

**RESPONSIBILITY ATTITUDES AND LOCUS OF CONTROL AS  
PREDICTORS OF OBSESSIVE-COMPULSIVE SYMPTOMATOLOGY:  
AN ANALYSIS WITHIN THE COGNITIVE MODEL**

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## **ABSTRACT**

### **RESPONSIBILITY ATTITUDES AND LOCUS OF CONTROL AS PREDICTORS OF OBSESSIVE-COMPULSIVE SYMPTOMATOLOGY: AN ANALYSIS WITHIN THE COGNITIVE MODEL**

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This study examined the effects of responsibility attitudes, locus of control and their interactions on general obsessive-compulsive (OC) symptomatology and dimensions of OC symptoms. Research subjects consisted of 385 senior high school students from Fatih Sultan Mehmet High School in Ankara. The students were given the Turkish version of Responsibility Attitudes Scale (RAS), the Maudsley Obsessive-Compulsive Inventory (MOCI), the Locus of Control Scale (LCS), the Beck Depression Inventory (BDI), and the Trait- State Anxiety Inventory-Trait Anxiety Form (TAI). The factor analysis of MOCI revealed three-factor solution. These factors were labeled as rumination, cleanliness/meticulousness, and checking. The findings of analysis of variance indicated that cleaning was the most common symptom subtype, followed by rumination and checking symptoms among Turkish high school students. Related to the gender differences, females reported more OC symptoms than males.

Furthermore, females received significantly higher scores for cleaning subscale than male. The results of hierarchical regression analyses indicated that there was a significantly positive relationship between responsibility attitudes and general OC symptomatology. However, locus of control was not a significant predictor of general OC symptomatology. Furthermore, results revealed that there was a significant interaction effect of responsibility attitudes with locus of control on OC symptomatology. That is, an inflated sense of responsibility and the presence of external locus of control produced the highest OC symptoms. Related to dimensions of OC symptoms, responsibility was a weak predictor of rumination symptoms, and moderate predictor of cleanliness and checking symptoms. It was almost equally relevant for cleaning and checking symptoms. Locus of control and its interaction with responsibility attitudes only significantly predicted rumination symptoms. The findings of the present study were discussed with current literature.

Keywords: Responsibility attitudes, locus of control, and obsessive-compulsive symptomatology and its symptoms.

## ÖZ

### **OBSESİF-KOMPULSİF SEMPTOMATOLOJİNİN ÖNGÖRÜLERİ OLARAK SORUMLULUK TUTUMLARI VE KONTROL ODAĞI: BİLİŞSEL MODEL KAPSAMINDA BİR İNCELEME**

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Bu çalışmada sorumluluk tutumları, kontrol odağı ve bu iki değişkenin etkileşiminin genel obsesif-kompulsif (OK) semptomatoloji ve farklı obsesif-kompulsif semptom grupları üzerindeki etkileri incelenmiştir. Araştırma örneklemini Ankara Fatih Sultan Mehmet Lisesi'nde okuyan 385 lise son sınıf öğrencisinden oluşmaktadır. Öğrencilere, Sorumluluk Tutumları Ölçeği (STÖ), Maudsley Obsesif-Kompulsif Envanteri (MOKE), Kontrol Odağı Ölçeği (KOÖ), Beck Depresyon Envanteri (BDE) ve Süreklilik Kaygı Envanteri (SKE) uygulanmıştır. MOKE ölçeğine uygulanan faktör analizi sonucunda ruminasyon, temizlik/titizlik ve kontrol etme olmak üzere üç faktör elde edilmiştir. Varyans analizi sonuçlarına göre, lise son sınıf öğrencileri arasında en sık görülen semptom çeşidinin temizlik semptomu olduğu ve bu semptomu ruminasyon ve kontrol etme semptomlarının takip ettiği bulunmuştur. Cinsiyet farklarına ilişkin olarak, kız öğrencilerin erkek öğrencilerden daha fazla obsesif-kompulsif

