CHAPTER-6
CONCLUSIONS, LIMITATIONS
AND IMPLICATIONS
Chapter 6
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6.1 Overview Of The Study

The present study was conducted to assess general intelligence, cognitive processes, academic achievement, and intelligence-achievement relationship of adolescent students. In this context, the literature review reveals that obsessive-compulsive symptoms may result in functional deficit in various cognitive processes and executive functioning, as well as impairment in academic performances. This is particularly relevant, since adolescence is the phase of preparing for subsequent career. Particularly, in countries like India, where grades are given much importance, poor achievement in examination may result in damage of both career and self-esteem and hence, invite financial intricacy. But, unfortunately not much attention has been given on the impairment in academic performances of the adolescent students having obsessive-compulsive symptoms.

Hence, the present study purported to find out the extent of impairment in Obsessive-Compulsive symptoms in the areas of general intelligence, various cognitive processes, academic achievement, and intelligence-achievement relationship in a non-clinical and sub-clinical student sample.

The aims of the present research were twofold. The first aim was to compare two genders (male versus female) in terms of general intelligence, cognitive processes, academic achievement, and intelligence-achievement relationship of adolescent students. The second aim was to compare two groups (High versus Low obsessive compulsive symptoms group) in terms of general intelligence, cognitive processes, academic achievement, and intelligence-achievement relationship of adolescent students. While the first has been studied extensively earlier, the latter is less investigated in detail. The former serves to understand the latter better.

The independent variables of the study were i) gender (Male versus female) and ii) group (High versus low Obsessive-compulsive symptoms). The dependent variables were i) general intelligence, ii) cognitive processes iii) academic achievement and
iv) intelligence-achievement relationship. In this study, the effect of groups, gender, and their interaction effect were examined on the four dependent variables.

The study had ten control variables, i.e., age (14 years), class (VIII), type of school (boys and girls Bengali medium schools of Kolkata city), health condition (not suffering from physical disability, chronic physical or psychiatric disease), parental education (minimum secondary level), parental income (Rs. 5000-35000/month), parental occupation (business or service), mother tongue (Bengali), residence (residing in and around Kolkata), academic record (consistency in schooling and academic performance).

A detailed personal information schedule was administered to collect the personal, familial and health related information. This schedule was also treated as the measure for control variables.

The other measures used to assess the dependent variables were as follows: 1) Standard Progressive Matrices by Raven, Court, and Raven (1992) for measuring general intellectual level. 2) Children’s Obsessive Compulsive Inventory (CHOCI) by Shafran et al., (2003) for measuring obsessive compulsive symptoms. 3) Children’s Yale-Brown Obsessive Compulsive Scale (CY-BOCS) by Goodman et al., (1989) for measuring obsessive compulsive symptoms. 4) Sumon’s Attention Memory Module for measuring cognitive processes, and 5) Results obtained from school records to portray an index of academic achievement of the last two academic years.

The sampling was done by following the purposive sampling technique and some general inclusion and exclusion criteria. The final number of participants of this study was 210. Among them, 100 were male and another 110 were female. The age level was restricted to 14 years and all of them studied in Class VIII. All prospective participants were administered the CY-BOCS and only those scoring below 15, that is at sub-clinical level or below were included. All data were collected individually from the students of selected schools by administering the tools described by special appointment and only after obtaining the informed consent of the participants.

The study had 6 hypotheses. The hypothesis number 1 was formulated to examine whether there would be significant difference between the two genders (boys versus girls) in terms of all the variables of achievement. Hypothesis number 2 was formulated to examine
whether there would be significant difference between the two groups (high versus low obsessive compulsive symptoms) in terms of all the variables of achievement. Hypothesis number 3 was formulated to find out whether there would be significant difference between the two genders (boys versus girls) in terms of all the variables of cognitive processes. Hypothesis number 4 was formulated to find out whether there would be significant difference between the two groups (high versus low obsessive compulsive symptoms) in terms of all the variables of cognitive processes. Hypothesis number 5 was formulated to examine whether there would be significant difference between the two genders (boys versus girls) in intelligence-achievement relationship in terms of all the variables of achievement. Finally hypothesis number 6 was formulated to examine whether there would be significant difference between the two groups (high versus low obsessive compulsive symptoms) in intelligence-achievement relationship in terms of all the variables of achievement.

Regarding the scoring and statistical analysis, all data were scored according to the manual, and entered on SPSS programme. SPSS 20 was used for statistical analyses. Descriptive statistics and correlations were calculated. Subsequently, the sample was divided in two groups at the median value of 12 following the results of CHOCI – high and low impairment. Descriptive statistics, ‘t’ tests and Multivariate Analyses of Variances were conducted to test the Hypotheses.

