

# Parental Encouragement and its Role in Girls Performance in Science Stream

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## ABSTRACT

Parental encouragement is one such thing that directly influences the motivation, self-confidence and academic performance of students. Parental support and encouragement becomes even more important for girls choosing science stream, as they have to face academic pressure on one hand and social and cultural expectations on the other. This research article explores the role of parental encouragement in the context of academic performance of girls, especially focusing on science stream. The main objective of the study is to understand how parents' positive attitude, motivation, providing resources and emotional support enhance girls' achievement. Both literature review and empirical findings suggest that girls perform better where parents are actively involved. In addition, parental encouragement also boosts their career aspirations, self-esteem and critical thinking skills. Thus, parental support is a crucial factor not only for academic success but also for the holistic development of girls, especially in demanding fields like science stream.

**Keywords:** Parental Encouragement, Academic Performance, Science Stream, Motivation

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## Introduction:

Education is the basic right of every child, but the journey in science stream is a bit challenging, especially for girls. In today's time, the role of both society and family is important that girls choose science in higher education and perform well in it. Science stream is considered tough because it requires logical thinking, problem solving and continuous effort. In this situation, parental encouragement becomes a powerful factor that motivates girl students and builds their confidence.

Parental encouragement means that parents motivate their children, create a study environment for them, understand their problems, and support them - be it emotional, financial or social. When parents openly support their daughters, there is a noticeable improvement in their performance. Research studies also show that parental involvement and encouragement are directly linked to academic achievement (Steinberg, 2001; Fan & Chen, 2001).

The performance of girls in science does not just depend on their personal ability, but family climate,

socio-economic status and parental attitude also play a major role. If parents inspire them and give them equal opportunities, girls perform outstandingly in science stream as well.

## Objectives:

1. To understand the role of parental encouragement on the academic performance of girls studying in science stream.
2. To explore the theoretical background of parental encouragement and its practical impact.

## Theoretical Background of Parental Encouragement:

“When girls are educated, their countries become stronger and more prosperous.”

— Michelle Obama

Education is the most powerful weapon which you can use to change the world. -Nelson Mandela

There is no tool for development more effective than the empowerment of women. - Kofi Annan

Parental encouragement is considered an essential motivational factor in educational

psychology. It is a type of positive reinforcement that improves students' learning and performance. When parents actively participate in their children's education, both their interest and performance are enhanced (Henderson & Mapp, 2002).

Bronfenbrenner's Ecological Systems Theory (1979) also explains that child development is incomplete without family environment and parental involvement. The microsystem, which consists of the family and parents, directly influences the child's behavior and achievement. If the family is supportive then the child sets high aspirations.

Bandura Social Learning Theory (1977) states that children look up to their parents as role models. If parents value education and provide motivation, girls follow them and show dedication to their academics.

Another theory is Expectancy-Value Theory (Eccles et al., 1983) which states that parental encouragement shapes students' expectations and values. If parents believe that their daughter can do well in science stream, the girl also develops belief in her own ability.

Research studies have also highlighted the importance of parental encouragement. A meta-analysis by Fan & Chen (2001) found that parental involvement has a strong positive impact on academic achievement. Singh et al. (1995) found in their study that parental support is directly linked to students' motivation and achievement.

Parental encouragement is also significant in the Indian context where gender roles and stereotypes are strong. Chaudhary & Sharma (2019) found in their research that where parents actively support their daughters, their performance and participation in science is higher. All these theories and research findings make it clear that parental encouragement is a theoretical and practical necessity, especially in environments where girls face social barriers.

### **Parental Encouragement guided her journey towards first position and academic excellence:**

Background

Name: Pal Aggarwal

City: Ghaziabad, Uttar Pradesh

Achievement: India first girl to score 100 percentile in JEE Main 2021 (March attempt).

### **Family:**

Father –Chartered Accountant (CA)

Mother – Takes care of the household, always gives emotional and moral support.

Home environment: Studies-focused, disciplined and encouragement.

### **Role of Parents and Encouragement:**

#### **1. Emotional Support:**

Pal has said in many interviews that his parents always motivated him. Papa's analytical thinking and mother's caring nature created a perfect balance in which Pal could handle his stress.