semptom gösterdikleri bulunmuştur. Ayrıca, kız öğrenciler erkek öğrencilerden anlamlı ölçüde daha fazla temizleme/titizlik semptomu belirtmişlerdir. Yapılan hiyerarşik regresyon analizleri sonucunda sorumluluk tutumları ile genel OK semptomatoloji arasında anlamlı ve pozitif bir ilişki bulunduğu bulunmuştur. Ancak, kontrol odağı ile genel OK semptomatoloji arasında anlamlı bir ilişki bulunamamıştır. Ayrıca yapılan analizler sorumluluk tutumları ile kontrol odağı arasındaki etkileşimin OK semptomatoloji üzerinde anlamlı bir etkisinin bulunduğunu göstermektedir. Bu sonuç, abartılmış sorumluluk duygusunun dış kontrol odağı ile birlikte bulunmasının bireyde görülen semptom düzeyini önemli ölçüde şiddetlendirmekte olduğunu göstermektedir. OK semptom boyutları ile ilgili olarak, sorumluluk tutumlarının ile ruminasyon semptomları arasında zayıf ama anlamlı, temizlik ve kontrol etme semptomları ile arasında ise orta düzeyde anlamlı bir ilişki bulunmaktadır. Ayrıca, sorumluluk tutumlarının temizlik ve kontrol etme semptomları ile aşağı yukarı eşit düzeyde ilgili olduğu bulunmuştur. Kontrol odağı ve onun sorumluluk tutumları ile etkileşiminin sadece ruminasyon semptomları için anlamlı bir yordayıcı olduğu bulunmuştur. Bu sonuçlar, kontrol odağı değişkeninin bireyin dış bir tehlikeyi önlemek için aktif bir davranışta bulunması durumunda OK semptomatolojide önemli bir rolünün bulunmadığını düşündürmüştür. Çalışmanın bulguları ilgili literatür bağlamında tartışılmıştır.

Anahtar kelimeler: Sorumluluk Tutumları, Kontrol Odağı, Obsesif-Kompulsif Semptomatoloji ve Semptom Boyutları.

To My Father and Husband

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## **CHAPTER 1**

### **INTRODUCTION**

Obsessive- compulsive disorder (OCD) is a chronic and often disabling anxiety disorder. While different clinical aspects of the syndrome were emphasized by different cultures of observers, a syndrome related to obsessive-compulsive disorder (OCD) has been recognized for more than 300 years. English explanations stressed religious aspects and relationships to melancholy; French phenomenologists emphasized the importance of doubt and loss of will, German aspects focus on the irrational nature of the thoughts, linking the disorder to psychosis (Okasha, 2000).

In this section, the literature review about OCD which include clinical description of OCD, recent phenomenological data on OCD, the cognitive theories of OCD, the cognitive distortions related to this disorder, and the role of responsibility and locus of control in OCD are presented.

#### **1.1 Clinical Features and Phenomenology of Obsessive-Compulsive Disorder (OCD)**

##### **1.1.1 Clinical Description of OCD**

For a diagnosis of OCD according to the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV; American Psychological Association, 1994):

A- The patient must present either pathological obsessions or compulsions (or both).

Obsessions are defined as 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. The thoughts, impulses or images are not simply excessive worries about “real-life” problems. The person attempts to ignore or suppress such thoughts, impulses or images, or neutralize them with some other thought or action. The patient recognizes that obsessional thoughts, impulses or images are product of her or his own mind.

Compulsions are defined as repetitive behaviours (e.g. hand-washing, ordering, and 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. The behaviours or mental acts are aimed at preventing or reducing distress or preventing some dreaded event or situation; however, these behaviours or mental acts either are not connected in realistic way with what they are designed to neutralize or prevent, or are clearly excessive.

B- At the some point during the course of the disorder, the person has recognized that the obsessions or compulsions are excessive or unreasonable (this does not apply to children).

C- The obsessions or compulsions cause marked distress, are the time-consuming (take longer than 1 h a day) or 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 a serious illness in the presence of hypochondriasis; preoccupation with sexual urges or fantasies in the presence of 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.

