CHAPTER-1

INTRODUCTION
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1.1 The Obsessive Compulsive Spectrum

Obsessive compulsive symptoms (OCS) are understood to constitute a spectrum, some being discernible in the non-clinical population, and others constituting a full blown obsessive compulsive disorder (OCD) (Teberner et al., 2009). Indeed OCD itself is recognized as a highly heterogeneous condition, not only expressed through a range of symptoms but also comorbid with many other clinical conditions (Kayahan, Ozturk, Veznedaroglu, & Eraslan, 2005). Such observations have also resulted in designating a group of syndromes as Obsessive Compulsive Spectrum Disorder (OCSD). OCSD is a model of medical categorization where by certain psychiatric, neurological and/or medical conditions are described as existing on a spectrum of conditions related to OCD (McElroy, Phillips, & Keck, 1994). The model suggests that many conditions overlap with OCD in symptomatic profile, demographics, family history, neurobiology, comorbidity, clinical course, and response to specific pharmacotherapy. These include Body dysmorphic disorders, Hypochondriasis, Trichotillomania, Hoarding, Tourette’s syndrome, Paraphilias, Pica, Sexual addictions, Eating disorders, certain Social phobias and the like.

Since, OCS are seen in apparently non-clinical population also, questions arise as to whether obsessive-compulsive disorders are a clinical entity entirely discontinuous from normal behavior and experience, or whether they are only quantitatively different from the normal (de Silva, 2003). The apparent bizarreness of many obsessive-compulsive symptoms imply that the disorder is very different from normal behavior and experience. Some have taken the position that obsessive-compulsive symptoms are a defence against a psychotic breakdown, and that many obsessive-compulsive patients may end up being schizophrenic (Bleuler, 1955). There is no clear evidence that this is the case (Pollack, 1987; Rachman & Hodgson, 1980). Yet some findings on the strength with which some of these patients hold certain beliefs associated with their obsessions and compulsions, leading to these being described as ‘overvalued ideas’ and even ‘delusional’, serve to emphasize this point (Foa,
1979), and is definitely qualitatively different from what is usually regarded as normal (Jakes, 1996).

At the same time, much of the obsessive-compulsive phenomenology is not unique to the small number of persons who come for help and get diagnosed as having obsessive-compulsive disorder. The two main characteristics of the disorder, the obsession and the compulsion, are commonly found in normal persons. In a study designed to assess the prevalence and characteristics of obsessions in a non-clinical population, Rachman and de Silva (1978) found that a very large proportion of normal persons did have obsessions remarkably similar to their clinical counterparts. The figure was around 80%. Both in form and content, these obsessions were very similar to, and indeed indistinguishable from, those reported by clinically identified obsessive-compulsive patients. The main differences were in frequency, distress and degree of severity. These findings have been replicated by Salkovskis and Harrison (1984), among others. This is not a surprising finding when one considers the essential nature of an obsession. An obsession is an unwanted cognition that intrudes into consciousness, and there are many studies showing that certain experiences, usually stressful, tend to cause intrusive cognitions. A case in point is the impressive series of studies by Horowitz (1969, 1975), and comparable data come from the more recent literature on post-traumatic stress disorder (e.g. de Silva & Marks, 2001). Intrusive cognitions also arise in non-stress conditions; indeed, the intrusion of cognitions into consciousness in normal day-to-day life is well established (Salkovskis, 1989). The main differences between clinical obsessions and normal intrusions are that the latter are more persistent, more repetitive, may cause more discomfort and are harder to remove. The content of some obsessions is also impersonal and sometimes senseless (de Silva, 1986). As for compulsions, it is clear that many people do have superstitious and stereotyped behaviors that resemble clinical compulsive behavior. More importantly, a significant number of people who never come to clinics or hospitals do have compulsive behaviors very similar, in both form and content, to those of their clinical counterparts, although not as disabling (Rachman & Hodgson, 1980). A report by Frost, Sher, and Green (1986) provides clear evidence of this. Nearly 10% of a sample of 384 people scored 5 or more (range of possible scores 0–9) on the checking subscale of the Maudsley Obsessional-Compulsive Inventory (MOCI). Only 34% were completely free of ‘symptoms’ (i.e. scored 0). In a second study of 148 female students, the proportion of checkers, as determined by the same
criterion, was 12%, with only 19% being complete non-checkers. The typical checking behaviors that these non-clinical subjects engaged in were very similar to those of compulsive patients, e.g. checking to make sure that doors are locked, checking that appliances are turned off and checking clothing for dirt. An Italian study (Sanavio & Vidotto, 1985) using the MOCI showed checking, contamination and cleaning, doubts and intrusive thoughts and, in males, slowness in a large ($n = 868$) non-clinical sample. Muris, Merckelbach, and Clavan (1997) in their study of compulsions in a non-clinical group, found that 55% exhibited some form of ritualistic behavior, while a figure of 10–27% was reported by Frost, Lahart, Dugas, and Sher (1988). Clearly both obsessions and compulsions are common in the general population, although they are less frequent, less severe and less persistent than in those with obsessive-compulsive disorder.

1.1.1. Constituent Elements Of Obsessive-Compulsive Experiences

The phenomenology of obsessive compulsive experience also underscores its experiential variations (de Silva, 2003; In India, Avasthi & Kumar, 2004). In clinical cases, an obsession may occur without an associated compulsion, as when a young woman has intrusive thoughts and images of her wedding reception, which she found distressing, but which led to no active compulsion (Akhtar, Wig, Verma, Pershod, & Verma, 1975; Wilner, Reich, Robins, Fishman, & van Doren, 1976). More often, obsessions lead to related compulsive behavior, for example an obsessional thought of contamination by germs or dirt, leading to extensive washing of hands and body each time the obsession is experienced. In such cases, the individual feels a strong need to wash and an inability to relax until this has been accomplished. Compulsions without obsessions are very rare but they do occur. An example is a man who had a compulsion to imagine each car number plate he saw with the numbers transformed in a certain way (multiplied by two, or squared) (Wilner et al., 1976). Rachman and Shafran (1998) have pointed out that occasionally the compulsive behavior can give rise to an obsession; repeated checking of the gas cooker, for example, can be followed by the obsessional thought that one’s mental stability and reliability are impaired. Such instances, however, are rare.

