Gifted females: An underachieving minority

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Abstract
The purpose of this study is to examine the needs and achievements of gifted girls. Girls are being identified at the elementary level, yet there is a continuous noticeable decline in academic achievement through their academic career. Of special interest are the subject areas of mathematics and science, since these are where the greatest decrease occurs. Through a review of literature the following questions will be answered: 1. What causes the gifted female to manifest diminished achievement in mathematics and science? 2. Who has the most influence on the attitudes of gifted females? 3. What can be done to help the gifted female overcome feelings of inferiority to male counterparts, especially in the areas of mathematics and science? 4. What roles do significant others (parents, teachers, counselors) have in shaping the future of the gifted female? 5. What programs have been implemented to help gifted girls and how effective have they been? 6. What career opportunities are available and to what degree are females aware of career options? A comprehensive literature search will be undertaken regarding these research questions. Findings will be synthesized and compiled in order to provide insights and guidances for those who are responsible for educating and guiding intellectually capable females.
GIFTED FEMALES:  
AN UNDERACHIEVING MINORITY

A Graduate Project
Submitted to the
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# TABLE OF CONTENTS

Chapter I: Introduction ........................................... 4
  Introduction to the Problem .................................. 4
  Statement of the Problem .................................... 5

Chapter II: Review of Literature ............................... 6
  Introduction of the Literature Review ..................... 6
  Research and Literature Review ............................. 6
    Terman Studies ............................................. 6
    Intelligence versus Femininity ........................... 7
    Gifted Females and Mathematics .......................... 8
    Gifted Females and Career Guidance ..................... 12
    Gifted Females and Significant Others .................. 17

Chapter III: Procedures ......................................... 21

Chapter IV: Summary & Conclusions ............................ 22
  Introduction to the Summary ................................ 22
  Summary ...................................................... 22
  Discussions & Conclusions .................................. 28
  Limitations of the Study .................................... 28
  Recommendations and Implications for Further Research ........................................... 29
  Implications for Future Use ................................ 29
  Bibliography ................................................ 30
CHAPTER I: INTRODUCTION

Introduction to the Problem

Today more girls than boys are identified for gifted programs at the elementary level (Alvino, 1985). Numerous studies show there is a drop-off of gifted girls' achievement and interest in junior high school, senior high school, and college; especially in the areas of mathematics and science (Fox, 1982, Fox, 1976, Fox, 1979, Kravitz, 1984). There are numerous peer and societal pressures put on girls at this point in their lives. Such pressures emphasize how girls should act, which subjects should be taken, and what career choices are best. These dictates seem to work against gifted girls developing to their fullest potential. The messages are often subtle. They usually come from significant others, e.g. parents, teachers, or counselors in a girl's life.

The female, while labeled gifted, must overcome all of the stereotyping of being intellectually outstanding along with those of being female. A study by Fox (1976) showed boys make an easier adjustment to being gifted than girls. A boy does not receive as many negative messages concerning giftedness and achievement. He is reinforced to achieve his potential to the fullest. With gifted girls, this is not always true.
Statement of the Problem

The purpose of this study is to examine the needs and achievements of gifted girls. Girls are being identified at the elementary level, yet there is a continuous noticeable decline in academic achievement through their academic career. Of special interest are the subject areas of mathematics and science, since these are where the greatest decrease occurs. Through a review of literature the following questions will be answered:

1. What causes the gifted female to manifest diminished achievement in mathematics and science?
2. Who has the most influence on the attitudes of gifted females?
3. What can be done to help the gifted female overcome feelings of inferiority to male counterparts, especially in the areas of mathematics and science?
4. What roles do significant others (parents, teachers, counselors) have in shaping the future of the gifted female?
5. What programs have been implemented to help gifted girls and how effective have they been?
6. What career opportunities are available and to what degree are females aware of career options?

A comprehensive literature search will be undertaken regarding these research questions. Findings will be synthesized and compiled in order to provide insights and
guidances for those who are responsible for educating and guiding intellectually capable females.
CHAPTER II: REVIEW OF LITERATURE

Introduction of the Literature Review

The review of literature will examine studies concerning gifted females. While there is not a great deal of research that examines the sex variable, it is an important area to consider in order that society may benefit from the potential of intellectually capable women. Through the literature review programs will be examined, as well as the influences of gifted females.