### **1.1.2 Prevalence of OCD**

OCD has been described as “the hidden disease”. As recently as in the 1980s, it was considered an uncommon disorder with poor prognosis, whereas it is now recognized to be more prevalent than previously believed and often very responsive to treatment (Stein, Forde, Anderson, &Walker, 1997). The Epidemiologic Catchment Area (ECA) study revealed that the life time prevalence rates range from 1, 9% to 3,3% across five epidemiologic catchments areas. The most striking finding of this data is that OCD is 50 to 100 times more frequent

than previously thought (Karno, Golding, Sorenson, & Burnam, 1988). According to these results, OCD is much more prevalent than schizophrenia, but less prevalent than major depression. These figures suggest that OCD is the fourth most common psychiatric disorder, following phobias, substance abuse and major depression (Cosyns, & Ödberg, 2000).

These findings have been criticized for using the lay interviewers rather than psychiatrists to assess symptoms. Since, studies of ECA using psychiatrists as interviewers have found lower prevalence rates of OCD. Thus, a more likely prevalence figure may be around 1-2% (Rasmussen & Eisen, 1989). Even so, it seems incontestable that OCD is highly prevalent disorder in many countries (Okasha, 2000).

### **1.1.3 Demographic Features**

Studies of OCD in adults have generally found either an equal distribution of OCD among men and women, or slightly higher rates for women. This is in contrast to many other anxiety and mood disorders which have higher prevalence in females than males (Stein, 2002). Although OCD is found equally common in both males and females in clinical samples (Karno et al, 1988; Rasmussen & Eisen, 1991; Bogetto, Venturello, Albert, Mania, & Ravizza, 1999), the epidemiological studies showed that females have slightly higher likelihood of developing the disorder (Rasmussen & Tsuang, 1986). Cross-National Epidemiological study confirmed that the lifetime prevalence of OCD ranged between 0.9 % and 3.4% in women and between 0.5% and 2.5% in males, with a female/male ratio ranging from 0.8 to 3.8 ( Weissman, Bland, Canino, Greenwal,



& Hwu et al., 1994). A higher ratio was reported by Grabe et al. (2000); the gender female-male ratio for the full diagnosis of OCD was 5.7 in northern Germany.

The mean age of one set of OCD has a wide range, between 21.9 and 35.5 years (Weissman et.al., 1994). Most patients (65%) develop OCD before the age of 25 years, some as nearly as age 6, with only a small percentage (15%) after the age of 35 years. Males seem to present with an earlier mean age of onset than females (Karno, Golding, Sorenson, & Burnam, 1988).

Research indicated that age onset of illness influences the phenomenological features of OCD, as well as the nature of comorbid disorders such as complex motor or vocal tics and mood disorder. In addition to these, age of onset of OCD has influence over the therapeutic response to medical and cognitive and/or behavioural therapy. Sobin, Blundell, and Karayiorgou (2000) compared adult patients with early and late onset OCD. They found that early onset OC patients differed from late onset OC patients in terms of number, severity, and content of obsessions and/or compulsions. Early onset patients showed more somatic fears, symmetry, and superstitious obsessions as well as more repeating, cleaning, counting and tapping/rubbing compulsions than late onset patient. They also had a greater number of obsessions and compulsions, and a more aggressive clinical course (shorter time between the onset of sub-clinical symptoms and the appearance of the full-blown syndrome) than those with late onset OCD. The observed clinical differences between adult patients with early- and late- onset OCD were supported by other studies (Fontenelle, Mendlowicz,

Marques, & Versiani, 2003). Therefore, authors suggested that patients with early onset OCD may represent a more severe subtype of this disorder.

#### **1.1.4 Course of OCD**

The course of OCD is remarkably variable, ranging from episodic to chronic. Rasmussen and Eisen (1991) proposed that the course of OCD can be divided into four categories: episodic (at least one circumscribed interval- six months- that was completely symptom- free after the OCD onset), continuous with stable symptomatology; chronic with fluctuating symptomatology (symptoms were waxing and waning without complete remissions and patient remained symptomatic with some social and occupational impairment between exacerbations), and deteriorative (progressive worsening of the illness with evidence of social decline result in patient unable to lead an independent existence).