The relationship between the obsession and the compulsion is perhaps best understood in the context of all the key variables that are associated with an obsessive-compulsive experience. These elements will be briefly described.
**Trigger**

A trigger is an external or internal event or a cue that sets off an obsession, a feeling of discomfort or, indeed, a compulsive urge. Triggers are not invariably present in all Obsessive Compulsive experiences.

**Obsession**

Obsessions are intrusive thoughts, images and impulses that continue to recur in the mind of the affected person.

**Discomfort**

The occurrence of the obsession usually leads to a feeling of discomfort. It may also, less commonly, be generated simply by exposure to the trigger, or by the emergence of the compulsive urge. Obsessive-compulsive experiences always include discomfort for the OCD patient; though not necessarily for non-clinical instances (de Silva, 2003).

**Compulsive Urge**

This is the urge, or drive, that the person feels to carry out a particular behavior, usually in a particular way. Not every obsessive compulsive experience has this element.

**Compulsive Behavior**

This is the behavior, which can be either overt or covert, that results from the compulsive urge. When the term ‘compulsion’ is used, it usually refers to the compulsive urge and the compulsive behavior taken together.

**Discomfort Reduction**

When the compulsive behavior is executed in the required manner, the patient normally feels relieved; the discomfort (or anxiety) caused by the obsession (and/or the trigger, and/or the compulsive urge) is eliminated or reduced. Indeed, in a small number of cases the discomfort may even increase. Moreover, even when the compulsive behavior reduces the anxiety or discomfort, the person may be left feeling frustrated and demoralized (Beech, 1971).
**Fears of Disaster**

These are found frequently: the patient feels that a certain disaster will happen unless he/she wards it off by engaging in his/her compulsive behavior.

**Inflated Responsibility**

Many patients experience an inflated sense of responsibility, even for events over which they have no control. Indeed, some authorities consider an exaggerated sense of responsibility to be a cardinal feature of the disorder (Salkovskis, 1985). Salkovskis (1998) stressed that obsessive-compulsive patients also feel responsibility for not preventing, or not trying to prevent, harm to others or self—in other words, responsibility for inaction. Clinical observation shows that an inflated sense of responsibility is particularly common among those whose main problem is excessive checking. This inflated responsibility also tends to generate intense guilt (de Silva, 2003).

**Reassurance Seeking**

Many obsessive-compulsive patients resort to seeking reassurance from others, usually members of their families. Yet, at best, the provision of such reassurance provides only brief relief. Sometimes reassurance seeking is an undisguised attempt to enlist someone else to help in one’s checking (Rachman & Shafran, 1998).

**Avoidance**

Avoidance can be a significant feature in the clinical picture, although it is not part of the obsessive-compulsive experience itself. The avoidance behavior commonly concerns stimuli and situations that, potentially, can trigger the obsession or the compulsion.

**Disruption**

When an obsessive-compulsive patient engages in his/her compulsive behavior, the patient needs to carry it out precisely as he/she feels it has to be done. If the behavior is disrupted in any way, for many it is invalidated and needs to be restarted.
Resistance

Both obsession and the compulsion may be resisted by the sufferer. In his much-quoted paper, Sir Aubrey Lewis (1936) argued that the central and indeed essential feature of obsessive compulsive disorder was the strong resistance that the patient had. Other studies (Rachman & Hodgson, 1980; Stern & Cobb, 1978) have shown that whilst resistance is very common, it is not found invariably. There are chronic obsessive-compulsive patients where resistance to symptoms is quite low (Rasmussen & Tsuang, 1986).

Other Key Phenomena

A few other aspects of obsessive-compulsive phenomena need to be mentioned. A ritual in this context is a compulsive act, either overt or covert, which has specific features: a rigid set pattern or sequence of steps with a clear-cut beginning and end. An example is a checking ritual where a system of checks is carried out in an invariant sequence. Most compulsive behaviors have a ritualistic quality to them but some are very highly ritualized. Rumination is a train of thoughts, usually unproductive and prolonged, on a particular topic. A young man had complicated and time-consuming rumination on the question, 'Am I genetically flawed?' In recent years, a particular cognitive feature that is found in many obsessive-compulsive patients has been highlighted: thought-action fusion. This refers to a tendency to fuse thoughts and actions (Rachman, 1993). The fusion appears to have two components. One is the belief that thinking about a distressing or disturbing event, such as an accident to a loved one, increases the probability of that event actually occurring. The second is the interpretation of obsessional thoughts as equivalent, in a moral sense, to forbidden action. Thinking about something unacceptable is as bad as actually performing that action. To cite an example from Rachman and Shafran (1998), if a mother experiences the intrusive thought that she is going to harm her child, she is likely to feel almost as morally responsible as if she had really harmed her child.

1.1.2. The Obsessive Compulsive Personality

The issue of spectrum has been further complicated by the existence of obsessive compulsive or Anankastic Personality trait (Sandler & Hazari, 1960). These terms refer to a group of behavioral phenomena characterized by control. An individual with obsessional personality trait is seen to exercise marked measure of control over both himself and his
environment. S/he is conscientious, deliberate, thoughtful and rational in approach to life and its problems may appear dry and pedantic. When these traits are carried to an extreme, s/he emphasizes the reason and logic at the expense of feeling and intuitions and tries to be objective and to avoid being carried away by subjective enthusiasm. As a result s/he often appears sober and emotionally distant but also a person with steadiness of purpose, reliability, earnest consciousness. Simultaneously s/he lacks inflexibility, imagination and inventiveness.

