

Functioning Intelligence and Parenting in Children

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ABSTRACT

Background: MISIC short scale's six subtests were regrouped into Abstract (akin to fluid), Concrete (akin to crystallize) and Numerical (akin to working memory) indexes. It was presumed that the abstract index score would display basic inborn intelligence and crystallize would display how much of basic was made operational. 'Abstract > concrete' pattern, therefore, might indicate under development of potential and this could be attributed to ineffective parenting due to lack of time to parents [both working] or due to mother's over-concern with her own persona, or being overprotective to a child holding a precious position in the family. **Materials and Method:** With this background, 40 subjects in the age range of 6 to 15 were administered MISIC short scale. **Results & Conclusions:** Analysis of data indicated that all the three assumptions were significant suggesting that parenting plays a great role in fuller optimization of potential. Significance of these findings were discussed as to how to improve parenting by counselling the parents to be more interactive with the child for the unfolding of their basic potential.

Keywords: Fluid-crystallizes intelligence, abstract-concrete intelligence, parenting, parents training

INTRODUCTION

Parenting is the process of promoting and supporting the physical, emotional, social and intellectual development of a child from early childhood to early adulthood. Parenting is usually done by the biological parents of the child. Amongst various developmental areas, intelligence is one of the most studied area from the time, Binet-Simon^[1] developed, first objective measure of intelligence, to screen out Parisian children suffering from learning disability, low intellectual potential and children requiring special schooling. Thorndike^[2] was the first who divided intellectual activities into three types: (1) social intelligence or ability to understand and deal with persons; (2) concrete intelligence or ability to understand and deal with things as a skilled trades; (3) abstract intelligence or ability to understand and deal with verbal and mathematical symbols. In the year 1963 Cattell^[3] divided general intelligence (g) into fluid and crystallized intelligence.

In the applied area Cattell's theory of 'fluid and crystallize' intelligence is more popular and acceptable. Fluid intelligence is inborn and its limit largely depends on biological natural factors. Limit of Crystallize intelligence depends on fluid intelligence. Operationalization or optimization of fluid is achieved through schooling, stimulation, interaction, parenting, etc. and this is called 'crystallize' intelligence. In practice, how much of fluid had been activated might be called crystallize. 'High Fluid - low crystallize' pattern might indicate that inborn capacity was not fully unfolded and the child was under-functioning to his potential. Under normal circumstances parental training, interaction, stimulation may be held responsible for this difference in normal conditions, barring physical/neurological ailments. Rindermann, et al. in their experimental study have concluded that parents have a slightly stronger effect on crystallize than on fluid intelligence.^[4]

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Amongst the intelligence tests, culture faire tests of intelligence^[5, 6] are considered to be a measure of fluid intelligence but these tests include material that are nonverbal and non-performance in nature. Wechsler's scales are more comprehensive and more popular across the world because of comprehensive in nature.

For the present study, MISIC^[7, 8] an Indian adaptation of WISC^[9] was modified and shortened from 11 subtests to 6 subtests for the age range of 6 to 15 years to accommodate more subjects per working day.^[10, 11] These six subtests were regrouped into three categories: (1) Abstract Index – akin to fluid intelligence, (2) Concrete Index – akin to crystallize intelligence and (3) Numerical Index - akin to working memory. If a subject gets low on crystallize than fluid, this difference may be attributed to his parenting

The author opined that a subject should obtain almost equal scores both on abstract and concrete intelligence if the subject had wholesome development of his innate/inborn cognitive potentials. This wholesome development will depend upon stimulating environment provided by the parents who were considered as preschool teachers. The younger child was more 'field-dependent' than 'field-independent',^[12, 13] thus stimulating environment in early years of life would help to the optimization of logic and finding newer ways of combining rational thinking to excel in the world. However, if the child was encouraged only for 3 RS (reading, writing, arithmetic) and memorizing to excel in schooling grade then his concrete (crystallized) score would be lower than the abstract (fluid) score (basic potential). In the modern era, schooling/competition is usually much preferred than overall wholesome development of the child.^[14] Parental involvement in the day to day physical, cognitive, fluency, critical observations were denied that otherwise could be a part of effective parenting. This lack of interactive routine of parents might cause only partial unlocking of potential, reflected through 'abstract>concrete' pattern.

To test the above conjecture it would have been better to evaluate the degree of parenting by using some questionnaires^[15, 16] but the questionnaire methods always had inherent limitations of transparency of the items and

fake responses. Therefore, here, the author had used indirect methods like, if both parents were working then they would have less time for the child; if both parents specially mother was educated (graduate or above) she would give more preference to her persona and socialization and parents of a precious child would hardly give training in discipline and in solving trying puzzles and quizzes, and his (child's) dictums/demands would be complied instantly by the parents. Thus these three factors, (1) both parent working, (2) both parents graduate or above (3) parents of the precious child were considered as a barrier ineffective parenting.