Earlier retrospective follow-up studies of OCD have consistently shown that an overwhelming majority of patients have a chronic waxing and waning course, patients were rarely symptom-free at follow-up. That is, once a patient develops OCD, obsessions and /or compulsions are continuously present with varying degrees of intensity over time. Relatively few patients described either a progressively deteriorative course or truly episodic course with complete absence of symptoms between episodes (Rasmussen & Eisen, 1992; cited in Eisen, Goodman, Keller, Warshaw, DeMarco, Luce & Rasmussen, 1999). Eisen et al. (1999) have recently reported a probability of complete clinical remission of 12% of OCD patients, with partial remission in 47% of patients and subsequent

relapses in 48%, using a 2 years follow up study results. Skoog and Skoog (1999) examined the long-term course of OCD with 40-year follow-up. Results showed that the duration of the disorder was lengthy for most patients, with half still experiencing clinically relevant symptoms at follow-up. Among those followed up for more than 50 years from onset, 37% still had an obsessive-compulsive disorder. They conclude that despite adequate pharmacotherapy and effective psychotherapy techniques, the likelihood of full remission of OCD is low.

All studies have revealed that men reported an earlier and more insidious onset and greater chronic course than females (Bogetto et al, 1999; Fontenelle, Mendlowicz, Marques & Versani, 2003; Juang & Liu, 2001; Lensi et al, 1996; Lochner & Stein, 2001; Matsunaga et al, 2000; Noshirvani et al, 1991; Rasmussen & Eisen, 1991; Sobin et al., 1999). Importantly, epidemiological studies show that three times as many prepubertal boys as girls are diagnosed with OCD, but that the incidence of OCD in females increases markedly after puberty (Mendlowicz, Marques & Versani, 2003). The predominance of males in early onset OCD has been proposed to reflect the biological damage such as perinatal or early brain trauma to which men seem more vulnerable than women. Indeed, increased risk of perinatal history of perinatal trauma has been found in males with OCD (Lensi et al, 1996; Bogetto et al., 1999).

Several studies have examined the prognosis of OCD. However, little is known about the course of this disorder in terms of patterns of remission and relapse and the factors that influence these patterns. Early age of onset especially in men, having both obsessive and compulsive symptoms, low social functioning at baseline (Skoog, 1999), sexual/religious obsessions (Alonso,

Maina, Pifarre, Mataix, Torres et al., 2001), the presence of cleaning rituals when compared with checking rituals (Drummond, 1993) have been found to be associated with poorer outcome.

### **1.1.5 The Role of Recent Life Events**

Although the role of recent life events in precipitating affective disorders, panic disorder or acute schizophrenia has been widely investigated, the relationship between triggering life events and OCD remains controversial. Most of the clinical descriptions of OCD report that initial symptoms are often triggered by stressful life events (McKeon, Roa, & Mann, 1984; Neziroglu, Anemone, & Yaryura-Tobias, 1992; Rasmussen & Eisen, 1991; Rasmussen & Eisen, 1989; Rasmussen & Tsuang, 1986), but the percentages of subjects referring to at least one life event prior to OCD onset revealed a wide range, ranging between 25% to 92% (Albert, Mania, & Bogetto, 2000).

In addition, the interpretation of these data has been restricted because of several methodological problems: all these studies were performed in the absence of well-defined event criteria and of reliable and valid measures for the assessment of life events and they did not compare the patients with control groups. Only two studies have investigated this topic using standardized investigations and comparing patients with matched healthy control (McKeon, Roa, & Mann, 1984). In the first study was found that obsessive-compulsive patients reported a significant excess of life events in the year prior to the onset of the illness (McKeon, Roa, & Mann, 1984). However, the results of second study were not consistent with those by Mckeon et al. (1984) because no difference was

found in the occurrence of events between the patients and the controls in the year prior to the onset of the disorder (Khanna et al. 1988, cited in Mania, Albert, Bogetto, Vaschetto, & Ravizza, 1999). Therefore, the degree of the relationship between the occurrence of life events and OCD is still controversial. Despite the controversial findings, a review of the literature on this topics showed that increases in responsibility, such as the birth of child or promotion to a new job, or significant losses such as death of family members, loss of a job were among the most common precipitants reported (Rasmussen & Tsuang, 1986).

