

Birth Order Versus Student Performance

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Abstract

This study primarily focused on investigating how birth order relates to students' academic performance. It's widely recognized that students in different birth positions tend to achieve distinct academic results across various educational levels. The research involved analyzing life history data, including academic achievements, from students in Pakistan to assess the role of birth order. Due to the socioeconomic limitations in Pakistani society, more substantial investments are made in the education of the first-born child, while subsequent siblings often receive fewer resources. The study's findings strongly support the idea that first birth significantly influences academic success. A sample of 400 secondary school students was studied, and Chi-Square (χ^2) analysis demonstrated a clear and positive relation between birth order and educational achievements. These results have the potential to impact and change parental behavior regarding the importance of considering birth order beyond the first-born child in their educational support.

Keywords: Birth Order, Academic Achievement, Secondary Schools.

Introduction

The study explores the association between birth order and academic achievement among students. Birth order, the sequence of a child's birth in a family, has been a topic of interest in psychology and education. Some theories suggest that birth order may influence a student's academic performance, with first-born children potentially having an advantage in terms of responsibility and leadership skills, and later-born children benefiting from the experience of their older siblings. By investigating this relationship, the study aims to provide insights into how birth order might impact a student's academic success and inform educational practices and interventions.

Khan, et al (2018) In Pakistan, birth order significantly influences the academic

achievement of secondary school students. Typically, parents allocate more resources to the education of first-born children while facing financial constraints that lead to reduced investments in later-born siblings. The mother's age at childbirth introduces additional variables affecting a child's educational outcomes. Several studies emphasize the significance of birth order in influencing a child's academic accomplishments. The connection between family size and educational achievement is closely related to birth order, as family sizes differ across households, and the birth order varies among siblings within the same family. This paper investigates how birth order impacts years of education across various family sizes, recognizing the complex interplay between family size and birth order.

Albarkheel et al (2019) the relationship between a child's birth order and their academic achievement has been a topic of interest in educational research. Several studies have investigated whether a child's position within the family, whether they are a first-born, middle-born, or last-born, might influence their academic performance. Certain theories propose that first-born children often achieve higher academically because of factors such as increased parental attention and responsibilities. Conversely, later-born children may benefit from observing and learning from their older siblings. These dynamics can influence learning styles, study habits, and motivation, ultimately affecting academic outcomes. Research in this field seeks to uncover the nuances of this relationship and its implications for educational strategies and interventions.

Angrist, Lavy, and Schlosser (2005) the impact of birth order on educational and economic achievements is a topic of significant interest. The theory suggests that birth order has a substantial influence on an individual's prospects. Typically, first-born children benefit from a home environment with two adult parents, leading to a relatively high average intellectual level. Conversely, second-born children enter an environment with the potential for a lower average intellectual level, as the older sibling contributes to the intellectual atmosphere, effectively reducing the overall average. This pattern extends to subsequent siblings, with each child exposed to a progressively lower intellectual environment, especially when multiple older siblings are present. Consequently, there exists an inverse relationship between birth order and educational attainment, primarily due to the diminishing intellectual environment as one moves down the birth order hierarchy.

Keller, Troesch, and Grob, (2015) the differences in the development of first-born children are attributed to the distinct treatment they receive from their parents compared to their later-born siblings. Initially, first-born children enjoy exclusive attention and affection from their parents until younger siblings arrive. As the family expands, the first-born gradually shares this attention but maintains their unique status as "the first-born," affording them a sense of primacy within the family. This position leads to higher expectations of maturity and responsiveness, setting them apart. As they grow, they often take on caregiving roles for their younger siblings, essentially becoming surrogate parents. This role provides ample opportunities for social learning, potentially contributing to their unique development.

Academic Achievement and First-Born

Salvanes, et al (2016) the relationship between academic achievement and birth order, particularly the advantages of being a first-born child, has been the subject of numerous studies. These studies have often produced mixed results. Some research suggests that first-born children tend to have a slight advantage in academic performance. For example, Zajonc and Markus (1975) proposed the "confluence model," which suggests that first-born children have a cognitive advantage due to their early exposure to adult language. This early exposure results from the fact that first-born children have their parents' undivided attention for a period, allowing them to interact with adults more frequently. However, it's important to note that while some studies indicate small advantages for first-born children in areas like IQ and academic performance, the overall effect size is relatively small, and birth order is just one of many factors that influence academic achievement. Birth

order effects can also vary across different cultures and families.

