



## INTELLIGENCE IN CHILDREN WHOSE EITHER PARENT IS TREATED FOR SCHIZOPHRENIA

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### Abstract

Schizophrenia is a psychiatric disorder that generally appears in late adolescence or early adulthood. However it can emerge in any time in life. Evidence suggests that the children whose parents are treated for schizophrenia show intellectual impairment, however very few previous studies have measured these areas. The current study looks into the difference in the IQ levels of these children when compared to normal children with parents without any psychiatric problems. The study consists of 60 participants (30 children in study group, 30 children in control group). The Binet Kamat Test for Mental Ability was used. The results indicate that there is a significant higher level of IQ among the children whose parents are not treated for psychiatric problems. ( $t=-15.694$ , Sig. =0.000). This study opens up a forum for the practioners to look into the intervention programs for these children.

**Keywords:** Intelligent quotient, children whose parents treated for schizophrenia, schizophrenia.

### Introduction

*Intelligence is not to make no mistakes, but quickly to see how to make them good.*

*-Bertolt Brecht*

“Intelligence is described as how smart a person is” and actually the definition is quite more complicated than that. Over the years psychologists have debated as to how to define and measure intelligence. Individual theorist have often disagreed on the mixture of cognitive and mental capacities like problem solving, abstract thinking, creativity, memory, concentration and interpersonal skills that has to be included with the definition, and how important it has to be in a culture free manner.

Presently intelligence is seen as not a single ability or attribute, but rather it is seen as comprised of many different and separate cognitive abilities. According to the APA, intelligence describes as a person’s ability to understand complex ideas, to adapt the environment, to learn from experience and to engage in reasoning and decision making in all sorts of situations.

Wechsler (1944), defined intelligence as “the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment”. Wechsler did not view intelligence only in terms of a person’s capacity, but rather also included one’s performance. Thus his scales not only measure the quantity of intelligence but also one’s intellectual performance. The rationale behind this is that it does not matter how much intelligence one has, but rather how he effectively uses that to adapt to his environment, as well as the fact that intelligence is not tangible and hence cannot be adequately measured.

Gardner (1983) believes that intelligence refers to “the ability to solve problems, or to create products, that are valued within one or more cultural settings”. The theory of multiple intelligences suggests that one’s intelligent behavior does not arise singly from a unitary quality of the mind, but rather that different kinds of intelligence are generated from a metaphorical pools of mental energy. Each of these pools enables the individuals to solve problems to create products that are valued within one or more cultural setting. Gardner had derived this personal experience with sample from extreme populations, where certain cognitive abilities were preserved even in the absence of other, very basic abilities.

The seven intelligences as given by Gardner are: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal and personal. Linguistic intelligence deals with the ability for individuals to read, write and speak well. Logical-mathematical intelligence involves logical thinking (such as that used in chess or deductive reasoning) as well as mathematical and scientific problem-solving. Spatial intelligence comes to the forefront when an individual navigates an unfamiliar set of streets, or when an architect visualizes her plans for a building. Musical intelligence involves the set of skills that help a musician to play a tune by ear. Bodily-kinesthetic intelligence is necessary for problem-solving that requires the individual to use his or her physical body, as would be necessary for performing a complex surgical procedure, executing a series of dance steps or catching a fly ball. Interpersonal intelligence drives social skills and things like empathy and intuition about what motivates other people-a type of understanding that is necessary for salespersons, teachers and clergy, for example. Intrapersonal intelligence involves a similar set of abilities, but these are turned toward the self, individuals who have high intrapersonal intelligence have an accurate self-understanding, and can use this to their advantage in problem-solving.

Right from primary school, and well into college and even in the job market, young people are faces with a multitude of tests to determine their intelligence quotient. The rationale behind this is the assumption that only the most intelligent are most successful in life. It should however be understood that intelligence and all its cognitive components play a very vital role in an individual’s ability to cope with life.

**Intelligence in Typical Children.** IQ was invented to relate the mental development of the child to the child's chronological age. The intelligence quotient was equal to 100 times the Mental Age divided by the Chronological Age. Intelligence levels in typical children follow the patterns predicted by the bell curve. Using a normal bell curve, can see how common or rare any given IQ score is, with about two-thirds of scores falling somewhere between 85 and 115. The majority of the population falls into the 85-115 IQ points range and 14% in the above average and below average range respectively. As the scores tend to become extreme at either end, with a score of less than 70 IQ points and above 130 IQ points, the frequency in population also reduces.