Orderliness and tidiness characterize such a person’s arrangement of space as does punctuality. S/he can be surprisingly obstinate and stubborn when challenged or contradicted. S/he seems to abide by justice and honesty, has a strong sense of property right, manages resources with frugality and does not easily part with possession.

The traits that form the obsessional personality have been variously described (Sandler & Hazari, 1960) and investigations have been conducted into the extent to which these traits are causal and overlap with OCD (Pollak, 1987). The psychoanalytic view of anal erotic character is a ‘triad of characteristics which are almost always to be found together like orderliness, parsimoniousness and obstinacy’ (Freud, 1908). Ingram (1961) observed that the primary difference between these definitions of obsessional personality was in differences of emphasis in the language used, and in the elaboration of the theory of anal eroticism as linked to infant bowel functions and toilet training. A number of studies have failed to demonstrate such links (Pollak, 1979). Even if these could be shown, they could be interpreted as functions of childhood training in general as subject to the rigid, obsessional practices of a parent rather than due to specific repressive toilet training (Carr, 1974).

Nevertheless, the so called obsessional personality became viewed as a precursor to the development of OCD. Lewis (1936) noted that while many patients with OCD did indeed show such traits, it was easy to confuse them with symptoms and, more recent research suggested that ‘They are...just as commonly found among patients who never have an obsessional neurosis but who get an agitated melancholia...The traits are also, of course, common among healthy people. They are, conversely, sometimes indiscernible in the previous personality of patients who now have a severe obsessional neurosis’ (p.103).

The cognitive approach to OCD provides a different view of what earlier writers might have called ‘obsessional personality’. In discussing the development of an overdeveloped sense
of responsibility, Salkoviskis, Shafran, Rachman, and Freeston (1999) suggest 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). They examined a number of factors that may predispose people to obsessional thinking and behaviour by leading them to formulate general assumptions and beliefs that increase their sense of responsibility. In the main, these derive either form childhood experiences of parents or other authority figures, or from critical incidents that influence learning.

Alongside the development of cognitive models of OCD, individual difference research has begun to examine the correlation of phenomena such as responsibility perfectionism with OC symptoms, primarily in non clinical populations. Scarrabelotti, Duck, and Dickerson (1995) found that responsibility, together with Eysenckian N, predicted discomfort from OCs after controlling for mood. Bhar and Kyrios (1999) also found perfectionism to be related to OC phenomena. In each of these studies correlations are modest no 'all or none' phenomena are present, indicating heterogeneous routes to susceptibility, an area indeed of further research.

1.2 **Obsession And Compulsion As Disease**

The criteria of OCD according to DSM-IV-TR, are:

A. Either obsessions or compulsions:

*Obsessions as defined by (1), (2), (3), and (4):*

(1) recurrent and persistent thoughts, impulses, or images that are experienced at some time during the disturbance, as intrusive and inappropriate and that cause marked anxiety or distress

(2) the thoughts, impulses, or images are not simply excessive worries about real-life problems

(3) the person attempts to ignore or suppress such thoughts, impulses, or images, or to neutralize them with some other thought or action
(4) the person recognizes that the obsessional thoughts, impulses, or images are a product of his or her own mind (not imposed from without as in thought insertion)

*Compulsions as defined by (1) and (2):*

(1) repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) that the person feels driven to perform in response to an obsession, or according to rules that must be applied rigidly

(2) the behaviors or mental acts are aimed at preventing or reducing distress or preventing some dreaded event or situation; however, these behaviors or mental acts either are not connected in a realistic way with what they are designed to neutralize or prevent or are clearly excessive

B. At some point during the course of the disorder, the person has recognized that the obsessions or compulsions are excessive or unreasonable. *Note:* This does not apply to children.

C. The obsessions or compulsions cause marked distress, are time consuming (take more than 1 hour a day), or significantly interfere with the person’s normal routine, occupational (or academic) functioning, or usual social activities or relationships.

D. If another Axis I disorder is present, the content of the obsessions or compulsions is not restricted to it (e.g., preoccupation with food in the presence of an Eating Disorder; hair pulling in the presence of Trichotillomania; concern with appearance in the presence of Body Dysmorphic Disorder; preoccupation with drugs in the presence of a Substance Use Disorder; preoccupation with having a serious illness in the presence of Hypochondriasis; preoccupation with sexual urges or fantasies in the presence of a Paraphilia; or guilty ruminations in the presence of Major Depressive Disorder).

E. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

*1.2.1. Common Features Of Obsessions And Compulsions*

Obsessions and compulsions have certain features in common: An idea or an impulse intrudes itself insistently and persistently into a person’s conscious awareness. A feeling of
anxious dread accompanies the central manifestation and frequently leads the person to take countermeasures against the initial idea or impulse. The obsession or the compulsion is ego-alien; that is, it is experienced as foreign to the person's experience of himself or herself as psychological being. No matter how vivid and compelling the obsession or compulsion, the person suffering from obsessions and compulsion usually feels a strong desire to resist them. Nevertheless, about half of all patients offer little resistance to compulsions, although about 80 percent of all patients believe that the compulsion is irrational. Sometimes patients overvalue obsessions and compulsions—for example, they may insist that compulsive cleanliness is morally correct, even though they have lost their job because of time spent cleaning (Sadock & Sadock, 1998).