6.2 Conclusions

From the present study the following conclusions were drawn-

1) No gender difference was found in case of obsessional symptoms. The difference was found in case of compulsion symptoms where boys were higher than girls.

2) In the total sample, there was a positive and significant relationship between ‘Compulsion Symptoms’ and some variables of cognitive processes like Full test trial till 100% and Retroaction. Compulsion Symptoms was also negatively and significantly correlated with all other cognitive variables like General intelligence, Span of memory, PCT in percentage, and attention. Such findings indicate that Compulsion symptoms inhibits memorization and attention.
3) In the total sample, there was a positive and significant relationship between 'Impairment Compulsion' and some cognitive processes like Full test trial till 100% and Retroaction but negative and significant relationship with General Intelligence, PCT in percentage and Attention. Such findings indicate that Impairment Compulsion impairs memorization and attention.

4) In the total sample, there was a positive and significant relationship of Obsessional symptoms and some cognitive processes like Full test trial 100% and Retroaction, and negative and significant relationship with Span of memory, PCT in percentage, and Attention. Overall, the study findings indicate that Obsessional symptoms inhibit memory and attention.

5) In the total sample, the variable Impairment Obsession and Impairment Total were positively and significantly correlated with Full test trial till 100% and Retroaction but with all other cognitive variables like Span of memory, PCT in percentage, and Attention, these two Impairment variables were negatively and significantly correlated. Overall, the study findings are going in favor of the statement that Obsessive Compulsive symptoms inhibit cognitive functioning.

6) In the boys sample, the variable Impairment compulsion and Impairment total were negatively and significantly correlated only with the cognitive variable Attention.

7) In boys sample, there was a positive and significant relationship between Obsessional symptoms and Full test trial till 100%, and a negative and significant relationship between Obsessional symptoms and Attention. The variable Impairment Obsession was negatively and significantly correlated only with cognitive variable Attention. Findings of the study are indicating that boys having Obsessive Compulsive symptoms, take more trials in memorizing the syllables than others and have difficulty in attending.

8) In the Girl's Sample, the variables of Compulsion and Obsession were positively and significantly correlated with the cognitive variables like Full test trial till 100% and Retroaction but with all other cognitive variables like Span of
memory, PCT in percentage, and Attention, variables of Compulsion and Obsession were negatively and significantly correlated. Overall, the study findings are indicating that in girls, Obsessive Compulsive symptoms inhibit cognitive functioning.

9) In the total sample, all the variables of Compulsions and Obsessions were significantly and negatively associated with all the variables of Achievement.

10) In boys sample, the variable Symptom Compulsion was negatively and significantly correlated with 2nd language average, Mathematics average, Physical science average, Life science average, Geography average, and Total average. The variable Impairment Compulsion was negatively and significantly associated with all the variables of Achievement.

11) In boys sample, the variable Symptom Obsession was negatively and significantly correlated with 1st language 1st paper average, 2nd language average, Physical science average, Life science average, History average, Geography average, and Total average. The variable, Impairment Obsession and Impairment total were negatively and significantly correlated with 1st language 1st paper average, 2nd language average, Mathematics average, Physical science average, Life science average, History average, Geography average, and Total average.

12) In girls sample, all the variables of Compulsions and Obsessions were negatively and significantly correlated with all the variables of Achievement.

13) There was a significant difference between two Genders (male versus female) in achievement in terms of 1st language 1st paper average, Physical science average, Life science average, History average, Geography average, and Total average. In all these achievement variables boys performed better than girls.
14) There was no significant difference between two Genders (male versus female) in achievement in terms of 1st language 2nd paper average, 2nd language average, and Mathematics average.

15) There was a significant difference between two Groups (High versus Low OCS) in all achievement variables in terms of 1st language 1st paper average, 1st language 2nd paper average, 2nd language average, Mathematics average, Physical science average, Life science average, History average, Geography average, and Total average. **In all achievement variables Low OCS group performed better than High OCS group.**

16) The interaction effect between Genders (male versus female), and Groups (High versus Low OCS) was not significant in achievement.

17) There was a significant difference between two Genders (male versus female) in Cognitive processes in terms of Span of memory, Full test trial till 100%, PCT in percentage, and Attention. **In all these cognitive variables boys were better than girls.**

18) There was no significant difference between two Genders (male versus female) in Cognitive processes in terms of General intelligence, and Retroaction.

19) There was a significant difference between two Groups (Low versus High OCS group) in all Cognitive processes in terms of General intelligence, Span of memory, Full test trial till 100%, PCT in percentage, Retroaction, and Attention. **Low OCS group was better in General intelligence, Span of memory, PCT in percentage, and Attention. And took less time in Full test trial till 100% and had low Retroaction.**

20) The interaction effect between Genders (male versus female), and Groups (High versus Low OCS) was not significant in Cognitive processes.