#### **1.1.6 Phenomenologic Subtypes**

Many studies have consistently pointed out that obsessive-compulsive disorder is a multidimensional and etiologically heterogeneous condition. Patients with OCD present with a broad range of obsessions and compulsions, they have been observed to experience a variety of comorbidity with other psychiatric conditions and vary in their response to treatment. Identification of homogeneous subgroups of OCD patients may have important implications for understanding the variability in treatment response and may also advance etiological models (Leckman, Dorothy, Boardman, Zhang, Vitale et al., 1997).

Obsessive fear of contamination coupled with handwashing compulsion is the most common phenomenological presentation of OCD, found in 45% of the patients. This obsession can take many forms, among the most common being the fear of unseen dirt, germs, poisons, or toxins. Embarrassment or guilt usually accompanies shame and disgust in these patients. Although, the fear structure of contamination obsession is most closely linked to phobias, patients with

contamination obsessions often report that they are more concerned about the possibility significant others becoming ill because of them, rather than themselves getting ill. Furthermore, another crucial point related to the characteristic phenomenon of contamination obsessives is that in the patients' minds contamination is "magically transmitted from a dirty object to a clean object merely by coming into contact with it. Patients classify objects in the environment as either clean or dirty (Rasmussen & Eisen, 1991; Rasmussen & Tsuang, 1986; Rasmussen & Eisen, 1989).

The next common obsessive thought, present in 42% of the patients, is pathological doubt or fear that one would be responsible for something terrible happening. These patients are continually worried about the possibility that something terrible will happen, even if the possibility is very small. Inflated perceived responsibility plays a crucial role in this obsession (Rasmussen & Eisen, 1989).

Somatic obsessions are another other common obsession, found in %36 percent of the patients, characterized by compulsive checking rituals carried out to reassure them that they do not have serious illness. Many of these patients with somatic obsessions are indistinguishable from hypochondriacs. However, the most important difference between OCD patients and hypochondriacs is that hypochondriacs with primary somatic obsessions are primarily concerned with their own health rather than being responsible for harm befalling other important persons. Somatic obsessions are most commonly associated with checking and the need for reassurance rituals (Rasmussen & Eisen, 1989).

Twenty-six percent of the patients complained of sexual and aggressive obsessions. These patients suffer from fears of committing an unacceptable sexual or aggressive thought/ act towards others. They are often unable to make a clear distinction between having an unacceptable thought and acting on it. Guilt and anxiety are the dominant affective symptoms (Rasmussen & Eisen, 1991). The patients with sexual obsessions have internal conflicts between their sexual and aggressive impulses and their moral value systems. The frequently seen compulsions in this group is to ask significant others frequently and give confessions (Grabe, Meyer, Hapke, Rumpf, Freyberger, et al., 2000). Paraphiliacs are at times difficult to distinguish from patients with sexual obsessions. However, OCD patients have had past histories that include the typical course of OCD and have other types of obsessions and compulsions during their course of illness. Although, both groups feel remorse and guilt, obsessive-compulsive patients feel anxious about their unacceptable thoughts while paraphiliacs are usually only anxious about getting caught (Rasmussen & Eisen, 1989; Rasmussen & Eisen, 1991).

Thirty-one percent of the patients had obsessive thoughts that involve the need for symmetry, order, or exactness (Rasmussen & Eisen, 1989). These patients try to have objects or events in a certain order or position, to do certain motor activities in an exact fashion, or to do things exactly symmetrical or “evened up”. These patients can be divided into two groups: patients with obsessive slowness, and patients with primary magical thinking. Both of these patients reported minimal anxiety related to their compulsions except for that due to time pressure. Their greatest fears were that something would not be done right

and that they would have to start the entire sequence over again from the beginning (Rasmussen & Eisen, 1991).