Lamb (1982) Parents often exhibit more lenient behavior towards their first-born child, demonstrating a soft spot and investing more heavily in their education. First-born children frequently receive extra attention and involvement in educational activities from their parents, potentially leading to academic achievements. Studies indicate that mothers of first-born children tend to show more overt expressions of love and emotional support, such as hugs and kisses, especially when the child is successful in assigned tasks. Regarding the children themselves, first-borns tend to be more dependent, often seeking their mother's assistance and being more likely to turn to her during testing sessions compared to later-born children.

The link between birth order and students' academic performance has been a focal point in numerous studies. Birth order indeed exerts a significant influence on children's educational outcomes. In most cases, first-born children enjoy the advantage of undivided parental attention and access to more resources, which often contributes to their superior academic achievements. In contrast, later-born children often have to share these resources and may receive less parental guidance and financial support for their education, impacting their academic performance (Rodkin, 2017). As such, birth order is an essential factor to consider when examining the academic achievement of students.

Parents' Behavior Toward First-Born

Parents' behavior toward their first-born children is often characterized by a more cautious and attentive approach. Numerous studies have indicated that parents tend to be more lenient and attentive to their first-born children, investing more time and resources in their upbringing and education

(Zajonc, 2001). This can manifest as heightened emotional support, engagement in educational activities, and a tendency to overlook the mistakes of the first-born. The first-born children often receive greater displays of love and affection from their mothers, such as hugs and kisses, especially when they excel in tasks. In return, these children may develop a stronger dependence on their parents, often seeking their assistance and support (Brody & Hall, 2000). This unique parental approach toward first-born children may contribute to their advantageous educational outcomes.

First-born children often enjoy certain advantages within the family dynamic. As the initial child in the family, they typically receive a substantial share of parental attention and resources, resulting in higher educational achievement (Black, Devereux, & Salvanes, 2005). Parents tend to be more invested in the success of their first-born child and engage in activities that promote their intellectual and academic growth. The phenomenon of "birth order" suggests that the first-born child is more likely to embrace a leadership role, acquire higher cognitive abilities, and experience greater levels of responsibility (Sulloway, 1996). These advantages can significantly influence the child's future academic and career achievements, as well as their overall personal development.

The connection between physical health and academic achievement, often summed up by the adage "a sound mind in a sound body," is widely acknowledged in educational research. Good health, which includes proper nutrition, regular exercise, and overall well-being, positively influences a student's academic performance. Numerous studies have demonstrated that students who maintain a healthy lifestyle exhibit improved cognitive abilities, better concentration, and enhanced memory (Taras, 2005).

Additionally, health impacts attendance rates, as healthier students are less likely to miss school due to illness, ensuring they have more learning opportunities. Proper

nutrition, physical fitness, and a focus on emotional well-being contribute to students' academic success and overall educational experience.

Diagram: First-Born and Academic Achievement

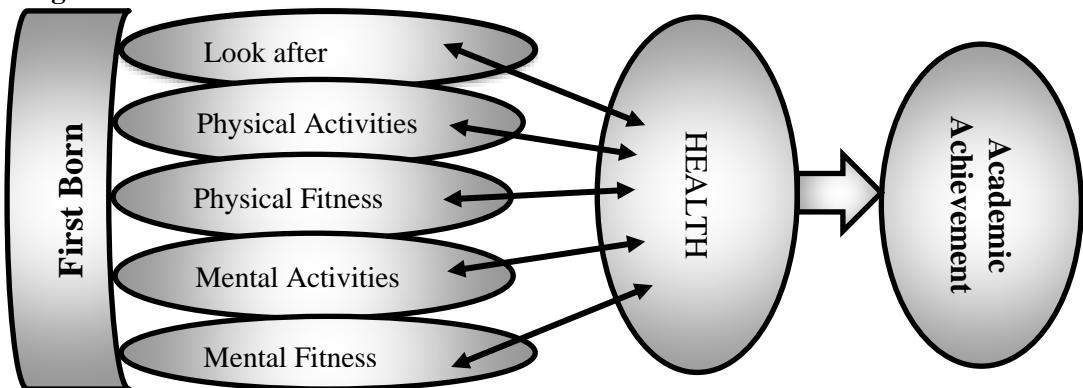
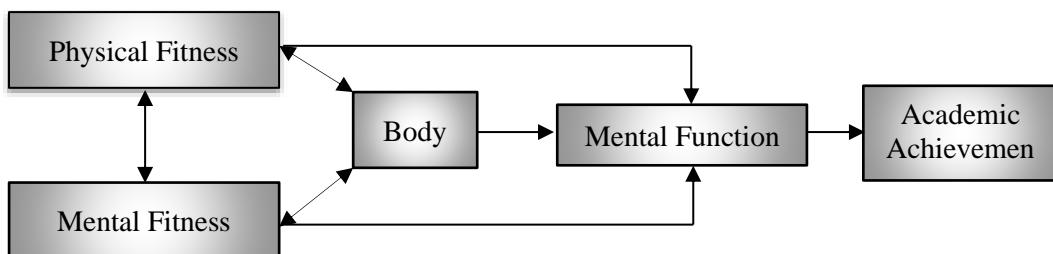