- (1) If both parents were working then they would not be able to provide effective parenting to their children because of the scarcity of time, therefore their children would get a low score on crystallize intelligence compare to fluid intelligence.
- (2) If both parents especially mother was graduate or more, she would be more concern with her own persona and socialization than keeping busy with a child in the exploration of his potential.
- (3) If it was a precious child of the parents then parents might not give him proper training for fuller operationalization of potential thus may achieve a lower score on concrete than on abstract index.

OBJECTIVES

- (1) To find out whether 'abstract > concrete' score pattern on MISIC- short scale was related to the working status of parents (both working/one working).
- (2) To find out whether 'abstract > concrete' score pattern was related to the educational background of parents (specially mother graduate or more and not graduate).
- (3) To find out the relationship of 'abstract > concrete', score pattern with the prestigious position of the child.

MATERIALS AND METHOD

Sample: Forty subjects in the age range of 6 to 15 years referred to a psychodiagnostic centre, Chandigarh for trivial complaints for which attending neurologist, pediatrician and psychiatrist could not establish any pathology on laboratory and clinical examinations.

Tool: MISIC-short-scale consisting of six subtests (four verbal and two performance)^[10, 11] was administered individually by the author. Three indexes as given below were worked out for each subject.

Table 1: Index calculation & names of subtests of intelligence

Indexes	Description of Indexes
Abstract Index	Mean of TQs on Block Design and Comprehension
Concrete Index	Mean of TQs on Picture Completion and Information
Numerical Index	Mean of TQs on Arithmetic and Digit Span

Procedure: Each referred subject was interviewed to evaluate adaptive skills to rule out those who had an IQ of less than 70 or intellectual disability or learning disability. Accompanying parent of each subject was also interviewed to enquire date of birth of the subject and significant past history of fall from the height, seizure disorder and chronic continuous illness in the child and family history of psychiatric/neurological disorder in mother or father and such subjects were excluded. The accompanying parent was also enquired about their working status and educational background in addition to the special status of the child (single child, born after long conjugal life, only male after a number of female children, adopted child, etc.).

Statistical analysis: four-fold tables were generated. All subjects were divided into two groups: (1) those who had obtained 10 or more points higher on the abstract index compared to the concrete index and (2) another remaining subject. These two groups were further dichotomized based on ‘both parents working – one working’, ‘mother graduate and above or not’ and child had ‘precious position or not’. Chi-square test of significance applied to evaluate the relationship.

RESULTS

Table 1, indicated that the three indexes formed in this study had low correlation amongst themselves suggesting that these indexes were measuring different facets of intelligence. These indexes however had been contributing very high to overall IQ points. The contribution of the numerical index was significant but minimal with full-scale IQ. The abstract index was found to have a maximal correlation with full-scale IQ.

Table 1 Coefficient of Correlations amongst Indexes

Indexes	Correlation
Abstract – concrete	.379
Abstract - numerical	.374
Concrete – numerical	.362
Abstract- full-scale IQ	.819
Concert – full-scale I.Q.	.759
Numerical –full-scale IQ	.673

Table 2, given below suggested that 55% of the subject (22 out of 40) had obtained 10 or more points higher on Abstract index compared to their score on the concrete index. This might lead to conclude that in clinical population fuller inborn capacity remained un-operational [under developed]. Parents of these subjects were, either, not having sufficient time, or mother was more concern about her persona [socialization] or did not pay much heed because the child was a precious member in the family. Among these subjects, 83% of both parents were found to be working, 79% of the subjects were precious children and about 71% of the mothers were graduate or more.

Table 2: Significance of Abstract > Concrete pattern with Demographic Variables of Parents

Characteristics	Abstract > concrete ≥10 [N= 22]	Abstract > concrete ≤ 10 [N= 18]	Chi square
Parents` Working			
Both working [n=12]	83.33% [n=10]	16.67% [n=02]	5.61, P=.01
Single working [n=28]	42.86% [n=12]	57.14% [n=16]	
Birth Position			
Precious child [n=14]	78.6% [n=11]	21.4% [n=03]	4.83 P=.05
Not so precious[n= 26]	42.3% [n=11]	57.7% [n=15]	
Mother`s Education			
BA & above [n=17]	70.58% [n=12]	29.41% [n=05]	3.00 P=.05
Not BA [n=23]	43.48% [n=10]	56.52% [n=23]	

DISCUSSION

‘Intelligence is what the intelligence tests test’^[17, 18] was the status in the beginning, even before Binet-Simon developed their first-ever intelligence test and with Wechsler’s sustained efforts. Now intelligence testing has assumed a significant role in the life of human being: assessing the development of the child, adjustment in the newer situation, excelling in the academic area, prediction success in qualifying entrance exams for professional courses and administrative positions in addition to maintaining interpersonal cohesiveness and adjustment in newer/ challenging environment. Can intelligence be divided into various subdivisions/ facets to meet these challenges of life? Intelligence is a construct that may include a number of

cognitive functions. Different researchers have given different theories of intelligence based on their scientific work. These theories are listed below^[19]

