Chapter 5

Discussion

The major findings that emerged from the study are discussed below in the light of the earlier literature and relevant theoretical backdrops. From the present study, it is evident that, gender difference, and difference in Obsessive Compulsive symptoms (OCS) are obtained in case of academic achievement, cognitive processes, and intelligence-achievement relationship. Students suffering from Obsessive Compulsive symptoms have difficulties in thoughts and various cognitive functioning which may lead to the functional deficit in academic performances. Some of the major issues that came up from the study and relevant for understanding how OCS impair performance are discussed below.

5.1 The Sample Was Of Sub-Clinical Level - That Is They Had Never Been Referred For Psychiatric Assessment. This Has Implications In The Understanding Of The Results.

In the present study, the major interest was in examining the role of Obsessive Compulsive symptoms in general population and not on the disease entity per se. This might be considered a limitation as well as strength of the study. While inclusion of a disordered group would have further clarified the function of obsessive compulsive symptoms, the present study with its focus on sub clinical group indicates how even less pronounced problems in thought and behavior have implications in performance. Such considerations may now be judged against the theoretical backdrop.

Researchers showed how Obsessive Compulsive symptoms in sub-clinical group impair cognitive processes, and academic achievement. In a study about the relationship between obsessive-compulsive complaints and academic performance in college students, Mrdjenovich and Bischof (2003) reported that students who indicated a higher level of obsessive-compulsive complaints earned a significantly lower course grade, despite having enrolled in a fewer credit hours. Obsessive-compulsive complaints predicted course grades independent of credit hours.
There have been other studies that hint at explanation of such findings in terms of brain functioning. In a study by Mather, Alison, Hatton and Sam (2004) on cognitive predictors of obsessive-compulsive symptoms in adolescents, it was reported that when age, sex, and depression were controlled, only meta-cognition was a predictor of obsessive-compulsive symptoms. The findings suggested that meta-cognition and responsibility may be important correlates of obsessive compulsive symptoms in youth. In another study by Mataix-cols (2003) on declarative and procedural learning in individuals with sub-clinical obsessive compulsive symptoms, it was found that psychometrically sub-clinical obsessive-compulsive (OC) individuals performed worse than non-obsessive-compulsive controls on specific tests of executive functioning. Both of these studies imply some problem with over all management of cognitive functions. Meta cognition refers to cognition of cognition - in other words insight into cognitive processes of one's own. Executive functioning refers to planning and managing cognitive inputs and outputs systematically. (Alvarez & Emory, 2006) These being hampered, depth and organization of cognitive functions may be sacrificed in favour of detailing of information without integration. This may be responsible for poor academic achievement of youngsters with obsessive compulsive symptoms.

As in our study, the above works also indicate that even before the symptoms reach a pathological level, obsessive compulsive symptoms need to be taken care of, as they affect the macro level organization of information in favour of minute details.

5.2 **There Exists No Significant Difference In General Intelligence Between The Boys And The Girls, Yet The Girls Fare Poorer In Achievement And In A Number Of Cognitive Variables**