Research and Literature Review

Terman Studies

The earliest and most extensive research investigating gifted children was conducted by Lewis Terman and published in 1926, 1930, and 1947. The studies included approximately 1,000 gifted children. There were various combinations of selection procedures for identifying three groups of gifted children. The ratio of boys to girls in each of the three groups was: Group I, 352 boys to 291 girls; Group II, 195 boys to 159 girls; Group III, 251 boys to 119 girls (Terman, 1926). Terman stated the general population at that time had more males than females, therefore, his study reflected an imbalance of the sexes. He also discussed the possibility of a biased selection procedure (teacher
selection) and the male bias of the Stanford-Binet. He ruled out these reasons for bias and maintained that the primary reason was that there were more boys than girls in the general population of the areas from which the samples were drawn.

An article written by Ben-Dor (1979), challenged the Terman studies stating that the population from which the sample was drawn actually did not include a larger proportion of males to females. Yet, the studies are male biased. Much of what is now considered general knowledge about gifted children is based on these studies even though male bias has been established.

There was little research on gifted children between 1946 and 1960. What was written concentrated on gifted males. Most often the only reference to the gifted female was in reference to female's inferiority to gifted males.

**Intelligence Versus Feminity**

The reason cited for the absence of studies of gifted females is the place women occupied in the home (Gemant, 1961). Females were not visible in the general population. Gemant maintained that females were biologically inferior to males. He also stated that women are more practical, they do not have a "playing tendency" or possess imagination as men do. Since a woman's main purpose is procreation, she is trained for this from a young age. There is little time for "idle-thoughts and occupation". He also felt that
"highly gifted women, approaching in some degree the nature of a genius, are masculine" (p. 114). He believed such women "are actually half man, physically and mentally" (p. 115).

This belief, that intelligence and femininity don't mix, has been an obstacle for gifted females. Also the belief that a woman's main occupation is child-bearing and house-keeping has kept the gifted female from considering other careers or occupations.

Today more and more women are in the work force. In fact, greater numbers of women are graduating from college than ever before. Data indicates that they have actually surpassed the number of men receiving Bachelor and Master degrees (Grant & Snyder, 1983-84). The number of women graduating with degrees in the fields of architecture, business and management, engineering, physical science, and mathematics, however are far lower than the number of men (Grant & Snyder, 1983-84). The stereotyped female careers still center in the service areas of teaching, nursing, and home economics (Grant & Snyder, 1983-84). Trends of women entering college have changed as recently as 1981, yet the majority of females are still selecting areas of study from the traditional female areas. This has a definite impact on the aspiration of the gifted female.

**Gifted Females and Mathematics**

Until sixth grade girls excel in mathematics (Kravitz, 1984). Kravitz notes that the attitude toward
girls in mathematics and science classes is tolerance while the attitude toward boys is one of expectation and success. Kravitz also found that girls are discouraged in grades K-12 from excelling in mathematics and science because it is not considered socially desireable for them to achieve in these fields. His research reflects the attitude of femininity versus intelligence, at least in the areas of mathematics and science.

Fox (1976, 1976, 1979) conducted several studies on the achievement of gifted females in the areas of mathematics and science. She believed there were several reasons why females manifested a decline in mathematics achievement in junior high, high school, and college. First was the perception that math is a male domain. To test this belief she developed an experimental math program for gifted seventh grade girls.

The program was held at Johns Hopkins University and extended from May through July. The classes met two days a week. Students were chosen for the program based on their scores on the SAT-M and SAT-V. There were three groups. One group of gifted girls and one group of gifted boys served as controls and one group of gifted girls received the special instruction. That class was exclusively for girls. It had a female instructor and two female undergraduate assistants. The class structure was informal with an emphasis on the use of math for solving social problems. During the course it was found that the girls needed much encouragement to view
themselves as competent in math. Family counseling, therefore was important to the program.

The two main hypotheses tested in this study were:

1. Gifted boys and girls of equal ability and home background will differ during the high school years in math achievement due to different interests and encouragement. 2. Girls who receive special encouragement and assistance in math will keep pace with or surpass their male and female cohorts, with respect to achievement, as measured by performance. After the girls had completed the course a record was kept for the following three years to determine if they did, as a result of treatment, continue advanced achievement in math. They were compared to the two control groups. It was found that they did, indeed, continue to excel. However, the more time that elapsed between the experimental math course and their regular academic career, the greater was the decline in continued math achievement. The girls needed continued encouragement to sustain advancement in achievement. She found the problem to by cyclic in nature. Girls avoid math and science in school because it doesn't fit with their career choices. Since they avoided the courses, they were unable to compete for careers in math and science later. With few women in the math and science careers, attitudes favoring masculine dominance will remain.