**Schizophrenia.** Schizophrenia is a combination of two Greek words, schizo which means to divide or to split and phren which means mind. Literally translated, Schizophrenia refers to "the split mind". Discord is manifested in illogical and convoluted thinking, delusions and hallucinations and is most often thought of, as caused by an over production of dopamine. Schizophrenia however has no one single cause, but is subject to a number of factors that increase the risk of the disorder.

**Family Environment in Schizophrenia.** The family environment is a delicate structure that requires high maintenance and can easily be disrupted. Having a member of the family suffer from a mental health issues, can disturb the equilibrium of power relationships, responsibilities and roles within the family.

Schizophrenia, a disorder that continues to weaken the person gradually, gives innumerable disruptions in the smooth functioning of any typical family. There exist issues of role reversals, shirking responsibilities, unnecessary blame, feelings of guilt, unhappiness, anger and other emotional upheavals.

The second gift of the family to its offspring is the environmental milieu in which it develops. In the study by Schutz (1999) environmental factors such as viral exposure, nutritional deficiencies and obstetric complications may be aetiologically significant in schizophrenia and have been studied in the past. The study by Nasrallah (1993) found that early development of schizophrenia in particular is associated with an even greater likelihood of obstetric complications consistent with neurodevelopmental theories of schizophrenia

**Family Environment of individual treated for Schizophrenia on their Children.** As seen earlier, the environment along with hereditary plays an important role in shaping and developing a child's intelligence. A skewed perspective of responsibilities and duties of the family members puts unnecessary pressure on the child to perform beyond its chronological age. Role reversals put the child in the position of the caregiver, leaving limited time for children friendly activities that nurture learning.

A lack of healthy environment for the child to grow up in provides little cognitive stimulation through the environment, through learning by modeling and even through lack of resources. A healthy and stable family environment may provide protective effects against development of schizophrenia-spectrum disorders. Similarly, a dysfunctional rearing environment may increase the risk for development of schizophrenia-spectrum disorders in those with genetic susceptibility.

Disordered parenting and stress in the home is also known to contribute to depression, antisocial behavior, substance abuse and alcoholism, and other mental health problems – so there are many very good reasons to make extra effort to resolve family issues and make the family environment as healthy and safe as possible. If an individual who is genetically susceptible to psychotic disorders is forced to cope in such an environment, he or she is more likely to develop schizophrenia and related disorders. This does not mean that all individuals who develop schizophrenia-spectrum disorders have come from a broken home or even a family that is more dysfunctional than families where schizophrenia has not been diagnosed; what it does mean, however, is that some children – due to their genetics – are much more sensitive to some environmental factors, and the good news is that this study suggests that we have more power over our genetic expression than previously thought (Tienari et al, 1983).

**Role of Environment in Intelligence.** The brain is affected by the stimulation of its information processing provided by its surroundings including the opportunity to interact socially. Evidence for environmental influences on intelligence comes from adoption studies and twin studies.

Performance on cognitive tests in childhood typically is better predicted by measures of the home environment and by variables that influence the intellectual level of the home environment than by biomedical risk factors or infant developmental indices. In studies of normal and "at risk" children (including preterm, low birth weight, and low socioeconomic status (SES), strong correlations between markers for home environment quality (SES, maternal intelligence, characteristics of the home, and parenting practices) and performance on intelligence tests in infancy and early childhood are reported Bradley (1993).

McGue (1993) Identical twins reared apart have IQ's that are less similar than identical twins reared in the same environment. Reinberg (2008) found that children who are breastfed during the first three to five months of life score higher on IQ tests at age 6 than same-age children who were not breastfed .

**Intelligence in children whose parents are treated for schizophrenia.** As schizophrenia is concerned as an abnormality to the neurodevelopment, it can be seen that abnormality in the development could be seen during the childhood. Shah et al (2003) found that there were higher prevalence of neurobehavioural functioning, cognitive functioning, social behavior, attention and intelligence in children whose parents are treated for schizophrenia. Earlier follow-up studies have proven the existence of a link between adult onset schizophrenia and childhood deficits in intelligence. However we are in dire need of focusing on typical children of patients treated who are treated for schizophrenia and explore the deficits in IQ and other cognitive abilities if any. The higher incidence of schizophrenia among children at high risk has brought about how these behaviours that can be seen as vulnerable to the genesis of schizophrenia. Having daily contact with these patients creates major complications with these children. At times these children have to shoulder responsibility of taking care of these ill parents, so the consequence become innumerable.