So far as gender difference in general intelligence is concerned, not many studies are in favor of sex difference in cognitive ‘g’, but still differences are obtained in achievement in various disciplines. A study conducted by Colom, Espinosa, Abad, and Gazcia (2000) conducted a research on cognitive sex differences in whether, on average, females and males differ in ‘g’. The results suggested a negligible sex difference in ‘g’. This study included the largest sample on which a sex difference in ‘g’ has ever been tested. The findings were consistent with those using quite different test batteries and subject samples. In another study, Nyborg (2005) examined whether there exists sex related differences in general intelligence, brain size, and social status. IQ researchers sum standardized subtest
scores to calculate intelligence in general, and found that males outscored females by about 3.8 points, whereas factor analysts derived the ‘g’ factor scores from interest-correlations and found no consistent sex differences in general intelligence. This study by Nyborg tested four hypotheses: (1) Inadequate analyses explain why researchers get inconsistent results (2) the proper method will identify a male ‘g’ lead, (3) the larger male brain “explains” the male ‘g’ lead. (4) the higher male ‘g’ average and wider distribution transform into an exponentially increased male-female ratio at the high end of the g distribution, and this largely explained male dominance in society. All four hypotheses obtained supported and explained in part why relatively few males dominate the upper strata in all known societies. The confirmation of hypothesis 3 suggested that the brain size-intelligence-dominance link may partly be biological. Kumar and Lai in 2006 studied the role of self-efficacy and gender differences among the adolescents as revealed by intelligence test. Analysis of variance was applied and F-ratio revealed the significant effect of self-efficacy. Significant gender differences were also found, where females scored higher than their male counterparts. No interaction was found in self efficacy and gender. Dayioglu and Asik (2004) examined whether there exists gender difference in academic performance in a large public university in Turkey. The paper found that a smaller number of female students managed to enter the university and when they did so, they entered with lower scores. However, once they were admitted to the university, they excelled in their studies and outperformed their male counterparts.

The findings of the present study supported the above research findings that there was no difference between the boys and the girls in terms of general intelligence (Colom, Espinosa, Abad, & Gazcia, 2000). But boys were consistently better than girls in some cognitive processes like span of memory, full test trial till 100%, PCT in percentage, and attention. Similar finding were obtained in case of achievement variables where boys were again consistently better than girls in 1st language 1st paper average, Physical science average, Life science average, History average, Geography average, and total average. The reasons behind such findings may attribute to our various societal rules or socio-cultural norms that in our society males get much preference and are considered superior than females in different achievement oriented situations which require application of various cognitive skills. Such malpractices hinder females to get expose to various performance or skills developing situations. Unfortunately, such discriminations lack females in developing
various learning skills which may have resulted in their poor performances in academic achievement and cognitive functioning.

5.3 **On The Whole, Obsessive And Compulsive Symptoms Impaired Achievement. Although Some Differences Were Obtained Between Boys And Girls.**

Obsessive Compulsive symptoms result in a number of functional impairment in the child as well as adolescent. Studies have revealed that usually the greatest difficulties occur in execution of those areas, which are of greatest significance to the adolescent, that is, in academic performance, and various aspects of social interaction (Sukhodolsky et al., 2005). Another study by Piacentini, Bergman, Keller, and McCracken (2003), surveyed the functional impairment in children and adolescents with obsessive-compulsive disorder. They examined the complaints reported by 151 OCD children and adolescents and their parents. They observed that parents of clinic referred OCD children and adolescents identified the most significant problems as trouble with concentrating on school work (47%), doing homework (46%), and getting ready for bed (42%). The children and adolescents themselves complained more of difficulties relating to concentrating on school work (37%), doing homework (32%), and doing household chores (30%). Mrdjenovich and Bischof (2003) studied the relationship between obsessive-compulsive complaints and academic performance in college students. This study examined how obsessive-compulsive complaints, as measured by Maudsley Obsessive-Compulsive Inventory (MOCI), related to academic performance in a college student sample (N=56). Students who indicated a higher level of obsessive-compulsive complaints earned a significantly lower course grade, despite having enrolled in a fewer credit hours.

So far as gender difference in mental health is concerned, a large number of studies have demonstrated that in our country as well as in abroad, women are poorer than men in terms of mental health. In general, certain disorders like depression, anxiety disorders including phobia, panic disorder, obsessive compulsive disorder, and certain somatoform disorders, eating disorders etc. are more notable, or at least more diagnosed in women (Desjarloais, Eisenberg, Good, & Kleinman, 1995; Denton & Walters, 1999).

