in teacher behavior. They prescribed seven steps for teachers to follow in order to improve gender equity in their classroom environment. Also, Susan Shaeffer recommended that teachers evaluate materials with students and encourage them to question what is being presented.

Classroom teachers also should be trained in understanding the unique needs of gifted girls. Howard-Hamilton and Robinson (1991) explain that "the adolescent gifted girl is different from her traditional age cohort. Thus it is imperative that educators recognize, encourage, and celebrate those differences that make gifted girls unique" (p. 32). Kerr (1994) mentioned the "awesome responsibility teachers and parents have to protect and promote the self-esteem and aspirations of gifted girls" (p. 168).

The reviewed literature recommended several strategies that can be used in the regular classroom to help gifted girls find their identity and self-confidence. Kerr (1994) recommended that teachers give girls specific information about their relative abilities, rather than vague or bland confidence-giving statements. She urged teachers to back up the encouragement with solid facts, such as "Your math skills are as good as those kids who grow up to be
mathematicians and scientists” (p. 411). Also, Siegle and Reis (1998) reiterated that when teachers helped students recognize the progress they had made and the skills they had acquired, students’ perceptions about their ability were higher.

Kerr (1991b) suggested that teachers reverse rewarding compliant, quiet behavior in gifted girls and encourage them to take risks, take the most challenging courses, participate in activities that are physically challenging and occasionally competitive, and learn to speak out and defend their own opinions. She also supported giving bright girls opportunities to lead other girls and boys, e.g., lead task groups, captain sports teams, or teach skills. In addition, Kerr (1991b) advised that teachers sometimes leave gifted girls alone, rather than drawing them into a group. Praise and encouragement for projects that require exploration of difficult, uncertain or ambiguous issues will help gifted girls learn self directed behaviors. Finally, she counseled teachers to help gifted girls fall in love with an idea. Sometimes girls need permission to do so or need help in recognizing that they already are in love with an idea. Teachers can encourage their enthusiasm for particular ideas by offering related readings or opportunities to explore beyond the treatment of a particular subject in the classroom.

Some training recommendations in the literature were specifically addressed to the secondary level educators, who see the immediate needs of gifted adolescent girls. Silverman (1986) concluded that the top priority for gifted girls of middle-school age is career counseling and life-planning counseling. She recommended that teachers and counselors act as advocates for special classes for the gifted and that they inspire excellence in females as well as males. Silverman (1986) listed the following policies as in-service
training classes for classroom teachers and counselors:

1. Believe in girls' logico-mathematical abilities and provide many opportunities for them to practice mathematical reasoning within other subject areas.

2. Accelerate girls through science and mathematics curriculum whenever possible.

3. Have special clubs in mathematics for high-achieving girls.

4. Design co-educational career development classes in which both sexes learn about career potentialities for women.

5. Expose boys and girls to role models of women in various careers.

6. Discuss nontraditional careers for women, including salaries for men and women and schooling requirements.


8. Discuss underachievement among gifted females and ask how they can combat it in themselves and others.

9. Have girls read biographies of famous women.

10. Arrange opportunities for girls to "shadow" a female professional for a few days to see what her work entails.

11. Discourage sexist remarks and attitudes in the classroom.

12. Boycott sexist classroom materials and write to the publishers for their immediate correction.

13. Discuss sexist messages in the media.

14. Advocate special classes and after-school enrichment options for the gifted.

15. Form support groups for girls with similar interests. (p.81)

At the high school level, Silverman (1986) suggested that counselors,
teachers, administrators, and support personnel be involved in reclaiming the hidden talents of gifted girls. She continued with the following:

High school is a critical juncture at which highly able females make decisions that may limit their choices for the rest of their lives. Strong positive action is needed at this point to counteract the effects of sex-role socialization. Special counseling programs should be partially coeducational and partially designed for females only. (p. 81)

Suggested features of a comprehensive program at the high school level might include:

1. Actively recruiting girls for Advanced Placement mathematics and science courses.
2. Cluster grouping gifted students or cluster scheduling them so that they maintain a strong support network.
3. Encouraging all gifted students to plan rigorous coursework programs to broaden their career options.
4. Instituting internships, mentorships, and work/study experiences for girls to work with professional women.
5. Making certain that the contributions of women are acknowledged in every discipline.
6. Selecting nonsexist texts
7. Requiring nonsexist language in written discourse.
8. Encouraging female students to contribute in class.
9. Alerting male and female students to the negative effects of sex-role stereotyping.
10. Forming support groups for gifted girls to share their concerns.
11. Exposing students to role models of professional women with
different lifestyles: professional homemakers, single career women, career women who do not plan to have children, career women/homemakers.

12. Discussing alternative, equitable solutions that would enable a woman to combine a career and family (e.g., role reversals, sharing a position, live-in childcare).

13. Analyzing career paths that are autonomous (planned to actualize one's career potential) versus those which are contingent upon a mate's career (planned to actualize one's potential as a wife and mother in a mobile society).

14. Providing comparative information about college programs and assistance in applying for scholarships and encouraging students of both sexes to attend first-rate colleges.

15. Actively seeking scholarships for gifted students. (p. 82)

Community-wide efforts

Programs in the community that increase awareness of the issues facing gifted girls would help parents, educators and other community members support the cognitive, social and emotional development of gifted girls. Families are very important and influential to gifted girls. Colangelo (1982) noted that talented adolescents both shape and are shaped by their family systems.

Outreach programs can make parents and family members aware of things they can do to help gifted females. Kerr (1991b) recommended that gifted girls be given specific information about their superior abilities very early. They should be helped to understand their intellectual strengths and see how their abilities can help them in their classwork. Also girls need to perceive their giftedness not as a mysterious force out of their control, but as a set of potentials that, when combined with effort, can lead to extraordinary accomplishment.
Howard-Hamilton and Robinson (1991) suggested that through parent outreach programs, parents could be made aware of the following issues: (a) Families should not underestimate or ignore the abilities of their gifted daughters, (b) Children of working mothers tend to be less stereotyped in their views of men and women, (c) When the father has high participation in raising children, boys and girls are more independent and achievement oriented, and (d) Parents should take note of gender biased toys and games. Girls should be encouraged to solve puzzles, build structures, and work with science equipment to enhance analytical ability.

Callahan (1990) expressed the need to look at parental attitudes early, reporting that sexual stereotyping is complete by the time a child is five years old. She suggested early identification and program development during preschool years. This writer suggests that seminars or workshops such as Mary Pipher's could simply raise awareness of the sexist messages and stereotypes prominent in our society that undermine girls' achievement.

Silverman (1995) agreed that greater awareness is needed of the sexism in society and in school that robs gifted females of equal opportunities in education, employment, and public recognition. Banning the terms "bossy" and "overachiever" would help, she professed. "They undermine the confidence of adolescent gifted girls and leave scars that can last a lifetime" (p. 151). Silverman (1995) also recommended that parents and teachers hold high expectations for girls as well as boys and provide challenging experiences for them early in life. Fathers, in particular, play a vital role in the formation of their daughters' aspirations.

Finally, Howard-Hamilton and Robinson (1991) recommended that parents and teachers make known societal gender roles early to young girls in
order for them to be aware and develop strategies to successfully negotiate the challenges they will encounter as gifted females. Silverman (1986) listed many specific suggestions for a parent curriculum and for an in-service program for preschool and primary teachers. (pp. 79-80)

While early awareness is important, families can still provide needed support for gifted girls during adolescence. Buescher & Higham (1989) listed consistency of support by family before adolescence as one of the factors that gave teens the strength to weather adolescence. Also, Olszewski-Kubilius & Yasumoto (1993) alluded to the importance of parents: "Parental feelings about the importance of subjects may be able to offset student self-perceptions that keep them, particularly females, from accelerating themselves in mathematics" (p. 395).