1.2.2. Clinical Description

a) Epidemiology

The lifetime prevalence of OCD in the general population is estimated at 2 to 3 percent. Some researchers have estimated that the disorder is found in as many as 10 percent of outpatients in psychiatric clinics. These figures make OCD the fourth most common psychiatric diagnosis after phobias, substance-related disorder, and major depressive disorder. Epidemiological studies in Europe, Asia, and Africa have confirmed these rates across cultural boundaries (Sadock & Sadock, 1998, p.616).

Among adults, men and women are equally likely to be affected, but among adolescents, boys are more commonly affected than girls. The mean age of onset is about 20 years although men have a slightly earlier age of onset (mean about 19 years) than women (mean about 22 years). Overall the symptoms of about two third of affected persons have an onset before age 25, and the symptoms of fewer than 15 percent have an onset after age 35. The onset of the disorder can occur in adolescence or childhood, in some cases as early as 2 years of age. Single persons are more frequently affected with OCD than are married persons, although this finding probably reflects the difficulty that persons with the disorder have maintaining a relationship. OCD occurs less often among blacks than among whites, although access to health care rather than differences in prevalence may explain the variation (Sadock & Sadock, 1998, p.616).
Some Indian studies demonstrate different rate of occurrence. A recent review by Reddy, Rao and Khanna (2010) reports a study by Khanna, Gururaj, and Sriram (1993), where only 0.6 percent of OCD was obtained. However, in a recent study by Sanyal and Basu (2012), a prevalence of 3% was obtained among adolescents.

b) Comorbidity with other diseases (Shafran, 2001)

OCD has been associated with a range of other disorders including body dysmorphic disorder, Tourette’s syndrome, eating disorders, anxiety disorders and depression (Hollander, 1993). Indeed, it is considered that OCD is one disorder on an ‘obsessive-compulsive spectrum’ (Hollander, 1993). A number of factors need to be taken into consideration when drawing conclusions about co-morbidity, including base-rates, phenomenological overlap between the disorders and specificity of assessment measures. OCD in children and adolescents specifically has been associated with motor tics and Tourette’s syndrome (e.g. Leonard et al., 1993; Thomsen & Mikkelson, 1995) and it has been suggested that OCD and Tourette’s syndrome may be alternative manifestations of the same underlying illness (Pauls, Alsobrook, Goodman, Rasmussen, & Leckman, 1995). However, there are important differences between patients with OCD alone and patients with OCD + Tourette’s syndrome. Specifically, the latter group tends to have more touching counting and blinking compulsions and fewer cleaning compulsions than patients with OCD alone (George, Trimble, Ring, Sallee, & Robertson, 1993; Holzer et al., 1994). Comorbid affective and anxiety disorders are common comorbid problems. In the NIMH sample of 70 children, only 18 (26%) had OCD as their only diagnosis, with 35% receiving a co-morbid diagnosis of depression, and 40% having a co-morbid anxiety disorder (Swedo, Rapoport, Leonard, Lenane, & Cheslow, 1989b). In other clinical studies of children and adolescents, a similar proportion (60–80%) had other lifetime diagnoses apart from OCD (Hanna, 1995; Last & Strauss, 1989). The episodic course of a substantial number of patients with childhood OCD could be attributed to variability in depression.

1.2.3. Classification On The Basis Of Phenomenology

de Silva (2003) narrated the different clinical presentations of OCD. Obsessive-compulsive phenomena manifest themselves in different clinical presentations. Patients may be categorized, for convenience, on the basis of the prominent aspects of the disorder that they present with. The main clinical presentations are:
1. Those with washing/cleaning compulsions as the prominent problem.

2. Those with checking compulsions as the prominent problem.

3. Those with other overt compulsions as the prominent problem.

4. Those with obsessions unaccompanied by overt compulsive behaviour.

5. Those with compulsive hoarding.

6. Those with primary obsessional slowness.

1.2.4. Etiology

Genetics

Family studies have consistently demonstrated more people with OCD among the first-degree relatives of patients with childhood onset OCD than among the first-degree relatives of patients with later onset OCD (Starcevic. 2005). However, twin studies have been inconsistent in demonstrating a higher concordance among dizygotic pairs. When a "dimensional approach" is employed, twin studies support the heritability of obsessive-compulsive symptoms (van Grootheest, Cath, Beekman, & Boomsma, 2005). It is assumed that those with early onset OCD have a stronger genetic contribution. There has been nothing definitive to this point (January, 2008). Three genome-wide linkage studies and 80 candidate gene studies have been published, but little progress has been made (Pauls, 2010; Grados, 2010).

Biological Theory

On the other hand, some biological theories regarding OCD posit that the symptoms associated with OCD come about as a result of abnormal serotonin functioning (Abramowitz & Luenzmann, 2004; Maltby & Tolin, 2003). This is mostly due to the finding that patients who suffer from OCD tend to respond more to serotonin reuptake inhibitors (SRIs) versus placebos or other pharmacotherapy (e.g., nonserotonergic medicines) (Abramowitz & Luenzmann, 2004; Maltby & Tolin, 2003). However, although some studies have shown a link between serotonin levels and OCD, others have not supported the serotonin hypothesis (Abramowitz & Luenzmann, 2004).
Psychoanalytical Theory

Many different theories have been proposed in regard to the etiology of OCD. Not surprisingly, each school of thought has their own views. For example, many psychoanalysts believe that OCD comes about as a result of unresolved or unsettled conflicts that occurred during one’s respective childhood (Freud believed that these conflicts were found in the anal sadistic phase) (Cordioli, 2008); this eventually contributes to the development of the obsessions and compulsions that are characteristic of OCD (Abramowitz & Luenzmann, 2004).