Intelligence is seen as an important issue to be studied with these children with parents treated for schizophrenia as these could affect majorly in the academic setting. Some of the earliest signs of schizophrenia are a decline in verbal memory,

IQ, and other mental functions, which researchers believe stem from an inefficiency in cortical processing - the brain's waning ability to tackle complex tasks.

## Methodology

### Aim

To find the intelligence of children whose parents are getting treated for Schizophrenia

### Hypothesis

1. There is no significant difference in the IQ between children whose parents are treated for schizophrenia and normal children whose parents do not get treatment for any psychiatric problems.
2. There is no significant difference in the IQ of male and female children whose parents are treated for schizophrenia.

### Sample

A sample of 60 early adolescents ranging from 11 to 13 years was selected for the current study. The sample consisted of 30 males and 30 females, divided into the following groups.

Study Group: 30 adolescents (15 male and 15 female) whose one parent is being being treated for schizophrenia.

Control Group: 30 adolescents (15 male and 15 female) whose parents are not getting treatment for any psychiatric illness

Both study and control group children are from 8<sup>th</sup> standard private school from urban South India.

### Test administered

All the participants were administered the Binet Kamath Test of Mental Ability, a standardized Intelligence test for the Indian population.

### Data Analysis

Their scores were then analyzed using Statistical Package for social sciences (SPSS) version 16 with tools such as mean and t-tests.

## Results

Table 1 Describing the mean IQ scores for study and the control group

Groups	N	Mean IQ	Std. Deviation
Study group	30	86.93	2.89
Control Group	30	117.10	10.12

Table 2 Describing the t test of the IQ scores of both the study and control group

Groups	t score	Significance (0.01)
Study Group	-15.694	.000
Control Group		

Table 3 Describing the mean IQ scores of male children and female children in the study group

Gender	Study Group	Std. Deviation
Male	87.20	2.21
Female	86.67	3.49

Table 4 Describing the results of the t test of the IQ between male and female children in the study group

Study Group	t score	Significance (0.01)
Male	-0.888	.382
Female		

## Discussion

The results of this study suggest that offspring of parents who are suffering from Schizophrenia have low level of intelligence when compared to the normal population. This has been reported in the study conducted by Byrne et al (1998).

In the study there are two hypotheses, as follows:

1. There is no significant difference in the IQ between children whose parents are treated for schizophrenia and normal children whose parents do not get treatment for any psychiatric problems.
2. There is no significant difference in the IQ of male and female children whose parents are treated for schizophrenia.

In the study the first hypothesis was rejected and the alternate hypothesis was accepted, and the second hypothesis was accepted.

The first table shows the mean IQ scores and SD for the two groups, children whose one parent is getting treated for schizophrenia and children who have normal parents. The results shows a significantly higher scores (IQ=117.10, SD=10.12) among the control group when compared with the study group (IQ=86.93, SD=2.89).

The second table shows the t test result of the intelligence scores of male children and female children, whose parents are treated for schizophrenia and whose parents are not treated for schizophrenia. The results show that there is a

significant difference between both the groups ( $t = -15.694$ ,  $sig. = 0.000$ ). The results do not confirm with the hypothesis that there is no significant difference in the IQ between children whose parents are treated for schizophrenia and normal children whose parents do not get treatment for any psychiatric problems. The alternate hypothesis is accepted. The results are supported by various studies that children whose parents are treated for schizophrenia have a higher deficiency in memory and IQ impairments. The result findings of the study is supported by Mednick et al (1968) suggesting that cognitive dysfunction is evident in pre schizophrenia subjects as early as age 4 and that precedes the normal diagnostic symptoms and signs by 10-15 years. Children with high risk in schizophrenia showed that they were underestimated with regard to normal cognitive ability in their age and overrated with regard to the lower level of cognitive ability. The difference in the intellectual ability did not differ much in the early childhood however differences were seen to a significant effect in early adolescence onwards. The level of functioning is also found to be increasingly diverged when compared to the functioning of the family.