Thurston's Primary Abilities	Consolidated six types of intelligence
Spearman two factor theory	'g' and 's'
Thorndike three factor	Social, concrete and abstract
Cattell 2 factor	Fluid and crystallize
Hebb's	A and B
Jenson's	Level-1 and level-2
Gardner's	Multiple intelligence
Guilford's	Cubical model

Division of intelligence into fluid and crystallize is also based on a theoretical model and has demonstrated its worth over other theories of intelligence. Wechsler group of tests of intelligence are in use for over eight decades and have introduced a new system of clubbing the tests for tapping different cognitive abilities such as 'Verbal Comprehension', 'Perceptual Reasoning', 'Working Memory' and 'Processing of Speed' for diagnostic and clinical purposes.

In the present study, WISC^[8,9,11] was shortened to 6 subtests and all the six were categorized based on the commonality of functioning into three groups or indexes. New groups were named Abstract, akin to fluid; Concrete, akin to crystallize; and Numerical, akin to working memory. Working memory had a low correlation with full-scale IQ, as also demonstrated earlier by other researchers^[17,20,21] thus was not used for further analysis. Abstract and concrete abilities, however, had high correlations with full-scale IQ and low correlation between, therefore it was concluded that these two were distinctly different abilities but contributing significantly in the overall determination of IQ. Abstract ability was thought to be related to inborn ability usually unaffected by education, socialization and parental stimulation in day to day activities. Concrete ability was thought to be related to parents' training, as a first pre-school teacher, formal schooling and other interactive stimulating activities made available. Theoretically, under optimal stimulating condition, abstract and concrete abilities should correspond to each other except for a few points of chance error. However if abstract was significantly higher

(10 or more points) than concrete it might indicate that fuller inborn abilities were not maximally explored and child's two wheels (abstract and concrete) were not adequately synchronized causing adjustment problems at school, home and society.

In some of the cases, crystallize might be higher but exceptions are always everywhere in every walk of life. By and large, fluid and crystallize should parallel to each other if parents were interacting with a child with ease of time. The present study clearly showed that the abstract index and concrete index had low correlation (of around .4) but both of these were contributing high in overall full-scale IQ. Both of these might be considered as different facets of overall cognitive functioning. In an experimental study^[4] concluded that parents had a slightly stronger effect on crystallize than on fluid intelligence.

Role of parenting was another area that needs to be discussed. Kagan^[22] in his commentary remarked, 'parents can affect their children through at least three different mechanisms and the one easiest involves the consequences of direct interventions with the child'. Contrary to this remark, Maccoby and Martin^[23] wrote that the contribution of parental practices to children's personality cannot be viewed in isolation; each parental behavioural or personality trait is part of the complex parent-child relationship. Another study^[24, 25] had found an adverse effect on the outcome of children if both parents had full-time employment. They remarked full-time work increased family income but less time for mothers to interact with their families tended to reduce children's later educational attainments and might have long term consequences for their children's development.

Around 50% of the subject, seeking the attention of doctors was found to have obtained 10 or more points higher on Abstract Index. These phenomena need to be looked into to minimize the difference between abstract and concrete scores and to perpetuate more balanced intellectual behaviour. Employment status of parents, education level of mother and parents having a precious child may not be able to look after their children in a manner convenient to facilitate balanced development. The reasons for this inability

could be different in each individual case. Counsellor, psychiatric social worker, school psychologist, another mental health worker may try to bridge this gap by trying appropriate management strategy where child and parents both are provided brief activities to be carried out regularly under the supervision of parents. The author has been trying to help some of these parents in minimizing complaints of their children by instituting activity rescheduling model^[26, 27, 28] with encouraging results. However owing to the slow follow-up rate, it may take a longer time to complete with the minimum required number of the subject. The study also needs to re-administer the same intelligence test after an interval of at least one year to find out the influence of activity rescheduling in minimizing the difference in abstract and concrete indexes.

CONCLUSION

MISIC's short scale with six subtests was administered on forty subjects referred to a psychologist for IQ assessment and management of their trivial complaints. MISIC'S 6 subtests were grouped into three categories naming them abstract index, concrete index and numerical index. It was found that children who obtained higher on abstract belonged to the families where both parents were working, mothers were graduate or above and child had a precious position in the family. It was concluded that their behaviour problems were consequent to their poor parenting and interaction with parents with ease. Efforts were made to reduce their complaints by instituting activity rescheduling program. Findings were discussed in the light of discrepancy between abstract and concrete scores and were suggested to abridge the gape.

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