Behavioral Theory

The basic idea of the behavioral explanation is based on animal conditioning research. Mowrer (1960) developed a two-factor theory of phobias in which he postulated that stimuli acquire aversive properties through classical conditioning but that fear was maintained over time by avoidance because by avoiding a feared stimulus you are reinforcing avoidance behavior (because the outcome of avoidance is positive). Also, by avoiding a stimulus you never disconfirm your belief that it is unpleasant. A similar idea is applied to OCD in which thoughts and obsessions are thought to become aversive through association with some traumatic event. The rituals develop as a means to neutralize (or avoid) these obsessions and so ritualistic behavior is reinforced.

The evidence for this model comes mainly from work with animals that has shown that if a stimulus is classically conditioned to have aversive properties, animals quickly learn to avoid that stimulus (Soloman & Wynne, 1954). In addition this avoidance behavior resembles the ritualistic behavior seen in OCD. Finally, if the avoidance behavior is blocked, physiological anxiety increases.

There are plenty of problems with this account, not least of which is that most obsessions are fairly distressing in their own right, so it is unlikely that they acquire aversive properties through conditioning. In fact, Jones and Menzies (1998) showed very little retrospective evidence for learning pathways in OCD. The behavioral model also doesn’t explain cases in which obsessions occur but compulsions don’t.
Cognitive Theory

Cognitive models of OCD suggest that OCD (and many other disorders) involves distorted, intrusive thoughts or assumptions; on the other hand, behavioral models of OCD involve the maintenance of obsessions due to the anxiety-reducing nature of the compulsive behaviors (Abramowitz, 2006; Maltby & Tolin, 2003). In this sense, erroneous assumptions, such as perfectionism, the need to control one’s thoughts, miscalculations of perceived threats, and an intolerance of ambiguity (Obsessive Compulsive Cognitions Working Group, 1997), help to maintain the disorder and its symptoms (Maltby & Tolin, 2003). In addition, this theory suggests that compulsions are even more potent for OCD sufferers because in addition to reducing the person’s anxiety they also prevent the person from seeing how unrealistic their fears were at first glance (Abramowitz & Luenzmann, 2004).

Social Theory

OCD is not caused by parenting or other family problems, however, the way a family reacts to a child with OCD can affect the disorder (March & Mulle, 1998). It has been suggested that the parent’s reaction to their child’s behavior can either increase or decrease the child’s anxiety. Barrett, Shortt, and Healy (2002) found that parents of children with OCD, when compared to the parents of non-OCD children, did not use much problem solving. Did not encourage their child’s independence, and did not have as much confidence in their child’s abilities. Similarly, children with OCD were less confident in themselves, used problem-solving less, and showed less warmth with their parents than children without OCD.

1.3 Obsessive Compulsive Symptoms In Children And Adolescents

Obsessive-compulsive disorder (OCD) is a relatively common disorder among children and adolescents, and is associated with increased risk for concurrent and future distress and impairment (Merlo, Storch, Murphy, Goodman & Geffken, 2005). Most studies in India and abroad reveal that the rate of OCD is similar in children and adolescents to that of adults. Males usually outnumber females and comorbidity is also apparent (Reddy et al., 2001; Reddy et al., 2003; Jaisoorya, Reddy; & Srinath, 2003). The symptoms may take various forms in children and adolescents. Children may have worries about germs, getting sick, dying, bad things happening, or doing something wrong. Feelings that things have to be “just right” are common in children. Some children have very disturbing thoughts or images
of hurting others, or improper thoughts or images of sex. There are a variety of compulsive rituals also, such as washing and cleaning, repeating actions until they are just right, starting things over again, doing things evenly, erasing, rewriting, asking the same question over and over again, confessing or apologizing, saying lucky words or numbers, checking, touching, tapping, counting, praying, ordering, arranging and hoarding.

Literature reveals that Obsessive-compulsive symptoms in children and adolescents have characteristics common to, as well as different from the adult stage. Their biological, psychological, social and cognitive resources shift throughout childhood and adolescence (Rangaswami, 1998). Normal children often display obsessive ideas and compulsions at certain stages of development, which later fades away (Judd, 1965). Yet, like the adult OCD patient the principal problem among child OCD is also cognitive in nature (Rangaswami, 1999). Various cognitive models like ‘thought action fusion model’ (Rachman, 1976), cognitive behavior model (Salkovskis, 1985; 1989). Clark and Pardon model (1993). Meta cognitive model (Wells & Mathews, 1997), general working model (Wells, 1997) and developmentally based cognitive model (Rangaswamy, 1998) have been used to explain cognitive deficit associated with obsessive compulsive symptoms.

Obsessive-compulsive tendencies result in a number of functional impairment in the child. 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). A study by Piacentini, Bergman, Keller, and McCracken (2003) surveyed the complaints reported by 151 OCD children and adolescents and their parents. They observed that parents of clinic referred OCD children and adolescents indentified the most significant problems as trouble with concentrating on schoolwork (47%), doing homework (46%), and getting ready for bed (42%). The children and adolescents themselves complained more of difficulties relating to concentrating on schoolwork (37%), doing homework (32%), and doing household chores (30%).

In the context of the above background, the present study purported to examine the role of obsessive compulsive symptoms in intelligence-achievement relationship and cognitive processes among school students. It focused on the non-clinical or sub clinical sample, that is not on the students who suffer from Obsessive Compulsive
Disorder (OCD) per se, but those who have a share of Obsessive Compulsive Symptoms (OCS) in different degrees. Therefore, OCS may be viewed in this context as a personality variable, where such symptoms may be seen as habitual pattern of behavior. In the following sections, the nature of intelligence, cognitive processes, achievement, and the relation of achievement with intelligence and personality in general would be discussed briefly.

