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## Investigation into Parents' Attitude towards Mathematics for Girls at Intermediate Level in FATA

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### Abstract

The purpose of the study was to investigate parents' attitude towards mathematics for girls and the factors affecting their attitude perceived by parents of the students in government Girls' Colleges in Federally Administered Tribal Area (FATA) of Pakistan. Convenience and random sampling techniques were applied. A qualitative research approach was adopted to investigate the questions and an open-ended interview was the main data collecting tool of the study. Data were collected by using open-ended interviews from fifteen parents of those students who dropped mathematics at college level from two girls' colleges in Khyber Agency. The collected data were analyzed by using codes and categories. The key findings of the study showed that the parents' attitude towards mathematics for girls was negative. Socio-cultural constrains about math's-related jobs, stereotype threat about girls for mathematics, lack of parents-college communication and lack of counseling services were the main factors responsible for negative attitude towards the subject. It was, therefore, recommended that parents awareness campaigns for math-girl future, arrangement of special classes by trained female teachers for diluting math's phobia from students at primary level, creating new mathematics related jobs for female gender which are not contrary to their cultural values, provision of teachers and counseling services and establishing parents- teachers' council in colleges were necessary.

**Keywords:** Parents, Mathematics, Negative Attitude, Socio-Cultural Factors, Counseling.

### Introduction

In Pakistani education perspective, mathematics is compulsory subject up to the secondary level while it becomes optional at intermediate/college level. In this era of science and technology for which mathematics is the most important subject, it has been observed in Federally Administered Tribal Area (FATA) of Pakistan that a lot of girls are losing interest in selecting mathematics at college level. This is alarming because the nation has expectations from both genders to be equipped with modern science and technology to face the challenges of 21<sup>st</sup>

century. Government of Pakistan has provided equal opportunities to female gender to make contribution in Science, technology, engineering and mathematics (STEM) for prosperous Pakistan. Modern Science and technology is regarded as critical to national economy of a country and Mathematics is a key subject in these fields. There are many factors that affect students' attitude towards science and mathematics such as method of teaching, attitude of teachers, societal views of scientist, social implication of science, scientist and achievement, students' cognitive style, age, gender and parents influence on subject selection (Adesoji, 2008). For this purpose a study was conducted to investigate parents attitude towards mathematic as well as factors responsible for the attitude towards mathematics.

## **Review of Literature**

### **Attitude towards Mathematics**

Attitudes are evaluations people make about objects, ideas, events, or other people. Attitude can be positive or negative. Explicit attitude are conscious beliefs that can guide decisions and behavior. Implicit attitudes are unconscious which can affect decisions and behavior. The attitude of an individual can be negative or positive towards a particular object, subject or idea (Kind et al., 2007). Student's achievement in mathematics and their participation in advanced level mathematics is a reflection of their parents' attitudes and aspirations (Ma, 2001). According to Marttene (2005), the sole factor in children's educational success is their parents and their attitudes towards learning. However, it seems that many parents are more actively involved in their children's language learning than mathematics (Cannon, 2008). According to study of Papanastatiou (2000), that parental and social attitude about Math's class room experiences has effect on girls which cause them to feel that they are inferior to boys in Math's.

The study of different literatures reveals that different types of parental activities are involved in children subject and career selection. In a research Catsambis (2001), argued that the more consistent findings in the research of parental involvement was the importance of parents educational expectations from their children, post-secondary planning , parental support and encouragement can put the child on the correct direction of his career. Research has shown that parents influence students' attitude as well as achievements in Math's (Campbell, 2000).

Society is the group of people with common territory, interaction and culture. According to the report of CAWMSET (2000), that parents and society are responsible for the lack of interest of girls in the subject of Mathematics. They discourage girls to go to traditionally male-dominated fields like engineering for which mathematics is an essential subject. The reports of CAWMSET (2000); Reis (2001) generally supported that society usually discourage girls from entering traditionally male dominated fields such as Science, mathematics, engineering and technology (SMET) for which mathematics is compulsory at intermediate level. The study of Jensen and Seltzer (2000) showed that some factors like individual study, parent's role and socio environment had significant effect on education, decision and achievement in the maths of young students. The study of Khan (2017), concluded that parents' role and cultural constrains hinder girls' choice of mathematics.