The present study focuses on the investigation of a functional deficit that is loss of academic achievement among adolescents due to Obsessive-Compulsive symptoms. The findings of the study supported the above research findings that there was a significant difference
between high and low Obsessive Compulsive symptoms 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. On the whole, Obsessive Compulsive symptoms resulted in impairment in academic achievement of the child as well as adolescents. It is probably due to the fact that students with high Obsessive Compulsive symptoms are busy with thinking many things at a time, so they cannot switch over from one topic to another as obsessional thoughts intrude forcibly into their mind which probably resulted in poor academic performances. In Obsessive Compulsive symptoms group, boys performed better in 1st language 1st paper average, Physical science average, Life science average, History average, Geography average, and Total average. But in all other achievement variables like 1st language 2nd paper average, 2nd language average, and Mathematics average girls performed better. Overall, boys with Obsessive Compulsive symptoms showed better academic performances than girls with Obsessive Compulsive symptoms. This may be due to the fact that in our society males are considered superior than females in performance situation. In Indian culture, males are much exposed to the different career oriented activities than girls who lack their self confidence probably due to such facts. So, to keep up with such expectations males probably try hard to maintain their academic performances in spite of suffering from obsessive Compulsive symptoms.

5.4 On The Whole, Obsessive And Compulsive Symptoms Impaired Cognitive Processes, Although Some Differences Were Obtained Between Boys And Girls.

Researchers showed that Obsessive Compulsive symptoms are known to impair cognitive performance on domains like visuo-spatial memory, verbal fluency (Roh et al., 2005), spatial working memory, spatial recognition (Purcell et al., 1998), and executive functions (Andres-Perpina, Lazaro-Garcia, Canalda-Salhi, & Boget-Lucia, 2002). Roth, Baribeau, Milovan, and O'Connor (2004) conducted a study to examine the role of speed and accuracy on tests of executive function in obsessive-compulsive disorder. This study suggested that slowness in OCD may be, particularly evident on tests of executive function sub served by frontostriatal circuitry. Results suggested that slowness in OCD may be most apparent on executive tests requiring self-initiated organizational strategies consistent with frontostriatal abnormality. In recent studies, Tarafder, Bilimoria, Roy, and Mukhopadhyay
(2012) investigated the domain of executive functioning, and metacognition in OCD along with obsessive personality traits and obsessive symptoms. The comparative evaluation of the findings indicated that the OCD differed markedly from their control counterparts in terms of Obsessive personality traits, metacognitive beliefs and executive functioning. In another recent study, Tarafder, Bhattacherya, Paul, Bondyopadhyay and Mukhopadhyay (2006) examined neuropsychological disposition and its impact on the executive functions and cognitive style in patients with obsessive-compulsive disorder. Results revealed that Subcortical-cerebeller-Spinal domain of ANQ was found to be associated with cognitive style and executive functions. Finally they stated that the impairment in executive functions and poor activation of specific neurological circuitry in OCD patients affirms the neurophysiological basis of the disorder. In 2008 Trivedi et al examined neurocognitive dysfunction in patients with Obsessive-Compulsive disorder. 30 OCD patients were compared with 30, age and education matched control subjects on computer based tests measuring executive functions, vigilance and special Working memory. Results indicated that OCD patients performed poorly on all the neuro-cognitive parameters as compared to controls. The severity of illness had a positive correlation with poorer performance on CPT. There were no significant correlations between duration of illness and any parameter of cognition. These findings suggested that OCD patients performed significantly worse on cognitive measures than controls. This was consistent with their poorer functional outcome. The results further suggested that on the basis of severity OCD patients are qualitatively distinguishable in neuropsychological terms, given their difference in the profiles of cognitive impairment.

The present study focuses on the investigation of the extent of impairment in cognitive functioning among adolescents due to Obsessive-Compulsive symptoms. The findings of the study supported the above research findings that there was a significant difference between high and low obsessive compulsive symptoms 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 whereas high OCS group was better in Full test trial till 100% and Retroaction. On the whole, Obsessive Compulsive symptoms resulted impairment in cognitive processes of the children as well as adolescents. Poor performance of high obsessive compulsive symptoms group in cognitive functioning may be attributed to
their intrusive thoughts, which are key source of cognitive disturbances. In Obsessive Compulsive symptoms group, boys performed better in all the variables of cognitive processes than girls. Overall, boys with Obsessive Compulsive symptoms showed better performances in cognitive functioning than girls with Obsessive Compulsive symptoms. Again, gender difference in cognitive functioning may be attributed to the socio-cultural phenomena. In country like India where social system always prefers males to maintain economic structure of the family. To keep up with such expectations males get more opportunity to expose in various performance situations than females. Such gender discrimination in many social as well as performance situations hampers confidence level of the female students, which probably resulted in their poor cognitive functioning.