Fitzpatrick (1978) found that as the gifted female grows older, the importance of peer acceptance increases. With this peer acceptance comes the awareness of one's
sex role. Parental influence is not as important. While the parent may still be rewarding good achievement in school, the peer group has more influence. Unless a gifted female has self-confidence and a purpose in mind for her future, subjects not regarded by peers as being feminine are not pursued. This premise was tested by Hollinger (1983).

In Hollinger's study (1983) gifted girls were asked to indicate which career they would most like to pursue. There were six career areas listed from which the student could choose: nontraditional math careers (accountants, economists, etc.); nontraditional science careers (chemist, physician, etc.); neutral/traditional non-science careers (nurses, bookkeepers, etc.); nontraditional nonmath careers (lawyers, law-enforcement officers, etc.); neutral nonmath careers (reporters, graphic designers, etc.), and traditional nonmath careers (teachers, stewardesses, etc.). The theory was posited that the higher a student's self-perception in an area of math or science, the higher the likelihood that a career would be chosen in that area. The findings indicated that females, aspiring to non-traditional math or science careers, appeared to rate themselves higher in stereotypically masculine abilities, or skills, and comparatively lower in stereotypically feminine abilities.

One other area that retards excellence in math and science is the attitudes of teachers, counselors, and the media (Wells, 1985). Children receive sex-role
stereotypic signals repeatedly through media, home, and school. Wells believed that the passive and dependent female is often rewarded for this behavior. Behaviors of females which appear to be assertive and independent are punished or ignored. Gifted females who have a desire to excel in math and science are discouraged at an early age. Once rewards are given for passivity and acceptance on a regular basis, the desire to excel no longer exists. Once the desire to excel has been squelched, advanced achievement in math and science are non-existent.

It has been established that gifted females do not excel in math and science due to male dominance of the subject areas. (Fox, 1976) Although the ability exists, a decline in achievement occurs. Gifted girls receive pressures from parents, counselors, and peers to excel in traditionally female roles. How can a change take place so these abilities do not continue to be untapped? Career guidance has proven to be successful in aiding gifted females.

Gifted Females and Career Guidance

Several studies have been reported which relate early career guidance to improved achievement in math and science (Fox, 1976; Vidulich, 1978; Fox, 1982; Wolleat, 1981; Fox 1981; Deutsch & Wolfeat, 1981, Deutsch & Wolleat, 1981; Jackson, 1978; Rodenstein & Glickhauf-Hughes, 1977). The purpose of these investigations was to raise career consciousness levels
so that gifted girls would recognize the necessity for and benefit from maintaining achievement in math and science.

The middle grades are the best time for career development, theorized Deutsch and Wolleat (1981), because the girls are still relatively open-minded. Sexual and social roles and attitudes usually develop in grades six through eight. This study was conducted with 13 gifted girls in the fifth grade. The girls were given special instruction on different careers available to women. They saw movies, talked to women who had careers in predominantly male areas, and discussed those that most appealed to them. There was a significant change in attitudes toward role options. The girls were also more career conscious after treatment.

A study conducted for over a year in the Great Falls Public Schools in Montana was designed to demonstrate a career guidance model for academically gifted females (Jackson, 1978). The study dealt with a way for students to overcome problems associated with non-traditional career choices and sex-role stereotyping. This was done by providing interaction with successful career role models, conducting learning experiences to expand the range of career alternatives to be considered, and training and information for parents, teachers, and counselors. The program was deemed successful and has since been implemented by other school districts.

In a study conducted by Rodenstein and Glickhauf-Hughes (1977), 201 gifted women were divided
into three classes. The classes were labeled homemakers, career-focused, and homemaker and career-focused (integrator). The homemaker group was married, had children and listed homemaker as their occupation. The career-focused group was unmarried, had no children, and had a full time career. The integrator group was married, had children, and a full time career. When the women were high school seniors they were asked their career choices. A higher percentage of women in career and integrator groups had chosen investigative careers as their first career choice. A higher percentage of homemakers had selected social occupations as their choices. The study found that there was a strong relationship between career orientation and mother's occupation. Those things which most influenced the gifted women in this study were parental influence, career preferences and career preparedness, self-assessment, the nuclear family, current interests, and values.