21) There was a positive and significant relationship between intelligence and achievement in terms of all the variables of achievement for both boys and girls.
22) There was a positive and significant relationship between intelligence and achievement in terms of all the variables of achievement for both High and Low OCS groups.

23) There was a significant difference between two Genders (male versus female) in intelligence-achievement relationship in terms of 1st language 1st paper average, 1st language 2nd paper average, and Total average. In all these variables, the magnitude of correlation is consistently higher for the girls than for the boys. This shows that OCS has greater negative effect on achievement in these specific subjects case of girls.

24) There was no significant difference between two Genders (male versus female) in intelligence-achievement relationship in terms of 2nd language average, Mathematics average, Physical science average, Life science average, History average, and Geography average.

25) There was a significant difference between two Groups (High versus Low OCS) in intelligence-achievement relationship in terms of 1st language 1st paper average, 1st language 2nd paper average, Physical science average, Life science average, Geography average, and Total average. In all these variables, the magnitude of correlation is consistently higher for the Low OCS group than for the High OCS group. This indicates that those with low OCS are better able to use their potential intelligence for achievement in these subject matters.

26) There was no significant difference between two Groups (High versus Low OCS) in intelligence-achievement relationship in terms of 2nd language average, Mathematics average, and History average.
6.3 **Limitations Of The Study**

1) The major limitation of the study is its small sample. Although initially a total of 300 data were collected but ultimately 210 could be retained considering the sampling criteria. It would have been better if more data could be collected. However, it was not possible within the stipulated time period, and this limits the generalization of the results.

2) Although the two groups (High versus low OCS) were compared on academic achievement, cognitive processes, and intelligence-achievement relationship, all of them were at non-clinical or sub-clinical level, at least they had never been referred for psychiatric consultation and scored low on CY-BOCS. While it may be generalized from the results that the impairment would be greater in actually Obsessive compulsive disordered group, and the processes would be similar, it would have been better if a disordered group could have been taken and confirmation for the assumption obtained.

3) The present study investigated only academic achievement, cognitive processes, and intelligence-achievement relationship of adolescent students suffering from Obsessive Compulsive symptoms. However, there are a number of variables that could be of considerable significance to highlight the overall impairment in Obsessive Compulsive symptoms. Some such variables are self esteem, coping strategies, temperament, and life style which have not been taken into consideration.

4) Variables like age, grade, health condition, parental education, parental income etc. have been kept constant in the study among the two groups (high versus low OCS), but their impacts have not been studied. The major reason for this lapse again was the small sample size. However, such analyses could have provided an overall picture of impairment resulting in Obsessive Compulsive symptoms. The study would have been much more contributory if different developmental groups were taken and a developmental trajectory of how OCS influences cognition and achievement could have been charted.
5) The purposive sampling technique was used and hence the sample lost the advantage of randomization.

6) To assess obsessive compulsive symptoms, self report inventory was used which may include the self reporting biases.

6.4 Implications And Recommendations For Future Studies

The major achievement of the study is in revealing an overall picture of how Obsessive Compulsive symptoms result in a number of functional impairment like disturbances in specific cognitive elements (i.e., intelligence, memory, attention), and academic performances in school students of 14 years of age. The study findings have discovered an area for educational counseling to those students who lacked their academic achievement despite higher potentials. The study findings have also opened up an area to be studied regarding various psychiatric symptoms that may act as intervening variables between intelligence and academic achievement. The specific counseling programs, psychotherapeutic measures may be formulated depending on the key findings of the study.

The following recommendations may be made on the basis of the study:

1. The findings must be generalized on a larger sample.

2. A more sophisticated research design involving other significant variables needs to be planned and implemented.

3. The familial and social issues of the adolescent students need to be studied and given proper attention.

4. Future studies need to be directed toward pragmatic intervention at individual and family levels. Studies revealed that Obsessional symptoms express themselves as problems in thinking and decision-making, and therefore, cognitive restructuring seems to be the most acceptable mode of intervention (Shafran, 2001).

5. Frequent educational programs at schools about early recognition of various psychiatric symptoms and refer for psychotherapy and pharmacotherapy, need to be conducted involving the students and their parents.
The most significant understanding of the researcher from the present work was that the students with Obsessive Compulsive symptoms can develop and function like other normal students if their problems are recognized at an early level and necessary therapeutic measures can be implemented. However, fear of exposing one’s weakness, stigma of being called ‘crazy’, lack of awareness and lack of exposure prevent them from engaging in various therapeutic measures and be fully functioning individual. The parents and professionals should join hands to help the students with Obsessive Compulsive symptoms to bloom to their fullest potential and contribute to the society as much as possible.