Minority of OCD patients complain of hoarding behaviours. Hoarding is the repetitive collection of excessive quantities of poorly usable items of little or no value with failure to throw away these accumulated items over time (Seedat & Stein, 2002). These patients often feel the urge to check their possessions over and over again to make sure that nothing is missing, or to check their garbage to make sure that they have not inadvertently thrown away something valuable. Because of the ego syntonic nature of their symptoms, hoarding behaviours can be seen as part of a compulsive personality instead of OCD. However, the checking rituals and anxiety attendant with loss of their valued possessions makes it seem more reasonable to classify these patients as suffering from true OCD (Rasmussen & Eisen, 1991). OCD hoarders have been shown to exhibit more anxiety, depression, family and social disability and dependent and schizotypal personality disorder symptoms, compared with OCD non-hoarders and other anxiety disorders (Frost, Steketee, Williams, & Warren, 2000).

Another study supported that contamination obsessions and aggressive obsessions are among the most frequent obsessions. Somatic fears and a need for symmetry are the next most frequently reported obsessions, followed by religious beliefs, sexual behaviour, superstitions and hoarding. Related to compulsions, checking, repeating, and cleaning/ washing compulsions are the most frequently reported, followed by counting, tapping/rubbing, arranging, and finally hoarding (Sobin et al., 1999).



The basic types and frequencies of obsessions and compulsions have been found to be consistent across culture and time (Grabe, Meyer, Hapke, Rumpf, Freyberger et al., 2000). This data was supported by Teket, Uluşahin and Orhon (1998) showing that the Turkish sample resembled the western and Indian samples in the order of the frequency of symptoms (i.e. obsessions of contamination, aggressive, symmetry/exactness and religious vs. compulsions of cleaning/washing, checking and ordering). The magnitude of these frequencies was also similar to the reports from other Islamic countries such as Egyptian (Okasha, Saad, Khalil, Dawla, & Yehia, 1994), Eastern Saudi Arabia (Mohamed & Abdel-Hafeiz, 1991).

The studies that evaluate the correlational relationships of the symptoms of OCD have consistently paired washing and cleaning compulsions with contamination obsessions. Similarly, aggressive, sexual, somatic, and religious obsessions tend to co-occur with checking compulsions. Obsessions of symmetry and exactness have been found to accompany repeating rituals, counting compulsions, and ordering/ arranging compulsions. Hoarding and collecting compulsions often co-occur with hoarding obsessions (Calamari, Wietgartz, & Janeck, 1999; Leckman et al., 1997; Rasmussen & Eisen, 1991; Rasmussen & Eisen, 1989; Rasmussen & Tsuang, 1986; Summerfeld et al., 1999).

### **1.1.7 Comorbidity**

According to recent studies, high rates of commorbidity with major depression and other anxiety disorders have been consistently found in patients with OCD. According to Weissman et al. (1994) the commorbidity rates vary

between 30,3% for Korea to 64.6% for Munich. An analysis of data from a large health maintenance organization study showed that about 25% of patients with OCD had no comorbid psychiatric condition, 37% of patient with OCD had one, and 38% had two or more.

The most common commorbid conditions were major depression, other anxiety disorders, and adjustment disorder. Among the comorbid anxiety disorders, panic disorders and generalized anxiety disorder were the most common. Six percent of the patients also had bipolar disorder (Fireman, Koran, Leventhal, & Jacobson; 2001).

High rates of comorbid depression have also been reported OCD patients seeking treatment. For example, Rasmussen and Eisen (1991) reported major depressive disorder to be the most common comorbid lifetime diagnosis with a prevalence of 67%. The next common secondary diagnoses were simple phobia, social phobia, eating disorders, alcohol abuse, panic disorder, and Tourette's syndrome. Although major depression is considered to be the most common complication in OCD (Fireman, Koran, Leventhal, & Jacobson, 2001; Perugi, Akiskal, Ramacciotti, Nassini Milanfranchi et al., 1999; Perugi, Akiskal, Gemignani, Pfanner, Presta, et al., 1997; Rasmussen & Eisen, 1991; Rasmussen & Tsuang, 1986 ) the Cross-National Epidemiological Study found a higher rate of commorbidity with anxiety disorders than with major depressions (Okasha; 2000).