1.4. Cognition And Cognitive Processes

Behaviorism was the dominant force in psychology until the late 1950s and 1960s, when many psychologists began to realize that they could not understand or explain observable behavior without referring to mental processes (Gardner, 1985; Reed, 2001). The term cognitive psychology became a label for approaches that sought to explain observable behavior by investigating mental processes and structures that cannot be directly observed (Sternberg, 2003; Willingham, 2004). Since 1960s, cognitive psychology has played a crucial role in understanding psychopathology as well.

Cognition refers both to the processing of information and its end product. Intelligence is the global cognitive function which incorporates a number of cognitive processes like attention, perception, learning, memory, thinking, problem solving, decision making and language. The overlap and distinction between intelligence and cognitive processes need to be clarified at this point.

1.4.1. Intelligence And Cognitive Processes

In the literature of Psychology, we find references of intelligence tests and assessment of cognitive processes. Since both are concerned with apprehending environment and responding to information, their interrelations need to be clarified. The debate over defining intelligence is well known. Legg (2007) provides a collection of definitions of intelligence available on the internet that provides a glimpse into the intricacy of the problem. The APA 1996 Intelligence task force report provides a working concept in the following form: “Individuals differ from one another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought” (Neisser et al., 1966). The same task force however, points out the unanswered aspects of intelligence:
1. Differences in genetic endowment contribute substantially to individual differences in (psychometric) intelligence, but the pathway by which genes produce their effects is still unknown. The impact of genetic differences appears to increase with age, but we do not know why.

2. Environmental factors also contribute substantially to the development of intelligence, but we do not clearly understand what those factors are or how they work. Attendance at school is certainly important, for example, but we do not know what aspects of schooling are critical.

3. The role of nutrition in intelligence remains obscure. Severe childhood malnutrition has clear negative effects, but the hypothesis that particular "micro-nutrients" may affect intelligence in otherwise adequately-fed populations has not yet been convincingly demonstrated.

4. There are significant correlations between measures of information processing speed and psychometric intelligence, but the overall pattern of these findings yields no easy theoretical interpretation.

5. Mean scores on intelligence tests are rising steadily. They have gone up a full standard deviation in the last fifty years or so, and the rate of gain may be increasing. No one is sure why these gains are happening or what they mean.

6. The differential between the mean intelligence test scores of Blacks and Whites (about one standard deviation, although it may be diminishing) does not result from any obvious biases in test construction and administration, nor does it simply reflect differences in socio-economic status. Explanations based on factors of caste and culture may be appropriate, but so far have little direct empirical support. There is certainly no such support for a genetic interpretation. At present, no one knows what causes this differential.

7. It is widely agreed that standardized tests do not sample all forms of intelligence. Obvious examples include creativity, wisdom, practical sense and social sensitivity; there are surely others. Despite the importance of these abilities we know very little...
about them: how they develop, what factors influence that development, how they are related to more traditional measures.

Many definitions of intelligence, including APA's accepted definition imply inclusion of cognitive processes in specific functional relations: For example, as early as in 1979 Humphrey said that intelligence is the "resultant of the process of acquiring, storing in memory, retrieving, combining, comparing, and using in new contexts information and conceptual skills." Simonton (2003) states: "... certain set of cognitive capacities that enable an individual to adapt and thrive in any given environment they find themselves in, and those cognitive capacities include things like memory and retrieval, and problem solving and so forth. There's a cluster of cognitive abilities that lead to successful adaptation to a wide range of environments."

From the above, it may be understood that there are differences as well as overlap between these two constructs. The issue is further complicated by the fact that while early theories of intelligence emphasized the 'g' or general factor cutting across many functions (Spearman, 1904), the more recent theories are in favor of multi-modal conceptualization of intelligence (Goddard, 1920). At the same time, it is being understood that the tests which were believed to assess 'g', in fact assessed many other aspects also. Thus much of the conceptualization depends on the nature of test used.

In the present research, we have used the term 'intelligence' to designate the notion nearer to 'g', so that we can have the assessment of a separate array of cognitive processes. The functions that may constitute cognitive processes are detailed below.

**Attention**

Sustained concentration on a specific stimulus, sensation, idea, thought or activity, enabling one to use information processing systems with limited capacity to handle vast amounts of information available from the sense organs and memory stores (Colman, 2006). Attention has two parts,

1. **Selective attention**, which involves focusing on a specific aspect as experience while ignoring others (Johnson & Proctor, 2004; MacLeod, Rutherford, Campbell, Ebsworthy, & Holker, 2002).
2. **Divided attention**, which occurs when a person must attend to several things simultaneously (Brouwer, Withaar, Tant, & Van Zomeren, 2002). Attention is selective because the brain's resources are limited (O'Donnell, 2002; Reynolds & Chelazzi, 2004).

**Perception**

Perception is the process of organizing and interpreting sensory information to give it meaning. Receptor cells in our eyes record a silver object in the sky, but they do not "see" a jet plane; receptor cells in the ear vibrate in a particular way, but they do not "hear" a symphony. Finding meaningful patterns in sensory information is the job of perception.

In everyday life, the two processes of sensation and perception are virtually inseparable. The brain automatically perceives the information it receives from the sense organs. For this reason, most psychologists refer to sensation and perception as a unified information processing system (Goldstein, 2002).

**Learning**

Learning is a relatively permanent change in behavior that occurs through experience. A century of research on learning in lower animals and in humans suggests that many of the principles generated initially in research on lower animals also apply to humans (Barker, 2001; Leahy & Harris, 2001).

Psychologists explain our many experiences with a few basic learning processes (Frieman, 2002). The type of learning called *observational learning*, in which organisms learn by watching what others do. Another type of learning is associative learning, in which a connection, or association, is made between two events (Kazdin, 2000; Pearce & Bouton, 2001). *Conditioning* is the process of learning associations (Miller & Grace, 2003; Ormrod, 2004). There are two types of conditioning: classical and operant. In *classical conditioning*, organisms learn the association between two stimuli. As a result of this association, organisms learn to anticipate events. For example, lightning is associated with thunder and regularly precedes it (Purdy, Markham, Schwartz, & Gordon, 2001).