According to the study the following myths need to be dispelled: 1. Societal myths which contribute to a forced choice between career and family. 2. Societal myths which view the career woman as asocial and single-minded. 3. Societal myths which view career and lifestyle planning as irreversible. Once these myths have been dispelled, a woman who has opted for the role of homemaker need not forever dismiss the possibility of integrating a career into her lifestyle.
A study by Deutsch and Wolleat (1981), investigated the historically held belief that women had to make a choice whether to have a career or to marry and have children. Thirteen fifth grade girls were used for this study. All of the girls were given a pretest concerning attitudes presently held about career and family options. Six of the girls met for a week and listened to speakers, watched films, and read books stressing the integration of career and family. After the week, all thirteen girls were given a posttest. The experimental group changed their attitudes toward personal role options including home family responsibilities. They viewed home responsibilities as being shared. The researchers concluded that awareness raising experiences can benefit gifted girls.

Three major factors are related to sex differences in achievement in gifted education: differential career interests and expectations; encouragement from significant others; and early identification and educational facilitation (Fox, 1976). Career goals and participation in advanced math classes are directly proportional. When there were definite career goals in place, the gifted girl was better able to cope with the advanced math classes and recognize the benefit. Those girls who were in advanced math classes received encouragement from parents, guidance counselors, math teachers, and peers. Identification with the father was important. In enabling gifted females to become more involved in advanced math classes it may be necessary to
help them recognize the social interests and careers of a social service nature. Fox contended that attempts to teach about ways in which math and science can be used to solve social problems would be desirable.

In another study by Fox (1976), three factors were found to have an effect on behavior and attitudes of gifted girls. The first was career aspiration and interests. The second was encouragement from significant others. The third was early placement in accelerated programs. In this study she found that in grades seven and eight more boys than girls were labeled mathematically precocious. Girls were less eager than boys to accelerate in math. Girls perceived parents as resisting acceleration. Gifted girls fear peer rejection. Accelerated classes and college courses have been more successful for boys. Values and career interests appear to be related to mathematical precocity.

Fox (1982) designed a program to help gifted girls cope with social factors that may have an inhibiting effect. The girls were told that, unless there were extensive changes in child-care and child-rearing values and practices, many of them would likely move away from professional careers that were perceived as too demanding or inflexible for effectively performing a dual role. The girls were brought together to explore careers. They were able to meet and talk with adult women who were successfully coping with family and career. Fox also felt that it was necessary for boys to view women as capable of dual roles. Her findings indicated that
gifted girls need extra support to counter-balance stereotypes. She felt that the career education of gifted girls should be a collaborative venture including parents, teachers, counselors, and professional and scientific organizations.

These above studies found that early career orientation expanded career options for the gifted female. Through such programs, a gifted girl can decide which career would be best suited to her. She can then make the decision on what she would like to pursue, without worrying about the stigma associated with advanced math and science classes and their effect on her femininity. Positive role models are essential for expanding attitudes toward career options. It is necessary to educate parents, counselors, and teachers so that they will be able to reinforce and support choices made by the gifted girls.

**Gifted Females and Significant Others**

The roles significant others play in the life of a gifted female are important. It has been found that negative messages received from these people can result in a non-achieving attitude on the part of the gifted girl. Gifted girls who have overcome reluctance to pursue goals of their choosing identified those people who have most influenced them. In a study by Schaefer (1970), ten gifted girls were given questionnaires and interviewed to find out what influenced their career choices. It was concluded that they had a variety of
role models. Their parents had attained a high educational level. The girls identified more with their fathers. They also listed a great many outstanding teachers. Another advantage was the rewards they received for their achievements in interest areas.

Significant others help gifted girls gain self-confidence, a sense of independence, and a positive image of self which is necessary for continued achievement (Schwartz, 1980). Schwartz also recommended curricular inclusion of appropriate examples of women's accomplishments in literature, the arts, government, and sciences. Counselor's responsibility to gifted girls, according to Schwartz, is to be aware of sex-bias and stereotyping in aptitude and achievement tests. They should encourage girls, interested in math or science, to pursue courses in these areas and support their enrollment in advanced placement. Counselors should be aware of accelerated programs and be able to advise gifted girls into them. Opportunities in all areas of industry and the professions should be made known to gifted girls. Finally Schwartz comments that the "re-education of society is important" (p. 11).

