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Determination of Relationship of Birth Order Position and Intelligent Quotient among Students of College of Medicine and Allied Health Sciences, Federal University Dutse

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Abstract

The present study is aimed at finding the relationship of birth order position and intelligence quotient among students of College of Medicine and Allied health sciences in Federal University Dutse, Jigawa state. A total number of 250 students which comprise 124 males and 126 females were assessed using questionnaires. Data was analyzed using "SPSS statistics version 20". The variable measurements were presented as mean ± SD. The differences between the two groups that is males and females were compared by using "independent sample t-test". The correlation between the variables were found using Pearson's and Partial correlation. Values of $p < 0.05$ were deemed as level of significant. The present study shows negative or no relationship between birth order position and intelligent quotient in the population study. Independent sample t-test for sexual dimorphism of the variables shows that no significant difference.

Keywords: relationship, birth order position, intelligent quotient, students

INTRODUCTION

Intelligence has been defined in a variety of ways ranging from the ability to acquire and apply knowledge and skills [1]. Intelligence is a general mental capability that, among other things, involves the ability to reason, plan, solve problems, comprehend complex ideas, think abstractly, learn quickly and learn from experience [2]. Intelligence is also defined as one's capacity for logic, abstract thought, clear understanding, self-awareness, communication, learning, memory, emotional knowledge, planning, creativity and ability to accurately solve problems [3]. Intelligence is not merely book learning, a narrow academic skill, good grades, or test-taking smarts [4]. Rather, it reflects a broader and deeper capability for understanding our surroundings; 'catching on,' 'making sense,' of things or figuring out what to do. Intelligence is the ability to think rationally, learn effectively, understand complex ideas, and adapt to the environment [5].

Human intelligence is the intellectual capability of humans, which is marked by complex cognitive facts and high levels of motivation and self-awareness [6]. Human intelligence, is a mental quality that consists of the abilities to learn from experience, adapt to new situations, understand and handle abstract concepts, and use knowledge to manipulate man's environment [7].

IQ (The intelligence quotient) is the quantification of an individual's intelligence relative to peers of a similar age or a range of characteristics [8]. IQ is one of the most heritable psychological traits, and an individual's score on a modern IQ test is a good predictor of many life outcomes, including educational and career success, health, longevity, and even happiness [9].

MATERIALS AND METHODS

Study Area

The study was conducted at Dutse local government area of Jigawa State. College of Medicine and Allied Health sciences, Federal University Dutse, Jigawa state was chosen as the study area.

Study Population

A total number of 250 students were selected comprising both genders students from all departments across the college.

Sampling Method

Random sampling method was adopted in this study that comprises 250 numbers of different birth ordinal positions.

Out of the questionnaires distributed, all were retrieved and the information contained in each questionnaire was analyzed and presented in a table. The remaining questionnaires were returned either unfilled or uncompleted.

The population size was determined using the formula;

$$n = \frac{N}{1} + Ne^2$$

Where,

n=Minimum Sample Size

N=Total number of population

e=coefficient error

Ethical Approval

An introductory letter of approval was obtained from Research and ethics committee of Human Anatomy Department, Federal University Dutse. The informed consents of the participated students were signed by the school managements on behalf of the students.

Inclusion Criteria

Subjects that are students from College of Medicine and Allied Health Sciences

Exclusion Criteria

Subjects that are not students from College of Medicine and Allied Health Sciences.

Materials

Birth order position assessment questionnaire

Intelligence quotient test questionnaire

Methodology

Assessment of Birth order position

The birth order position of the students was accessed by the use of birth order position assessment questionnaire. The participants of the study were personally enlightened before they were given the questionnaire. They were briefed regarding the nature and objectives of the study.

Intelligence Quotient Test

The intelligence quotient test was accessed by using IQ test questions which involves making the subjects to respond to a set of questions on a questionnaire. The questionnaire consists of two parts: A and B part. A consist of space for bio data like sex, age, level etc. while B consists of space for birth order position, IQ score and set of Intelligence quotient test questions designed at *the ultimate IQ test book.* The questions were marked and recorded.

Statistical Analysis

Independent t-test was used the find the difference between the means. Partial and Pearson's correlations were used to find the strength of the relationship between the variable. Level of significance was deemed acceptable at $p<0.005$.

Statistical Package for Service Solution (SPSS) version 20.0 was used for analysis.