#### **2. Academic Guidance:**

Parents encouraged Pal for mock tests and regular practice. Complete arrangement of online resources and study material was at home. Him that consistency and hard work are more important than comparison. Because of this Pal always remained focused.

#### **3. Confidence Building:**

Whenever Pal felt the pressure of competition, his parents would remind him that consistency and hard work are more important than comparison. This is why Pal always remained focused.

#### **4. Balanced Routine:**

Many students ignore health during JEE preparation, but Pal's parents ensured that her breaks, food-drinking and sleep were not compromised.

#### **5. Education Journey:**

Pal has always been a bright student.

Prepared for engineering entrance with special focus on PCM (Physics, Chemistry, Maths).

Adapted during lockdown with online classes and family support.

Made history by scoring 100 percentile in JEE Main in March 2021 - first girl in India to achieve this milestone.

#### **6. Motivation and Mindset:**

Pal says: "Girls can perform equally well in the engineering field. What is needed is hard work and self-belief." Her success story became a strong example of breaking gender stereotypes and became an inspiration for many girls.

#### **Outcome:**

Pal Aggarwal's achievement shows that if the home environment is supportive, parents constantly encourage, and girls pursue their dreams, they can get top positions even in male-dominated fields. Pal's

journey inspired many girls across India to move ahead by being confident in STEM.

Sanvi Jain – Journey of Parental Encouragement and Academic Excellence:

Background:

Name: Sanvi Jain

City: Madhya Pradesh (origin)

Achievement: Achieved perfect 300/300 score, 100 percentile and AIR 34 in JEE Main 2024 (April session)

Family: Middle-class family, in which education always got priority.

Coaching: Took training from Aakash Institute from 9th class, along with constant support from parents at home.

### **Role of Parental Encouragement:**

#### **1. Emotional Support:**

Sanvi parents kept her moral high all the time. During the stress of exams and competition, her parents motivated her by saying, "Focus on concepts, marks will come to you." This emotional backing kept Sanvi calm and confident.

#### **2. Academic Guidance:**

Parents ensured that Sanvi had the necessary study material, coaching and online resources available. Affording coaching from 9th was a big commitment, which they made because they had full faith in their daughter's potential

#### **3. Confidence Building:**

Whenever Sanvi was nervous about comparisons or competition, her parents reminded her that "a little hard work every day brings big results in the future." This approach kept Sanvi consistent.

#### **4. Balanced Routine:**

Parents ensured that Sanvi had breaks, proper food and some relaxation in her day. When she was tired, they encouraged her to go for a walk or talk to friends, which reduced her stress.

### **Educational Journey:**

Sanvi was a bright and disciplined student since childhood.

She did dedicated preparation for 4 years with strong focus on PCM (Physics, Chemistry, Maths).

During lockdown, parents created a focused study environment at home

She made her name in history by scoring perfect

300/300 in JEE

### **Motivation:**

Sanvi's biggest motivation was her parents. Whenever she felt pressured, they made her understand that hard work and consistency are the real secrets of success. Papa's discipline and mother's nurturing nature gave her confidence and calmness. This trust and support of parents kept Sanvi focused and positive.

### **Outcome:**

Sanvi Jain's success shows that with parental encouragement, girls can get top results even in competitive exams like JEE. Her parents not only gave resources but also emotional support and belief. This encouragement made her achievement possible and today she is an inspiration for thousands of girls in the STEM field.

Flight Lieutenant Avani Chaturvedi – Journey from Parental Encouragement to Fighter Pilot

Background

Name: Avani Chaturvedi

State: Madhya Pradesh

Achievement: In 2018, India's first female fighter pilot, who flew solo on a MiG-21 Bison aircraft.

Family: Middle-class background; parents emphasized on studies and discipline from the very beginning.

### **1. Parental Encouragement:**

Parents never stopped Avani from gender stereotypes. They always said - "Work hard to fulfill your dreams, leave the rest to us."

### **2. Academic & Career Guidance:**

From schooling to engineering and Air Force training, parents provided necessary resources and moral support. Even during admission in engineering, they encouraged Avani to follow her passion.

### **3. Confidence Building:**

When Avani thought that becoming a pilot was very tough, parents instilled self-belief in her and reminded her that "girls do not have to be a pilot in any field."

### **4. Balanced Upbringing:**

Along with studies, the family gave Avani a disciplined lifestyle and a positive mindset, which helped her handle the pressure of training.