In *operant conditioning*, organisms learn the association, between a behavior and consequence. As a result of this association, organisms learn to increase behaviors that are
followed by rewards and to decrease behaviors that are followed by punishment. For example, children whose parents reward them with candy for behaving well are likely to repeat their good manners. Also, children whose bad manners are followed by a few nasty words and glances from their parents are less likely to repeat their bad behavior.

**Memory**

Memory is the retention of information over time through encoding, storage, and retrieval. That is, for memory to work, we have to take information in, store it or represent it in some manner, and then retrieve it for some purpose later. Although memory is very complex, thinking about it in terms of encoding, storage, and retrieval should help you to understand it better.

**Encoding** is the way in which information is processed for storage in memory. When you are listening to a lecture, watching a movie, listening to music, or talking with a friend, you are encoding information into memory.

**Storage** encompasses how information is retained over time and how it is represented in memory. An early popular theory that acknowledges the varying life span of memories was formulated by Atkinson and Shiffrin (1968). They described three separate memory system:

- **Sensory memory**: time frames of a fraction of a second to several seconds
- **Short-term memory**: time frames up to 30 seconds
- **Long-term memory**: time frames up to a lifetime

To retrieve something from our mental “data banks,” we search our store of memory to find the relevant information. Memory **retrieval** takes place when information is taken out of storage. We rely on our memory systems to carry out similar plans every day of our lives. Human memory system systems truly are remarkable when you think of how much information we put into our memories and how much retrieve to perform all of life’s activities (Willingham, 2004).

**Thinking**

Thinking involves manipulating information, as when we form concepts, solve problems, think critically, reason, and make decision. Some of the processes discussed, such as how people perceive information and how information is encoded, stored, and retrieved play a
part in thinking. **Critical thinking** as thinking reflectively and productively and evaluating the evidence. People who think critically grasp the deeper meaning if ideas, keep an open mind about different approaches and perspectives, and decide for themselves what to believe or do (Halpern, 2002; Kamin, O'Sullivan, Younger, & Deterding, 2001).

**Problem Solving**

Problem solving is an attempt to find an appropriate way of attaining a goal when the goal is not readily available. It is impossible to solve problems without concepts. For example, William Eno, born in New York City in 1858, became concerned about the city's horrendous traffic jams. Horse-drawn vehicles were making street traffic dangerous. Eno published a paper about the urgency of street traffic reform. His proposed solutions to the problem created new concepts, such as "stop signs," "one-way streets," and "pedestrian islands," which continue to be important to traffic safety today (Bransford & Stein, 1993).

**Problem-solving stages**- These are the successive phases that can be observed in the process of problem solving. According to the most influential scheme, proposed by the English psychologist Graham Wallas (1858 – 1932) in his book *The Art of Thought* (1921), the stages are preparation, incubation, illumination or insight (2), and verification. According to the US philosopher John Dewey (1859-1952) in his book *How We Think* (1933), the stages are suggestion, translation of a difficulty into a well-defined problem, framing of a hypothesis, reasoning, and testing.

**Decision Making**

Decision making involves evaluating alternatives and making choices among them. In inductive reasoning, people use established rules to draw conclusions. In contrast, when we make decisions, such rules are not established, and we don't know the consequences of the decisions (Tversky & Fox, 1995). Some of the information might be missing, and we might not trust all of the information we have (Matlin, 2004). The following are some of the other mistakes we are prone to make in weighing our options (Stanovich, 1999, 2004):

- **Confirmation bias** is the tendency to search for and use information that supports our ideas rather than refutes them (Betch, Haberstroh, Glockner, Haar, & Fiedler, 2001).
Belief perseverance is the tendency to hold on to a belief in the face of contradictory evidence.

Overconfidence bias is the tendency to have more confidence in judgments and decision than we should, based in probability of past experience.

Hindsight bias is our tendency to falsely report, after the fact, that we accurately predicted an event.

The availability heuristic is a prediction about the probability of an event based on the frequency of the event’s past occurrences.

The representativeness heuristic suggests that we sometimes make faulty decisions based on how well something matches a prototype—that is, the most common of representative example—rather than its relevance.

Language

Language is a form of communication, whether spoken, written, or signed, that is based on a system of symbols. It is not the only way we communicate, however; the video clip “Cultural Variations in Nonverbal Behavior” shows how nonverbal symbols are used around the world to convey emotions and messages. But think how important language is in our everyday lives. We need language to speak with others, listen to others, read, and write (de Boysson-Bardies, 2001).

Our language also enables us to describe past events in detail and to plan for the future. Without language, much of our thinking would be focused on the here and now. Language lets us pass down information from one generation to the next and create a rich cultural heritage, which in turn affects not only the language that we use but also the way we think about the world.

1.5. Academic Achievement:

“Achievement is a general term for the successful attainment of some goal requiring a certain effort.” It is nothing but “a degree of success attained in a task” (Marschner, 1972, p.16). Achievement can also be defined as “the result of a certain intellectual or physical activity defined according to the individual and/or objective (organizational) prerequisites” (Marschner, 1972, p.16). In short, it can be said that achievement is to attain something successfully. Thus, academic achievement refers to attainment of success in the arena of
academics. In India, academic achievement is assessed in terms of the examinations conducted in the middle and end of each academic year. Sometimes the aggregate of the results of the semesters (conducted through the year) reflects the overall portrait of one academic year.