RESULTS

Table 1 shows the descriptive statistics for level, no. of siblings, order of birth, and IQ score of both males and females. The minimum and maximum level of both subjects were 1 and 4 respectively, the minimum and maximum number of siblings were 0 and 17 respectively, also the minimum and maximum IQ score where 1 and 20 respectively. The minimum and maximum order of birth were 1 and 12 respectively. The mean value of order of birth was 3±1.975. The average value of IQ score was 9.19±3.657.

Table 2 shows the difference in IQ score of male and female subjects, the male subjects had a slightly higher mean score of 9.23±3.92 than their female counterparts with mean score of 9.14±3.393. Also, there was no significant statistical difference in the IQ score (p=0.844).

Table 3a & b shows the relationship between the IQ and birth order for male and female subjects respectively. When level variable was controlled, there was no statistically significance correlation between IQ and birth order (p=0.009) and (p=0.046) respectively. Also, the tables show the relationship between IQ and level in both male and female subjects, there is no statistically significant correlation between the two variables (p=0.155) and (p=0.708) respectively. And also, there is no statistically significant relationship between level and order of birth (p=0.264) and (p=0.857) respectively.

Table 1: Descriptive statistics of level, number of siblings, order of birth, and IQ score

	Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Dev. Statistic	Kurtosis Statistic	Std. Error
Level	250	1	4	2.34	1.151	-1.431	0.307
No. of Siblings	249	0	17	5.66	2.756	0.869	0.307
Order of Birth	250	1	12	3	1.975	3.339	0.307
IQ Score	250	0	20	9.19	3.657	0.222	0.307
Valid N (List wise)	249						

Table 2: Difference in the IQ score of male and female subjects

	Male		Female			
	N	Mean±SD	N	Mean±SD	T	P
IQ SCORE	124	9.23±3.92	126	9.14±3.39	0.196	0.844
ORDER OF BIRTH	124	2.86±1.95	126	3.14±1.99	-1.121	0.263

IQ=Intelligence Quotient N=Number of subjects SD=Standard deviation Correlation is significant at p<0.05

Table 3a & b: Pearson's correlation of the study variables

Male

Control Variables	Correlations		R	P
NO control	IQ SCORE	ORDER OF BIRTH	-0.160	0.075
	IQ SCORE	LEVEL	-0.129	0.155
	ORDER OF BIRTH	LEVEL	0.101	0.264
LEVEL is controlled	IQ SCORE	ORDER OF BIRTH	-0.149	0.099

Female

Control Variables	Correlations		R	P
NO control	IQ SCORE	ORDER OF BIRTH	-0.041	0.650
	IQ SCORE	LEVEL	0.034	0.708
	ORDER OF BIRTH	LEVEL	0.016	0.857
LEVEL is controlled	IQ SCORE	ORDER OF BIRTH	-0.041	0.646

IQ= Intelligence quotient Correlation is significant at 0.005 level of significance.

DISCUSSION

The current findings show that there was no significant relationship between IQ and birth order position. Contrary to the paper published by Belmont and Marolla in 1973, which says within each family size (i) firstborns always scored better on the Raven than did later borns; and (ii) with few inconsistencies, there was a gradient of declining scores with rising birth order, so that firstborns scored better than second borns, who in turn scored better than thirdborns, and so forth [10]. Research has shown that there is no significant relationship between the IQ and birth order position, and there is no difference between male and female subjects in terms of IQ and birth order position that can be detected. In the average score of the present study the male subjects have a slightly high average IQ score of 9.23±3.92 than their female counterparts with the average score of 9.14±3.39 but no statistically significance difference between IQ and birth order position of male and female subjects.

It was observed from the study that birth order position has negative relationship with Intelligence quotient (IQ) with a significance p<0.001. The reason for this may be due to the issue of confounding variables, which if not properly taken into account, can produce biased estimates of the effects. Second is the issue of design choice, that is, whether a birth order study uses a between-versus a within-family design. Previous research and theory (e.g., Sulloway [11] suggests that the most important potential confounds in birth order research are sibship size, parental socio-economic status (SES), family structure, age, and gender. If not properly accounted for, these factors may lead to biased estimates of the links between birth order, personality and intelligence [12-13].

CONCLUSION

There was no statistically significant relationship between birth order position and intelligent quotient (IQ). Sexual dimorphism was absent in the study population.

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