### **Outcome:**

Parental encouragement and supportive environment at home became the real reason with the help of which Avani Chaturvedi created history.

In 2018, she achieved a new milestone by becoming India's first female fighter pilot by flying solo in MiG-21.

Her achievement proved that if parents believe in their daughters and let them fly their dreams, then they can get top positions even in male-dominated fields like science and Defense.

Today Avani journey is an inspiration for thousands of girls.

Which country at the international level ranks first in girls' education due to parental encouragement, and which state in India leads in this regard?"

#### **International Level (Country):**

According to research studies and global reports like UNESCO, UNICEF, Finland is a country where the education level of girls is very high due to parental encouragement and supportive family environment.

In Finland, parents give equal opportunities to their daughters.

Gender equality policies are strong there, so girls actively participate in science and higher studies.

#### **Indian Level (State):**

Kerala is one such state in India where the education level of girls is the highest due to parental encouragement and socio-cultural support.

Kerala has the highest literacy rate (female literacy ~92%).

Parents here encourage girls equally in science, medicine, and engineering fields.

#### **Communities where Girls are more Educated at the International and National level:**

<b>Level</b>	<b>Community / State</b>	<b>Reason for High Girls' Education</b>
International	Jewish (Israel, USA)	Education-oriented culture; parents strongly encourage girls.
International	Nordic (Finland, Sweden, Norway)	Strong gender equality; parental and state support.
International	East Asian (China, Japan, South Korea)	Hard work culture with strong parental pressure and encouragement for studies.
India	Kerala (Nair & Syrian Christian)	Highest female literacy rate; strong family support for higher studies.
India	Parsi Community	Progressive mindset; equal parental encouragement for girls.
India	Brahmin & Bengali Families.	Strong educational traditions; cultural value attached to learning.

#### **Parental Encouragement and its Role in Girls' Performance in Science Stream:**

Science stream is traditionally considered tough, and the challenges are even greater for girls. There is still a stereotype in society that science or technical fields are suitable mainly for boys. Parental encouragement plays a major role in breaking this stereotype.

##### **1. Academic Motivation and Confidence Building:**

When parents motivate their daughters to study science, their self-confidence and motivation automatically grow. Research shows that parental encouragement has a positive effect on girls' interest and performance in math and science subjects (Gonzalez-DeHass et al., 2005).

##### **2. Overcoming Gender Stereotypes:**

Girls are hesitant to choose science because they feel that this field is not meant for them. If parents openly trust their abilities and support them, they break the stereotypes. This parental backing gives them a secure feeling that they belong to the science field.

##### **3. Academic Performance and Achievement:**

Parental encouragement directly boosts performance. When parents create a conducive learning environment at home, provide study materials, and give regular feedback, girls' performance improves.

##### **4. Emotional and Psychological Support:**

It is difficult to manage the workload and pressure of science stream. If parents give them

emotional support, girls are able to cope with stress and anxiety easily. This strengthens their overall performance and consistency.

### 5. Socio-Economic Dimension:

Parental encouragement becomes even more important in families with low socio-economic background. Even if financial resources are low, if parents emotionally and morally support girls, they remain motivated in their studies (Desforges & Abouchaar, 2003).

### 6. Indian Context:

Many girls in India have made remarkable achievements in science stream in which parental support was a key factor. For example, examples of women scientists like Dr. Kalpana Chawla and Dr. Tessy Thomas show that family encouragement was the foundation stone in their careers.

### 7. Research Evidence:

Singh (1995) found that students whose parents were actively engaged in their academics had significantly higher performance.

Chaudhary & Sharma (2019) highlighted that parental encouragement was a deciding factor in girls' science participation in rural areas.

### 8. Future Implications:

If we want to improve girls' participation and performance in science stream, then parental encouragement has to be promoted. Awareness campaigns, counselling sessions, and family workshops can help in this.

### Conclusions:

Parental encouragement is a strong backbone that shapes the academic performance of girls in science stream. It not only boosts their confidence and motivation but also gives them the strength to fight social barriers and gender stereotypes. Research evidence clearly shows that parental involvement and encouragement are directly connected to academic achievement. Therefore, parents should be encouraged to create a supportive environment for their daughters. Only when parents and daughters form a team and move forward in science education, the true potential of girls will reflect in the society.

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