Clinical studies indicate that OCD and delusional disorders may coexist or alternate (Fear, Sharp, & Healy, 2000). Rasmussen and Eisen (1989) reported that 30 of 250 OCD (approximately 10% of their patients) patients had delusions, hallucinations and/ or thought disorders.

Literature reviews indicate that comorbidity of OCD is not only limited with axis I disorders in DSM-IV but also common with axis II personality disorders. In a study focusing on the comorbidity OCD and personality disorders, 75% of the patients fulfilled the DSM-III-R criteria for an axis II disorder, and 36% had an obsessive-compulsive personality disorder (OCPD) (Bejerot, Ekselius, Knorrning, 1998). In other study, the most prevalent personality disorder in OCD patients was found to be Mixed personality disorder (personality disorder not otherwise specified in DSM III-R), followed in frequency by dependent (12%), histrionic (9%), compulsive (6%), and, with equal frequencies for schizotypal, paranoid, and avoidant personality disorder (5% each) (Baer, Jenike, Ricciardi, Hollan, & Seymour, 1990; see also Joffe, Swinson & Regan, 1988; Rasmussen & Tsuang, 1986).

Another group of disorders, comorbid with OCD, may be grouped under the name of obsessive-compulsive spectrum disorders (Hood, Alderton, & Castle; 2001; Bievvenu, Samuels, Riddle, Hoehn-Saric, Liang et al. 2000). OC Spectrum Disorder (OCSD) is a term that has been used to classify a group of disorders whose clinical features intersect with those of OCD. This consists of disorders of impulse control such as pathological gambling, sexual addiction; neurological disorders with repetitive behaviours such as Tourette's syndrome, autism; syndromes characterized by exaggerated bodily concerns such as body dysmorphic disorder, bulimia; and dissociative disorders (Hood, Alderton & Castle; 2001; Bievvenu et al. 2000).

### **1.1.8 Assessment Tools**

Several scales are available to evaluate in the diagnosis of OCD and the measurement of treatment efficacy in that disorder. These include self rating scales such as Maudsley Obsessive Compulsive Inventory(MOCI), Padua Obsessive-Compulsive Inventory, Leyton Obsessional Inventory, the Hopkins Symptoms Checklist ( HSCL and SCL-90); and rater-administered scales such as the Yale-Brown Obsessive compulsive Scale( Y-BOCS). Each group of scales has advantages and disadvantages (Okasha, 2000).

### **1.2 Cognitive Theories of OCD**

A first attempt to conceptualize OCD in a cognitive model was made by Carr. According to Carr's experiments (1974; cited in Van Oppen & Arntz, 1994) obsessive-compulsives experience a high degree of threat because they overestimate both the probability and the cost of the occurrence of negative outcomes.

Based on Carr's cognitive theory, Mcfall and Wollersheim (1979) proposed that cognitions have a mediating role in compulsions. Their cognitive model emphasizes some factors which influence the unrealistic subjective estimation of undesired outcomes. After primary appraisals of threat, anxiety increases and obsessive-compulsive behaviour is initiated on the basis of the person's secondary appraisal. They determined four types of beliefs which influence the primary appraisal process of OCD. These are: (1) In order to be worthwhile and avoid criticism or disapproval by others one should be perfect; (2) making mistakes or failing to live up to one's perfectionist ideals will result in

punishment or condemnation (these two beliefs are associated with perfectionism); (3) certain thoughts and feelings are unacceptable and could lead to catastrophe and one should be punished for them (this belief corresponds to the fusion of thought and action); (4) one is powerful enough to start or prevent the occurrence of negative outcomes by magical rituals or obsessive rumination. They further formulated a number of unreasonable beliefs that negatively influence the secondary appraisal. These include the following: (1) one should be terribly upset by dangerous outcomes; (2) magical rituals or obsessive rumination will prevent feared outcomes; (3) it is easier and more effective to carry out a magical ritual or to obsess than it is to confront one's feelings/thoughts directly; (4) feelings of uncertainty and loss of control are intolerable, should make one afraid. Because of these dysfunctional beliefs obsessive-compulsives experience themselves as helpless to cope with perceived threat (cited in Van Oppen & Arntz, 1994).