The third table shows the mean IQ scores and standard deviation scores of the male and female participants in the study group. Male children had a marginally higher level of IQ (IQ=87.20, SD=2.21) than female children (IQ=86.67, SD=3.49). The study brings about a significant difference in the IQ scores between the two groups. In the group with children whose parents are treated with schizophrenia the scores were significantly lower compared to the normal children. The scores lie significantly could be as a result of the socio economic status, the parental guidance towards the children in the education of the children and could play a role. The IQ scores did not differ much in the study group. The fourth table shows the results of the t test between the male and female children intelligence score in the study group. The results show that the results are not significant at 0.01 level of significance ( $t = -0.888$ ,  $sig. = 0.382$ ). This shows that there was no true difference of intelligence scores in both the group. The results indicate that both male and female children did not differ in the mean IQ scores, so the results were not significant. The results confirm to the hypothesis that there is no significant difference in the IQ of male and female children whose parents are treated for schizophrenia. Further the results suggests that there could be underlying deficits in the neurocognitive domains such as attention, verbal memory, could be seen in the premorbid or prodromal phase and this could predict early markers of the illness in Schizophrenia as proposed by Woodbury et al (2008).

The study by Fish et al (1987) found that lower IQ among children, gave an increased predictability of acquiring Schizophrenia. Higher the level of intelligence, the risk of getting schizophrenia was less. In the current study, the intelligence scores of the children whose parent was treated for schizophrenia was less compared to children whose parents are not treated for any psychiatric illness, thus suggesting that there could be other factors that could have played a role.

There could be a possibility of familial circumstances. Parents who are treated for schizophrenia may not be able to give in parental care to these children. This could be related to academic and social skills. The very nature of the illness, where social interaction is less with people around, and the degree of symptoms both positive and negative, could possibly be reflected in the intelligence scores. The normal parent may not have had ample time to spend with children since he/she has to play the role of taking care of the ill spouse and the family, along with job and so on. The role of learning is explored. The children could possibly have learnt the behaviours from the sick parent. The observation of the symptoms of their parents, who is a little different from the others, could result in the faulty learning pattern. The child may not have had individual focus from the parents, when studies are concerned. This may have resulted not having the necessary exposure at a young age.

Using a different test for intelligence may vary the scores for intelligence. There is a possibility that the items and components been measured in the test too could vary between the various test. The score could substantially differ between a speed and a power test of intelligence. A lot more intelligence tests on these children may provide different level of intelligence.

The test results could widely differ due to the sample taken. The present test was taken from private schools from an urban background. The scores could reflect the amount of exposure the children get from the school. The results also indicate that the children whose parents are not for any psychiatric illness had significantly higher level of intelligence when compared to children whose one parent is treated for schizophrenia.

Since the sample size was limited to 30 in each group, generalization of the study is hard to make. The study gives an understanding that the factor of intelligence plays a role in the children whose parents are treated for schizophrenia and there is a need to bring about the intervention programme for these children. Further studies could help in understanding the intervention programmes for these children.

### **Implication of the Study**

The study implies that there is an effect in intelligence as far as with children with parents who have schizophrenia. An early intervention programme for the children at risk would help the parents and the children in terms of rectifying these problems.

### **Future Scope of Research**

This study would help us do further studies in terms of seeing the difference if mother or father is treated for schizophrenia. This would provide us further understanding on the family environment and parental role upbringing the children.

### **Conclusions**

The study as mentioned shows that there is a significant difference between the IQ scores of children whose parents are treated for schizophrenia and children whose parents are not treated for schizophrenia. This shows that there could be a possibility of a genetic, environmental factor that could be present amongst these children.

In the study the first hypothesis which states that there is no significant difference in the IQ between children whose parents are treated for schizophrenia and normal children whose parents do not get treatment for any psychiatric problems was rejected and an alternate hypothesis was accepted.

In the study the second hypothesis which states that there is no significant difference in the IQ of male and female children whose parents are treated for schizophrenia was accepted.

The study is widely been supported by other related studies on neurocognitive deficits that can be evident on these children. Lower IQ levels on these children are seen as predictors to schizophrenia at a later stage. This brings about the possibility in bringing out intervention studies to these children and thereby helping to bring about a better quality of life amongst these children.

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