Kerr (1985b) discussed the influence of social pressures. During adolescence parents, teachers and peers may start praising the gifted girl more for her attractiveness than for her intellectual achievements. The rituals and symbols of adolescence--clothes, hairstyles, music, heroes and beauty queens, proms, parties and dating--can be enticing to a gifted girl eager to conform. It is this writer's contention that rituals and symbols that celebrate intellectual and creative achievements should be encouraged among parents and educators as well.

"Some schools prize state basketball championships; others, National Merit scholarships. The difference can be the administrators, the school board, or the constituent parents" (Buescher, 1991, p. 394).
CHAPTER III
CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This review of the literature attempted to identify the needs of gifted adolescent girls in order to determine programming options that would best meet the needs of gifted adolescent females. From the reviewed literature the writer has concluded that gifted adolescent girls are “caught in the middle.”

The majority of gifted adolescent girls are caught in the middle of Maslow’s Hierarchy of Needs, not able to move toward self-actualization because they are still in need of belongingness and love and self-esteem. Many gifted adolescent girls are also somewhere in the middle of Piirto’s Pyramid of Talent Development. While they may have the genes, personality traits, and minimum intellectual competence, most have not discovered the thorn or their specific talent.

Gifted adolescent girls are also caught in the middle of many conflicts. As females, they are caught in the middle of conflicting messages from society about their gender roles. They also are caught between two worlds: the masculine and the feminine.

During adolescence gifted adolescent girls are literally caught between youth and adulthood, facing many important issues of transition. They are caught in the middle between needs for conformity and individuality, and between the needs for affiliation and separateness.

Gifted adolescent girls are also caught in the middle of a conflict between their giftedness and femininity, on the one hand needing to achieve and on the other needing to fit a passive role. They are caught in the middle of expectations
to be smart and expectations to play dumb. Their giftedness might compel them
to take risks; yet their socialization pulls at them to play it safe.

What gifted adolescent girls need, this writer has concluded, are the tools
to get them out of the meat grinder, the middle. They need to realize that
choices in life do not have to be either/or. They can be both masculine and
feminine (androgyrous), they can be both gifted and female, and they can have
both community and independence / autonomy. They can develop their
potential talents, and they can continue their journey toward self-actualization.

Specifically, this writer concluded that gifted adolescent girls need the
following supports:

1. **Encouragement.** Gifted adolescent girls need encouragement to
develop personality traits (such as self-esteem, androgyny, and resilience),
passions, general intellectual abilities, and specific talents. During their search
for their own identities, the encouragement to take risks, persevere and value
their own uniqueness can have direct and indirect effects on their affective and
cognitive needs.

2. **Opportunities.** Gifted adolescent girls need a variety of opportunities
for growth and skill development. Challenging learning opportunities are
essential not only for their cognitive needs, but also for developing the social
and emotional needs of self-esteem, belongingness and love (community), and
self-concept.

3. **Environments.** Gifted adolescent girls need environments that provide
encouragement and opportunities. The environments of home, school, and
community and culture should recognize and value gifted girls as unique
individuals and provide ample opportunities to meet their needs.

For example, a continuum of services should be available to gifted girls
in order to help them reach their present and future potential. The talented and gifted program should include a variety of program options, such as acceleration; advanced placement classes; ability grouping; single-sex grouping; enrichment classes; individualized instruction; counseling for support in affective, academic and career planning; and mentorships.

Also, school-wide efforts are needed in order to improve gender equity and provide support for gifted females. These objectives could be accomplished through evaluating curricular decisions and training teachers to reduce bias in their classrooms and understand the unique needs of gifted girls.

Finally, community-wide efforts should be employed to increase awareness in parents, early childhood and elementary educators, and other community members of issues such as gender bias, giftedness, and female adolescents. Many of the needs of gifted adolescent girls can be met through awareness, prevention and/or intervention.

Five themes that may impact positively on achievement and the development of females were identified by Hansen, Walker, & Flom (1995): (a) celebration of girls' strong self-esteem, (b) respecting girls as key players, (c) connecting girls to caring adults, (d) ensuring girls' participation and their success, and (e) empowering girls to believe they can realize their dreams. Through the efforts of talented and gifted programs, schools, and communities these themes can be accomplished, thus making a difference for the gifted adolescent girls who are "caught in the middle."