Summary

A search of the literature revealed that gifted girls, while identified in early grades, are not reaching their potential later in their academic career. Much of this underachievement occurs in the areas of math and science. A major reason for underachievement is
sex-stereotyping of females. Gifted females have found it difficult to excel in the masculine dominated fields of math and science because of these stereotypes. Peer pressure is also a major factor of these stereotypes. Peer pressure is also a major factor in influencing excellence in math and science. Girls don't enroll for advanced math and science courses because they don't want to be different. Counselors, teachers, parents, and the media also contribute to the concept of what girls can and can not do. Gifted girls often choose careers in service areas. This is what is expected of them. Gifted girls receive the message that they must choose between a family or a career, therefore, they are reluctant to choose careers which will be interrupted. A career will be short-term so it is not necessary to pursue math and science. Finally, underachievement is common because of the absence of female role models in the fields of math and science.

Studies indicated fathers exert a major influence on gifted girls. If a father conveys the attitude to his daughter that she can accomplish anything, she will believe him. This promotes self-confidence. Teachers and counselors who give girls the feeling they belong in whatever area of study they choose will also instill self-confidence. Praise and rewards for achievement in math and science are beneficial. Peer pressure, especially at the junior high school and senior high levels, is very important. Most girls, whether gifted or not, do not want to be different. When math and
science are viewed as masculine by peers, a conflict arises.

A strong and balanced general education for both gifted boys and girls will help to dispel stereotypes and sex bias. It is important to teach girls that they have a choice of career, homemaker, or a combination. Boys also need to recognize that girls are free to make such choices. If, as Schwartz (1980) contended, a "re-education of society is important", both boys and girls, at a young age, must learn they are equally capable of achievement in any career. Classes should emphasize equal contributions by both males and females. Math and science classes taught by female instructors encourage girls to expand options.

Special programs, beginning at the middle school level, showing career options are beneficial in changing career goals of gifted girls. Such programs minimize the conflicts experienced by girls with special abilities. They are more likely to pursue careers which have traditionally been considered "off-limits" to females.

It is important for schools, parents, professionals, and industry to work together to encourage gifted girls to achieve their potential. Society will benefit from such an effort. Research has indicated that stereotypic attitude and traditional practice are preventing half of the gifted population from making their full contribution.
CHAPTER III: PROCEDURES

A search of literature was performed by first consulting two data bases. The ERIC Document Files as well as The Exceptional Child data bases were utilized for locating appropriate resources. After consulting the data bases a list of studies, journal articles, and secondary sources pertaining to the topic were compiled. These sources were reviewed along with several books relating to the topic. A card file system of information pertaining to gifted females was maintained and organized for synthesizing and reporting findings.
CHAPTER IV: SUMMARY & CONCLUSION

Introduction to the Summary

It is the role of the educator to help all students reach their potential and prepare for the future. The gifted female's needs are not being met at the present time. Many girls do not reach their full potential and consider only a limited array of career options. Programs have been implemented to help these girls. It is essential that schools review these programs and endeavor to plan effective ways of meeting the needs of gifted females. What types of long-term solutions are being sought to help gifted girls obtain their potential? Reviewing the way which society, peers, and significant others influence gifted females is important for teachers to help girls set and achieve life goals. Through a review of literature on gifted girls it will be possible to find solutions to these questions. The answers will be beneficial in planning programs to help this underachieving minority. The summary will address each of the research questions individually.

Summary

1. What causes the diminished achievement in math and science by gifted females? Through a review of literature several causes for diminished math and science
achievement were found. In the early elementary grades girls excel in both math and science. As girls progress through the grades a greater emphasis on peer acceptance hampers achievement because math and science are labeled as male domains. Since gifted girls do not want to feel "left out" math and science are avoided. This lends itself to a second reason for diminished achievement, a societal view of math and science as male domains.

Historically, the greatest contributions to the fields of math and science were accomplished by males. Women were not visible in the work places and exposure to math and science were limited. More recently, women have joined the workforce in greater numbers. With advanced schooling for women, more and more exposure to math and science is available. While some gifted women have a special aptitude for math and science, they are not encouraged to pursue advanced degrees or careers in these fields. Often the messages are subtle, such as, guidance counselors encouraging "traditional" female occupations. A gifted girl in advanced classes will be outnumbered by her male counterparts, and she may receive a message that she doesn't really belong there.

Another reason for diminished achievement is the belief that women must make a choice between career and marriage and family. If girls decide they would like marriage and a family, math and science seem unimportant. This creates a cyclical problem: Gifted girls avoid math and science so they are unable to compete for careers in
these fields. They are unable to compete for these careers because they have avoided math and science.

2. Who has the greatest influence on the attitudes of gifted girls? Peers, parents, teachers, and counselors are found to exert great influence.