Diagram: Theoretical Model of Health & Academic Achievement



Statement of the Problem

This study aimed to explore the impact of birth order on students' educational achievements.

Objectives of the Study

The study's objective was to examine the impact of birth order on students' educational achievements.

Significance of the Study

The significance of this research on first-born children's effect on student's academic achievement is evident in several key aspects:

Leadership and Responsibility: First-born children often assume leadership roles within the family, which can lead to a sense

of responsibility and discipline. Studies have shown that first-borns tend to exhibit higher levels of conscientiousness, which can positively influence academic achievement (Lodi-Smith et al., 2010).

Parental Expectations: Parents tend to have higher expectations for their first-born children. Research by Feingold (1988) has shown that first-borns often receive more attention and parental involvement, which can contribute to better academic performance due to heightened parental expectations.

Mentorship and Tutoring: First-born children may act as mentors or tutors for their younger siblings, which reinforces their understanding of academic concepts. This role can enhance their learning (Downey, 2001).

Access to Resources: Being the first-born child may grant access to more educational resources and materials as parents initially invest heavily in the first child's education. This can positively impact academic performance (Black et al., 2005).

Family Role Models: First-born children often serve as role models for their younger siblings. Their achievements can inspire their siblings to excel academically as well (Barclay & Myrskylä, 2016).

These points emphasize the significant role of first-born children in shaping the academic achievement of students.

Hypothesis

H_0 : There is no substantial influence of birth order on students' performance.

Table #1: Sample Table

Schools	# of Schools	Rural Students	Urban Students	Total
Male	10	100	100	200
Female	10	100	100	200
Total	20	200	200	400

Instrument:

A questionnaire was meticulously developed, incorporating rigorous checks for face validity, content validity, pilot testing, and reliability to elicit students' opinions on the relationship between birth order and educational achievements. This questionnaire was personally administered to the students, who were instructed to provide precise numerical responses to the items.

Procedure:

To assess the influence of birth order on students' educational achievements, a comprehensive questionnaire was created and subsequently administered to the students. The researcher undertook direct visits to the schools to collect the requisite data. This questionnaire underwent an iterative development process, wherein validation, refinement, and improvements

RESEARCH METHODOLOGY

Population:

For this research, the population under investigation included all 10th-grade students, encompassing both male and female students from rural and urban areas in District D.I.Khan, Pakistan.

Sample:

A random selection was made, consisting of ten male (five from rural and five from urban areas) and ten female (five from rural and five from urban areas) secondary schools. This resulted in the random selection of a total of 400 students, with an equal split of 200 male and 200 female students from the 10th grade of each high school.

were made based on feedback. Any issues, difficulties, or ambiguities were identified and subsequently addressed in collaboration with experts in the relevant field. Birth order was categorized into two groups, namely "First Birth" and "Above First Birth," while academic achievement was classified as "High achievement" for students achieving first division status and "Low achievement" for those falling into the second or third division categories. High achievement pertained to students who obtained scores within the range of 60% to 100%, while the second division encompassed scores ranging from 45% to 59%, and the third division consisted of scores between 40% and 44%.

Statistical Analysis

To know the relationship between birth order on the educational attainments of students at higher secondary school level

Chi-square (χ^2) distribution was utilized. The significance effect was estimated at a 0.05 level of significance.