5.5 There Is Difference Between Genders In Terms Of Intelligence Achievement Relationship.

No study was conducted in India or abroad in terms of gender difference in intelligence-achievement relationship. In discussing the present issue, some related studies may be highlighted in support of the findings. Kumar and Lal (2006) examined the role of self-efficacy and gender differences among the adolescents as revealed by intelligence test. Analysis of variance was applied and F-ratio revealed the significant effect of self efficacy. Significant gender differences were also found, where female scored higher than their male counter parts. No interaction was found in self efficacy and gender. In another study Fatima, Ghayas, and Adil (2012) investigated the achievement goals and sociability as predictors of academic achievement. Gender differences in academic achievement, achievement goals, and sociability were also explored in the study. Regression analysis showed that only performance-approach goals significantly predicted academic achievement. Independent sample t-test demonstrated that girls were significantly high on academic achievement and performance-approach goals whereas boys were significantly more sociable. In studying the gender related differences and differences across academic streams on achievement motivation among college students Devi, Gupta, and Shekhar conducted a study in 2011. Significant difference was found between the achievement motivation of sciences and arts stream students as well as among male and female college students.

The present study, though not conducted with exactly the similar variables, supported the above research findings more or less. The research findings of the current study showed that
there was a significant difference between male and 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. Such study findings corroborate previous research findings (Kumar & Lal, 2006; Fatima, Ghayas, & Adil, 2012). The reason may be attributed to the fact that in sub-continent or country like India we are undergoing socio-economic or socio-cultural changes where awareness is developing regarding empowering women in different aspects of life. Such changes are making females more confident and aware to focus on the work at hand, not on the various uncontrollable issues. Again small sample size may be another attributing factor.

5.6 There Is Difference Between High OCS And Low OCS Groups In Terms Of Intelligence Achievement Relationship

Not many studies have been conducted either regarding the present issue or related issues in India or abroad. A study conducted by Malakar, Basu, and Chaudhury, in 2009 examining whether Obsessional thoughts have an effect on intelligence-achievement relationship of late adolescents. Results were analyzed using descriptive statistics, correlational statistics, and 't'-statistics. The analyses revealed significant differences between high and low obsessional thought groups indicating substantial loss in intelligence-achievement relationship attributable to obsessional thought. Research; have shown cognitive predictors of obsessive compulsive symptoms in adolescence (Mather, Alison, Halton, & Sam, 2004). This study examined relations among responsibility attitudes, meta-cognitive beliefs and obsessive compulsive symptoms in youth. The findings suggested meta-cognition and responsibility may be important correlates of obsessive compulsive symptoms in youth. A study by Mrdjenovich and Bischof (2003) about the relationship between obsessive compulsive complaints and academic performance showed that obsessive compulsive symptoms have negative impact on academic performance.

In judging the findings of the present study against earlier research findings, it was observed that there was a significant difference between high and low obsessive compulsive symptoms group 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 study findings corroborate the earlier research findings (Malakar, Basu, & Chaudhuri, 2009; Mrdjenovich, & Bischiof, 2003; Mather & Cartwright, 2004). Poor intelligence-achievement relationship of high obsessive compulsive symptoms group may be attributed to their intrusive thoughts, and ritualistic behaviors which are major source of cognitive problems resulting in poor intelligence-achievement relationship. In the year 1989 Salkovskis stated that intrusive cognitions also arise in non-stress conditions; indeed, the intrusion of cognitions into consciousness in normal day-to-day life is well established. Salkoviskis, Shafran, Rachman, and Freeston (1999) suggested that ‘people suffering from obsessional problems appear to have an enduring tendency to make negative interpretations of intrusions...pre existing general assumptions and beliefs concerning such responsibility may be the basis of such tendencies’ (p.103). These intrusive cognitions coupled with the schemas concerned with the need to control them produces distress.