3. What role do significant others (parents, peers, teachers, and counselors) have in shaping the future of the gifted female? Generally, gifted girls need continuous encouragement. They need to be constantly applauded for their achievements in math and science. They need to know it's fine for them to be interested in these areas and to know their special achievements are commendable. They need acknowledgement and support from those whose acceptance and respect they value.

Parents, especially fathers, exert a great influence. Gifted girls, who felt encouragement from their fathers, were best able to cope with achievement in math and science. A father is able to instill, in his gifted daughter, a special self-confidence. This assures her she can accomplish whatever she wishes.

A mother with a career also has an influence. The mother is a role model for her daughter. If a gifted girl has a mother with a career in math or science, little conflict arises with the gifted girl. She can also accept the possibility of combining career, marriage, and a family. While parents have an influence, as a gifted girl grows older, peers play an important part in influencing her.
Peers are important in influencing gifted girls perceptions of themselves. Popularity and acceptance into "the group" become of great significance. Often, in junior high school, school achievement becomes secondary. The question of femininity becomes important. Intelligence versus femininity can become an issue. Peers can stereotype intelligence as unfeminine. Depending upon how much support a gifted girl is receiving from significant others, a decrease in math and science may result. Teachers and counselors are significant others who can reverse the trend.

Teachers and counselors can positively influence gifted girls by encouraging their achievement. Special classes or programs designed for gifted girls can increase their achievement. Female teachers of math and science can be positive role models for the girls. Counselors should be aware of programs designed for gifted girls and encourage their participation. Career counseling is also important. Gifted females, made aware of career choices, can investigate requirements needed for life goals.

4. What can be done to help the gifted female from feeling inferior to male counterparts, especially in the areas of math and science? Through a review of literature several solutions were found. Positive reinforcement from home (especially fathers), peers, and school (teachers and counselors) will serve to alleviate the attitudes. Through positive reinforcement self-confidence to pursue advanced studies in math and
science can be accomplished. This reinforcement must be continuous to ensure continued success.

A reeducation of males as well as females, in the total population is needed to encourage females to strive to reach full potential. A redefining of what is male and what is female can help overcome female inferiority. Females can compete in math and science classes and careers if there is a general acceptance. Aptitude is a key in advanced classes and careers, not whether one is male or female.

5. What programs have been implemented to help gifted girls and how effective have they been? Several programs have used career awareness as their central theme. The hypotheses stated that if girls are more aware of career opportunities in math and science, they will be more likely to enroll for advanced classes in math and science. Most programs were designed for middle grade gifted girls, while others were for high school gifted girls. In general, the programs used female role models as instructors and speakers. They focus on female contributions to the fields of math and science. The programs, in most cases, increased career awareness.

Other programs included special math classes for gifted girls only. There were female instructors. Math was presented in such a way as to deal with social issues. Special reinforcement from home was essential to the success of these programs.

6. What career opportunities are available and how aware of these careers are gifted girls? There are many
career opportunities available. Of importance is the fact that gifted girls are not aware of them and do not perceive themselves in these roles. The education of guidance and career counselors will help alleviate this situation. If girls learn early what careers are available they can plan their education accordingly. They can be prepared to meet the challenges of advanced math and science academics and careers.

Discussion and Conclusions

Currently, educators are more aware of the needs of gifted females. Steps are being taken to better equip these girls. Several school systems have adopted programs to help gifted girls. The results have been positive. Gifted females have a greater chance for success in math and science than ever before. There still is much to be done to educate the general population. If gifted girls are educated toward career goals, a greater level of math and science participation can occur. Major contributions in the areas of math and science by women will help gifted girls to realize their potential.

Limitations of the Study

Some of the data used was from secondary sources. This could result in bias or inaccuracies in quoting sources. Five of the primary studies were not available at this time in this library.
Recommendations and Implications for Further Use

More research on gifted girls is necessary to find how these girls can better meet their potential. Most of the present studies are limited, and sample size is small. A long-term study of gifted girls beginning in the middle grades and following them through adulthood would be of benefit in designing appropriate programs. These programs would better meet the needs of gifted girls. The needs and characteristics that set these girls apart from the rest of the population would be better understood.

Implications for Future Use

The greatest use of the findings of this literature review is that there is a need for special programming for gifted females. While gifted girls have the intellectual ability to excel in math and science, they do not usually select these or related fields. Several studies indicated ways to alleviate the problem. Implementing career awareness courses for gifted girls may help to improve participation in advanced math and science. Of great importance is the wasted human potential because of ignorance of available opportunities.
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