Stereotype is an anxiety in which one observes another's actions through the lenses of a negative stereotype (Shapiro and Neuberg, 2007). According to Beilock (2008); Beilock et al (2007), it is a situation that undermines the performance of an individual in negative sense of

domain. In a research Gunderson et al (2011) concluded that teacher' and parents' own anxiety about Math's greatly influenced girls' attitude towards mathematics. There are some environmental factors that contribute to the gender related attitude about math's such as parents and teachers which are held by women and girls, (Gunderson et al., 2011). Parents and teachers' gender-related mathematics attitude including their stereotype and anxieties can transfer to girls and play a critical role in development of math's attitude and interest in girls (Gunderson et al., 2011).

Majority of teachers and administrators consider themselves to be the sole leaders of their class rooms and schools leading to the ignorance of parents (Epstein & Sanders, 2006). School-parents partnership and communication guarantee educational achievement of the students and creates confidence in parent to assist their children in curriculum (Richardson, 2009). School has major effect in influencing for parent involvement (2009). According to Price-Mitchell (2009), school leadership has the key role in establishing home-school relationship. For the students' achievement maintaining a strong and positive partnership is essential on the part of an effective teacher (Obeidat & Al-Hassan, 2009). Teacher can't educate their students alone without the collaboration of parents, so it is impartment to develop partnership for the well-being of children (Fullan, 2007). Parents- school partnership is very beneficial for schools (Clerke, 2007). School personnel and parents and improve communication. According to the study of Lumpkin (2010), conduction of regular orientation sessions with parents will be effective for school-parents relation to assess how parents can help their children in education.

Counseling is a relationship between a counselor and a client or counselee with a view of helping the counselee to understand his or her problems in relation to his/her thoughts, feelings and behavior in order to make informed choice of action. School counseling program is keys to the success to the best choice of students' career (Maitra, 2007). Lack of educational and career counseling is one of the serious issues faced by the students of FATA. Due to absence of career counseling services from educational institutions students face challenges in selecting right subjects according to their aptitude, abilities, inclination and interest. Ndambuki and Mutie (2007), in their study, concluded that due to lack of guidance and counseling services, many students go and leave the school bearing no idea of the kind of job they should train for. In the research of Rao, (2004), it was concluded that student's failure is a serious concern of counseling. These prevailing challenges are educational, cultural, economic and personal in nature. The findings of the research conducted by Halima & Fatma, (2012), highlighted that there is lack of awareness and sense of significance in government schools on need of career counseling. Some parents act as career counselors for their children. Some teachers apply traditional methods for giving career counseling to students.

### **Method and Procedure**

The purpose of the study was to investigate parents' attitude towards mathematics and the factors affecting their attitude. For this purpose qualitative method was adopted for this study. Qualitative research offers a deeper understanding of the persons being studied (Clerke, 2000). The researcher gains deeper insight into the situation and the participants get opportunities to read data about their feelings, expressions and actions. Qualitative research also contributes to leadership development of the research participants (Beettie, 2000). The use of qualitative

method was due to some facts for example accessibility, limited number of participants and good communication between researcher and respondents. Qualitative data can be in the form of observations, written documents or open-ended interviews which give valid and reliable results.

The sample of the study was fourteen participant parents of the students from two Government Girls' intermediate Colleges in Jamrud Khyber Agency, who dropped mathematics at intermediate level. The selection of colleges was convenience while parents were randomly selected. In order to conduct a good interview the participants must feel ease and express their view point freely (Bogdan and Beklin, 2003). In order to conduct interviews with participants, I got the addresses of the targeted participants from the college after taking permission from principals of the targeted colleges. The interview was informal and non-directive because in open-ended interview a researcher probes more deeply in the real views of the respondents, then these forms take the shape of conversation rather than interview (Bogdan and Biklen, 2003). I explained the purpose and introduce myself and recorded the interviews' main points. During the interview, I showed sincerity and developed trust among the participants and tried to convert the formal interview into conversation between the two persons. I gave respect to the respondents and did not show superiority over them. I assured them that the information recorded will be used for academic purposes only and their names will be kept in secrecy. Thus soft data were obtained which were free from external pressures and impurities. Two research questions, in the study, were developed leading to six sub-questions for interviews.

Q.1.What is the attitude of parents towards mathematics for girls?

Q.2.What factors affect parents' attitude towards mathematics?