1.5.1. Academic achievement, intelligence and personality:

A formal beginning to explore the determinants of academic achievement was made with Binet's attempts to predict children's academic achievement from their intelligence scores. There is an overwhelming evidence establishing intelligence as the most significant predictor of academic achievement. (Deary, Strand, Smith, & Fernandes, 2007; Eysenck 1960; Karnes, Whorton, & Curries, 1984; Laidra, Pullmann, & Allik, 2007; Neisser et al., 1966; Rao 1963; Stead, 1925; Stephen 1960; Sternberg & Kaufman, 1998; Tylor 1933). While crystallized intelligence seems to be a better predictor of any specific achievement, Rohde and Thompson (2007) found that improvement in GPA depends more on improvement in fluid intelligence. However in spite of this well established relation there is no 'a priori' justification to expect, as Thorndike (1963) pointed out, an exact correspondence between intelligence and achievement. Researchers have discovered that non-intellectual variables viz. personality, motivation, adjustment, values, self concept, environmental factors, teachers personality and school climate etc. were equally important predictors of academic achievement (Eysenck, 1960; Karnes, Whorton, & Curries, 1984).

From the perspective of non-cognitive variables, researchers have long identified those personality and motivation characteristics which are conducive to academic success. Obsessive compulsive disorder is an anxiety disorder, and sometimes border on psychotic like behaviours and ideations. In the present study, however, the participants were at sub-clinical level, and therefore obsessive compulsive symptoms (OCS) in them may simultaneously promote neurotic tendencies, as well as increase perfectionism and persistence. Therefore, although direct assessment of personality has not been done here, we may take this opportunity to recapitulate the relation between personality dimensions and achievement as revealed from literature. Guerin, Gottfried, Oliver, and Thomas (1994) observed that IQ was the best predictor of the students' school achievement. Yet, temperamental factors were also important when entered after intellectual factors. According to Dyer (1987), both cognitive ability and personality are the consistent
predictors of academic performance. Some studies have reported that there is no direct relationship between personality and academic achievement (Allik & Realo, 1997; Mehta & Kumar, 1985; Rothstein, Paunonen, Rush, & King, 1994). Others have found that personality measures are strong enough to predict substantial variance in achievement (Chorro, 1981; Hamilton & Freeman, 1971; Rindermann & Neubauer, 2001; Wolfe & Johnson, 1995).

Eysenck and Cookson (1989), for example, observed that extraverted children perform better in school till the age of 13 or 14, after which introverts gain a progressive advantage. More relevant to our study is the relation of achievement with neuroticism and psychoticism, which generally has been construed to be negative (Eysenck & Eysenck, 1985). Psychoticism (P) is a personality trait present in varying degrees in all persons. A high P scorer has difficulty in preserving set, is poorer in vigilance, attention and memory, has longer reaction time, is impulsive aggressive and hostile (Thompson 1973; Eysenck & Eysenck, 1978; Sehgal, 1984). Hence a negative correlation may be expected between psychoticism and achievement (Savage 1972; Nias, 1973; Goh & Moore, 1978). Several studies working with Neo Personality Inventory have identified the existence of significant relationship between personality and academic performance, specifically, conscientiousness has been identified as one of the strongest predictor of academic performance (Chamorro-Premuzic & Furnham, 2003). According to O'Connor and Paunone (2007), conscientiousness is strongly associated with academic success. Kifer (1975) argued that there must be a positive relationship between high achievement and positive personality characteristics. Persistence which is said to be having motivational function as a personality trait is reported to have a positive correlation with academic achievement (Dubey, 1982).

1.5.2. How Obsessional Thoughts Impair Academic And Cognitive Performance:

Obsessional thoughts are words or mental images which intrude into the conscious awareness against the person's will. In general compulsive acts are, or at least begin as, attempt to control or modify a primary obsession or compulsion, either because the person fears a consequence of his obsession or because he is afraid that he will not be able to control his impulse, such defensive compulsive acts are employed to contain, neutralize or ward off such impulses. The concurrent obsessions and compulsion obstructs the person
from switching over to another task properly or carefully. It has been demonstrated that OCD as well as OCS have significant association with cognitive and neuropsychological impairment. For example, distinct neural correlates have been found for different obsessive compulsive symptoms (Mataix-cols et al., 2004). Similarly, differential neuropsychological characterization of different subtypes of OCD has been observed (Duran, Ricardo-Garcell, Zamorano, & Mendoza, 2007). In this factor analytic study of neuropsychological functioning, three major subsets of patients were observed with differential patterns of association between OCS subtypes and performance on the WCST and part B of the Trail Making test. One subset of patients was impaired on both tests and had prominent contamination obsessions and compulsive washing. A second subset was intact on both tests and was characterized by aggressive obsessions. A third subset, consisting of a mixed group of patients with either prominent obsessions and aggression or prominent washing compulsions, was slow to complete the Trail Making test, with intact WCST performance. Omori et al. (2007) found that patients with schizophrenia and comorbid OCD characterized by prominent checking symptoms showed poorer performance on tests of response inhibition and cognitive flexibility when compared with patients with primarily washing symptoms. A relationship between more impaired executive function and checking has also been noted in studies of nonclinical samples (Mataix–cols et al., 1999; Roth & Baribeau, 1996).

It may be assumed that as different executive functions are impaired in OCD, the presence of obsessive and compulsive symptoms would result in poorer processing of information and study habits, resulting in academic decline. While a few studies are available in this line (see Chapter 2, pg.28-40, 46, 47), very few studies have been done in India.

On the basis of the above discussion, the objectives of the present study is to examine whether male and female school students of a defined age and belonging to non-clinical or sub-clinical levels of obsessive compulsive symptoms (OCS) differ in terms of general intelligence, cognitive processes, academic achievement and intelligence-achievement relationship and whether the two groups (High versus Low OCS groups) of students differ in terms of general intelligence, cognitive processes, academic achievement and intelligence-achievement relationship.