Recommendations

Based on the reviewed literature, the following recommendations are suggested:
1. There is a need for additional research on single-sex education. In some states, such as Iowa, this implies a relaxation of current state policies. Public schools should be allowed to pilot single-sex classes and single-sex schools.

2. More research should be initiated on various acceleration practices in relationship to females, particularly early entrance to kindergarten. Kerr (1991) advocated, “Whenever possible bright 4- and 5-year-old girls who simply show signs of school readiness—advanced vocabulary, precocious reading, math skills, and eagerness for school social activities—should be given the benefit of the doubt and admitted early” (p. 408). Again, flexibility in state policies is needed to allow further research.

3. In relation to the school reform movement, more awareness, discussion, debate, and advocacy is needed for the issues of gender and giftedness. The focus on equity has overlooked sensitivity to gender and to the needs of gifted students. The invisibility of the gifted girl is symbolic of her invisibility in classrooms. Educators, parents, and others must act in order to ensure her visibility in the future. Silverman (1995) stated, “The school reform movement needs to eliminate bigotry against the gifted that has been fostered under its auspices” (p. 152). Equal opportunity for an appropriate education must be provided to gifted children as well as to all other children. Equal opportunity does not mean equal outcomes despite differences in ability.

4. More research also is needed to determine the effects of removing the barrier of time in testing in such assessments as the SAT, ACT, achievement tests, and IQ tests. For example, preliminary research (Dreyden & Gallagher, 1989; Kelly-Benjamin, 1990) has shown that it is the time limit that makes a difference in scores for females.
5. Also, a special effort should be made to educate schools and scholarship committees that scholarship opportunities should be based as much on grades as on scores from timed aptitude and achievement tests (Silverman, 1995). Girls with high GPAs in math, but lower SAT math scores than male counterparts, have demonstrated higher performance in college courses (Sadker & Sadker, 1994).

6. The administration of IQ tests should be more accessible to talented and gifted programs. Many Area Education Agencies do not give IQ tests to potential talented and gifted students. Yet, Sattler (1992) asserted, “The single best method available for the identification of children with superior cognitive abilities is a standardized, individually administered test of intelligence, such as the Stanford-Binet Intelligence Scale: Fourth Edition or those in the Wechsler series” (p.671). Silverman (1990) also has determined that IQ tests, if given early enough, are important for finding gifted girls.
REFERENCES


American Psychological Association Press.


Iowa Code 257.44. Code of Iowa 1993, 2. Des Moines, IA: Legislative Service Bureau General Assembly of Iowa.


Reilly, J. (1994). Developing mentorships for secondary students. In J. McIntosh (Ed.), *20 more ideas for teaching gifted kids in the middle school and high school* (pp. 8-17). Waco, TX: Prufrock Press.

Reis, S. (1987). We can't change what we don't recognize: Understanding the special needs of gifted females. *Gifted Child Quarterly, 31* (2), 83-89.


Reis, S., Westberg, K., Kulikowich, J., Caillard, F., Hebert, T., Plucker, J., Purcell, J., Rogers, J., & Smist, J. (1993). *Why not let high ability students start*


Silverman, L. (1990b). It all began with Leta Hollingworth: The story of giftedness in women. In J. Ellis & J. Willinsky, Girls, women, and


APPENDIX A

Maslow’s Hierarchy of Needs (1968)

MASLOW’S HIERARCHY OF NEEDS

Self Actualization

Aesthetic needs; symmetry; order/beauty

Cognitive needs: to know, understand, & explore

Esteem needs: to achieve, be competent, gain approval, and recognition

Belongingness and love

Safety needs

Physiological needs

Being Needs

Deficiency Needs
Piirto's Pyramid of Talent Development (1998)

The Pyramid of Talent Development

FIGURE 1. Piirto Pyramid of Talent Development. (Revised 10/97). From the Prentice Hall/ Macmillan/ Merrill College Text. Talented Children and Adults. Their Development and Education. (1994). By Jane Piirto, Ph.D.