Sub- questions include:

- What do you say about mathematic as a subject for girls at college level?
- Do you influence your daughter at the time of admission?
- Do you propose similar subjects for males and females at college level, if not yes why?
- Which types of jobs are not allowed in your society for girls?
- Does college administration communicate you or provides counseling at the time of admission of your girl?

The data analyzed were headed by five main categories (a).Parents' attitude towards mathematics. (b). Parents influence on subject selection. (c). Stereotype effect. d). Socio-cultural constrains. (e). College-parents communication and counseling services. For analysis of collected data, I used open coding and applied thematic approach by categorizing data. I used open coding, because it is best way to use open coding (Neuman, 2003). Prior to code the collected data, I divided all the data in categories and gathered all information which was related to each category and then used systematic coding. After careful reading again and again the data made a sense.

### **Analysis and Results**

The purpose of the study was to investigate parents' attitude towards mathematics and to identify the factors affecting the attitude of parents at college level in FATA. Data were collected through interviews from the respondents. The collected data were analyzed by coding and categorizing and thematic approach was applied. Based on the questions asked in interview from the respondents the main findings of the study are presented as follows.

**(a) Parents' Attitude towards Mathematics as a Subject for Girls is Negative**

When we came across the first question related to participants' attitude about mathematics, maximum of the parents had the views that mathematics was not beneficial for girls. They complained about its toughness, abstract nature, non practicability, lacks of math's teachers at colleges and non-availability of female private tutors.

One of the participants, Mr. Kalid Afridi (pseudonyms) said,

"Math's is not suitable for girls and only boys can excel in mathematics. Math's related jobs are also limited and don't suit girls, after studying math's a girl will become an engineer, she will go for a job to factories with males! On the roads with males! It's not acceptable in our culture; I do not propose mathematics for my daughter...."

Another participant, Mr. Gul Wali expressed his views as

"Mathematics is a tough, laborious, impractical and dry subject bearing no sense for girls. In old times it was beneficial and was related to daily life problems. The present Math's can't solve problems of daily life, I don't propose it for girls".

**(b) Parents Influence Girls' Choice at the Time of Admission**

When we asked the question about the parents influence at the time of admission, most of the parents said they are involved and influenced their daughters at the time of admission.

One of the respondents parent Mr. Haji Gul, said

"Yes my daughter asks me about subject to be selected at the time of admission. I am a father; I have to spend on her education. My daughters do consult with us at the time of admission for subject selection. I will decide according to their capabilities. It's a matter of mutual understanding..."

One of the parents Mr. Jan khan said,

"Math's is very far from girls range, they find difficulties in understanding it because it very tough, abstract and non practical..."

Mr. Munawar khan said,

"For girls the selection of Math's is a problem. We know there is shortage of Math's teachers in college, and female tutor are not available for tuition. We can't allow our girls to do tuition with male tutors. That is why we do not propose it".

**(c). Stereotype Threat for Girls about Mathematics was Observed in Parents**

When the question about the same subjects for males and female was asked, the majority of the respondents said that they do not propose mathematics for female because they are mentally weak and can't perform like male.

Mr. M. Idris said

"God has bestowed male and female with different nature, mentalities and capacities. Males are strong while females are weak physically as well as mentally, so they are capable of learning different subjects. As for as the selection of mathematics is concerned, I think math's has nothing to do with females at higher level. For females medical courses are more suitable".

**(d) Socio-cultural Constrains affect Parents' Attitude towards the Subject**

All the parents were asked about the jobs of engineering and mathematics related jobs for their girls, they said that their society does not allow girls to do job in male dominated fields and Pakhtun do not send their girls to male working fields for job. That is why they don't propose mathematics for them.

Mr. Ghani Dad (pseudonyms) said.

"We know that engineering and math's related fields are very poplar but we as a Pakhtun, do not send our daughters to males fields. Engineering jobs are suitable for males only....."

Mr. Taza Gul said.

"It's very shameful in our society that girls go for a job in males' fields. They are not considered as real Pakhtun girls....."

**(f). Lack of Parents-college Communication and Counseling Services Affect Parents' Attitude towards the Subject**

When I asked the question from the respondents regarding the parents-school communication, all of the parents said that school/colleges don't communicate us neither at the time of admission nor at the running session of college. As for as college counseling services are concerned, most of the participants told that they were not aware of such services in colleges for selection of subject or students' career

Mr. Sahib Gul said.