Levin, Fox, and Forde, (2018) The Chi-square distribution is a valuable statistical tool for evaluating the relationship between two categorical variables in a contingency table. In cases involving a two-by-two table, it is instrumental in identifying

$$\chi^2 = \frac{n(ad - bc)^2}{(a+b)(c+d)(a+c)(b+d)} \quad \text{with } (r-1)(c-1) \text{ d.f.}, \quad \text{Where } 2 \times 2 \text{ Contingency table} = \begin{array}{|c|c|} \hline a & b \\ \hline c & d \\ \hline \end{array}$$

Table#2: Showing the relationship between birth order and academic achievement (For Rural Students)

For Rural Students	First born	Above 1 st born	Total	Level of Significance ' α '	χ^2 (Chi-Square calculated Value)	χ^2 (Chi Square tabulated Value)	P-value
High Achievement	96	69	165				0.0001
Low Achievement	05	30	35	0.05	22.2576	5.024	
Total	101	99	200				

To evaluate the connection between birth order and the academic achievement of students, this study utilized the Chi-square distribution. The computed Chi-square value was determined to be 22.2576, which significantly exceeded the table value of

significant associations between these variables by comparing observed and expected frequencies. This method finds widespread application across fields like education and social sciences. Researchers use the Chi-square test to analyze data in such tables, helping to establish meaningful connections between the variables under investigation. The formula for the Chi-square distribution is as follows:-

Table#3: Showing the relationship between birth order and academic achievement (For Urban Students)

For Urban Students	First born	Above 1 st born	Total	Level of Significance ' α '	χ^2 (Chi-Square calculated Value)	χ^2 (Chi Square tabulated Value)	P-value
High Achievement	107	66	173				0.0001
Low Achievement	02	25	27	0.05	27.9155	5.024	
Total	109	91	200				

To evaluate the connection between birth order and the academic achievement of students, this study utilized the Chi-square distribution. The computed Chi-square value was determined to be 27.9155, which significantly exceeded the table value of

5.024 at a significance level of $\alpha = 0.05$ with one degree of freedom ($\chi^2 = 22.2576 > 5.024$). Thus, the findings indicate a statistically significant association between students' achievement and birth order at the 0.05 level of significance.

Table#4: Showing the relationship between birth order and academic achievement (For Male Students)

5.024 at a significance level of $\alpha = 0.05$ with one degree of freedom ($\chi^2 = 27.9155 > 5.024$). Thus, the findings indicate a statistically significant association between students' achievement and birth order at the 0.05 level of significance.

For Male Students	First born	Above 1 st born	Total	Level of Significance 'α'	χ^2 (Chi-Square calculated Value)	χ^2 (Chi Square tabulated Value)	P-value
High Achievement	112	25	137				
Low Achievement	20	43	63	0.05	48.0894	5.024	.10000
Total	132	68	200				

To evaluate the connection between birth order and the academic achievement of students, this study utilized the Chi-square distribution. The computed Chi-square value was determined to be 48.0894, which significantly exceeded the table value of

5.024 at a significance level of $\alpha = 0.05$ with one degree of freedom ($\chi^2 = 48.0894 > 5.024$). Thus, the findings indicate a statistically significant association between students' achievement and birth order at the 0.05 level of significance.

Table#5: Showing the relationship between birth order and academic achievement (For Female Students)

For Female Students	First born	Above 1 st born	Total	Level of Significance 'α'	χ^2 (Chi-Square calculated Value)	χ^2 (Chi Square tabulated Value)	P-value
High Achievement	137	12	149				
Low Achievement	10	41	51	0.05	102.0779	5.024	.10000
Total	147	53	200				

To evaluate the connection between birth order and the academic achievement of students, this study utilized the Chi-square distribution. The computed Chi-square value was determined to be 102.0779, which significantly exceeded the table value of 5.024 at a significance level of $\alpha =$

0.05 with one degree of freedom ($\chi^2 = 102.0779 > 5.024$). Thus, the findings indicate a statistically significant association between students' achievement and birth order at the 0.05 level of significance.

Table#6: Showing the relationship between birth order and academic achievement

Variables	N	r	Sig
Birth order	400		
Academic Achievement	400	-0.89	0.0931

To assess the relationship between birth order and students' academic achievement, the study employed a correlation value is 0.89, which shows the strong relationship between first birth and students' achievement.

Conclusion

In light of the aforementioned results, it becomes evident that the birth order of a child plays a significant role in the academic achievement of secondary school

students, whether male or female, from rural or urban backgrounds. First-born children tend to exhibit superior academic performance compared to their later-born siblings.

Recommendations

Based on the study's findings and conclusions, several recommendations are put forth:

- Parents have the potential to enhance their children's education by

- recognizing the distinct needs and characteristics of each birth order.
2. The same research methodology can be applied to other educational contexts.
 3. Replicating similar studies across different grade levels could offer a valuable role in birth order and speculative attainment.

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