5.7 Integration Of The Findings

On the whole, the present study underscores how obsessive compulsive symptoms are important in non-clinical population in terms of impairing cognitive functions, achievement, as well as the utilization of intelligence to be deployed in achievement in academic sphere, that is intelligence achievement relationship. Thus the significance of the study lies in demonstrating the pathway of the operation of obsessive compulsive symptoms to impair the ultimate observable academic output. In our country, where academic achievement is given special importance in later life, the importance of such study and remedial measures taken on its basis may be considered quite significant.

A number of earlier theorization about Obsession and compulsion suggest that non-clinical symptoms and clinical diagnostic criteria indeed lie on a single continuum (Luchian, McNally & Hooley, 2007; Mataix-Cols, Marks, Greist, Kobak, & Baer, 2002). The concept of Obsessive compulsive spectrum disorder or OCSD is important in this context; there have been suggestions that a large number of symptoms and disorders overlap with OCSD (Phillips, McElroy, Hudson, & Pope, 1995). Considering the developmental pattern of OCD, there remains a high possibility that quite a few from this sample would develop OCD in their late teens, while others may carry on with the behavioural pattern and some others may recover from the binding symptoms. At this point, it would be interesting to
keep an eye on the literature of OCD remission. In general, follow-up studies of OCD in children and adolescents have reported low rates of remission (Thomsen, 1995), although in India Reddy et al. (2003) reported that a considerable number of such children and adolescents obtained full remission. It remains for later workers to understand to what extent spontaneous improvement in cognitive functions and achievement is also observed.

There have been different theories as to how obsessive compulsive symptoms cause cognitive problems. Recent research identifies specific belief domains that may cause cognitive deficit, mostly from intrusive thoughts: for example, some consider six beliefs namely, inflated personal responsibility, overimportance of thought, beliefs about the importance of controlling one's thoughts, overestimation of threat, intolerance for uncertainty and perfectionism (Steketee, Frost, & Cohen, 1998). Other categorization of belief systems are also discernible (Wheaton, Abramowitz, Berman, Riemann, & Hale, 2010; Wu, Aardeina, & O'Connor, 2009). The neural basis of such dysfunctional beliefs have also been explored (Nakamae et al., 2012). However, some studies, in turn, find less significance of dysfunctional belief systems in obsessive compulsive symptoms (Taylor et al., 2010).

However, in case of the present study, it is possible to consider the outcomes in terms of such dysfunctional beliefs. It has been suggested that the attempt to control thoughts and anxiety due to overestimation of probable negative outcome distracts the individual with obsessive compulsive symptoms (Janeck, Calamari, Riemann, & Heffelfinger, 2003; OCCWG, 2001). Our study revealed that memory factors and attentional components of cognition were disturbed in high OCS group, despite their being non-clinical in status. Retroaction and time required for memorizing was greater in high OCS group. The inner distraction due to overemphasis and preoccupation with thought control might have enhanced retroaction and attention problems.

Similarly, the high OCS group, especially the girls had problem in utilizing the potential intellectual capability to the fullest extent. It may be stated that the gap between potential and actualization lies in inner and outer environmental factors. The lack of confidence generated by being subject to uncontrolled thought intrusion and subtle social pressurizations for being a female might have worked as hindrances to actualization.
In this context, we may recall that there are works suggesting that a mild degree of obsessive compulsive symptoms promote perfectionism in a positive sense. Our study was not concerned with motor performance; so far as memory, attention and academic achievement was concerned, we did not find any positive outcome of the obsessive compulsive symptoms. It remains for future workers to dwell in detail on this.

On the whole, the study suggests that care needs to be taken for dealing with obsessive compulsive symptoms from early childhood onward to promote full utilization of cognitive and academic potential. Awareness needs to be generated among the parents and teachers in this regard.