"I for the first time have gone to college at the time of admission, waiting outside the gate, till now I have not seen her college. I don't know about the counseling services of schools and colleges...."

Mr. Abdul Wahab said.

"College has never organized parent- teacher meeting in this year. We don't know the future of our daughters because we do not know what is better for her...."

One of the participants Mr. Nor Sher expressed his views as

"Schools and colleges in our tribal area don't have these facilities which are very important for the future of students. Neither principal contact us for this purpose nor we visit the college to avail these opportunities because we know that principal knows better and we know nothing about subject selection..."

**Conclusions and Discussion**

The main purpose of the study was to investigate parents' attitude towards mathematics for girls and to identify factors affecting their attitude towards mathematics at intermediate level in FATA. The sample of the study was fourteen parents of the students from two girls' colleges in Khyber Agency. The selection of schools was convenience while parents were randomly selected. An open-ended interview was the main tool for data collection. In the light of results of the study it was revealed that the attitude of parents towards mathematics for their girls was negative. From the study it was concluded that at the time of admission parents had influence on girls. This result was in the favor of the findings of Campbell (2000), that parents have influence on students' attitude as well as achievements in Math's. From the study it was concluded that socio-cultural constrains were the prominent causes of negative attitude of parents about mathematics

for girls. These findings were supported by the reports of CAWMSET (2000); Reis (2001); Khan (2017), that parents and society are responsible for the lack of interest of girls in the subject of Mathematics. They discourage girls to go to traditionally male-dominated fields like engineering for which mathematics is an essential subject such as Science, mathematics, engineering and technology (SMET).

The present study also concluded that stereotype effect about girls was observed in parents, which caused the negative attitude towards mathematics. The results were in harmony to the studies of (Gunderson et al., 2011; Papanastatiou, 2000). They concluded that teacher' and parents' own anxiety about Math's greatly influenced girls' attitude towards mathematics. There are some environmental factors that contribute to the gender related attitude about Math's such as parents and teachers which are held by girls and that parental and social attitude about Math's class room experiences has effect on girls which cause them to feel that they are inferior to boys in Math's.

The study also concluded that the lack of parents-school communication caused the negative attitude of parents towards the subject. These findings were in accordance with the conclusions of Fullan (2007); Lumpkin (2010), that teacher can't educate their students alone without the collaboration of parents, so it is impartment to develop partnership for the well-being of children and conduction of regular orientation sessions with parents will be effective for school-parents relation to assess how parents can help their children in education.

The present study also showed that lack of counseling services in school caused negative attitude of parents towards mathematics in tribal area. These findings are in harmony to the conclusions of the study of Rao (2004), which concluded that student's failure is a serious concern of counseling. These prevailing challenges are educational, cultural, economic and personal in nature. In addition, globalization and the continued rising of competitiveness are major challenges for the youth today. The findings of the research conducted by Halima & Fatma (2012), also supported the present study that there is lack of awareness and sense of significance in government schools on need of career counseling.

### **Recommendations**

From the present study it was concluded that parents' attitude towards mathematics for girls was negative and Socio-cultural constrains about math's-related jobs, stereotype threat about girls for mathematics, lack of parents-college communication and lack of counseling services were the main factors responsible for negative attitude towards the subject.

The results of the study will be helpful for policy makers, curriculum designers and government stakeholder in bringing about changes in attitude of parents by launching mathematics scope awareness campaigns for female, creation of jobs which are not contrary to their cultural values, revision of mathematics, providing facilities in girls' colleges, provision of special scholarships for female students, strengthening of parent-school communication and counseling services at school and college levels. To reduce math's anxiety and phobia for girls, special training classes should be launched at primary level.



### Suggestions

- The study may be extended to the whole Khyber Pakhtunkhwa to unfold the causes of parents' negative attitude towards Mathematics.
- The researcher recommends a study to be conducted to unearth the factors responsible for girls' low enrolment in undergraduate courses like Physics, Computer Science and Statistics.
- The government will take steps by launching awareness campaigns for the scope of mathematics for girls to make parents' attitude positive towards the subject, which will cause girls to join Science Technology Engineering and Mathematics (STEM) fields for prosperous Pakistan.

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