A comprehensive cognitive theory of OCD was developed by Salkovskis (1985, 1989). He claimed that the models of Carr and Mcfall and Wollersheim fail to distinguish between threat appraisals in obsessive-compulsives and threat-appraisals in other patients. Salkovskis' model is based on the cognitive model of Beck for depression and anxiety. He emphasized the difference between intrusions and automatic thoughts. The negative automatic thoughts are relatively autonomous, idiosyncratic, experienced as reasonable, and egosyntonic. By contrast, obsessions are intrusive thoughts that are unacceptable, irrational, and implausible. Obsessions are incongruent with the individual's belief system, whereas negative automatic thoughts are congruent and are an expression of the belief system. Accessibility of obsessional thoughts is generally very easy, while

the accessibility of negative automatic thoughts can be difficult even with training.

In the cognitive-behavioral formulation of obsessions, Salkovskis (1985, 1989) hypothesized that clinical obsessions are intrusive cognitions; the patients interpret occurrence and content of these intrusive cognitions as an indication that they may be responsible for harm to themselves or others unless they take action to prevent it. Therefore, according to him, negative automatic thoughts of OCD are related to ideas of personal responsibility. He argued that if an appraisal does not include an element of responsibility, the person is likely to be anxious or depressed rather than having obsessional problems. This appraisal leads both to more adverse mood such as anxiety and depression, and the decisions and motivation to engage in neutralizing behaviours which can include a range of behaviours such as compulsive checking, washing or covert ritualizing. Adverse mood and neutralizing behaviours not only increase the likelihood of further intrusions, but also increase the perceived threat and the perception of responsibility. All of them lead to long sequences of intrusions-neutralizing-intrusion-neutralizing-intrusion... Therefore, appraisal of responsibility is the crux of the model.

In other words, Obsessive patients would appraise intrusive thoughts, for example “Did I turn off the stove?” as a function of possible harm to themselves or to others. An excessive sense of responsibility would produce automatic negative thoughts. As such “I might cause a fire”, “I will cause a dreadful trouble”, or “something bad will happen and it will be my fault” or “I could have prevent something bad from happening”. Thoughts associated with this schema

include blame, punishment, guilt, shame. Therefore, Patients with excessive responsibility would tend to neutralize their negative thoughts by reassuring themselves, performing an absorbing activity, distracting themselves or blocking the thoughts (Rheaume, Ladouceur, Freeston, & Letarte, 1995a).

The attempts to neutralization have particular importance because they are so common and because they serve a particular psychological function. The person uses the neutralizing behaviours to prevent or decrease the anticipated negative effects of obsession (Rachman; 1997). Therefore, the mechanism of neutralization has three main consequences. Firstly, neutralizing usually results in reduced discomfort which allows the development of obsessional behaviour as a strategy for coping with stress. This not only increases the likelihood of subsequent neutralizing behaviours, but also increases the probability of the generalization of this strategy for anxiety reduction to other circumstances. Secondly, neutralization will be followed by non-punishment. Rewarding non-punishment is a powerful reinforcement in its own right and will also be thought to have an effect on the perceived validity of the dysfunctional beliefs and assumption. This mechanism would act along the lines of “I acted on my belief and felt better, therefore the belief must be true and the disaster I attempted to forestall has not come about, which may mean that my neutralization was a reasonable and effective effort”. Finally, the performance of neutralizing will be, in itself a powerful and unavoidable triggering stimulus (Salkovskis; 1985). Due to all of these processes, neutralization persists because it succeeds. However, as with compulsions, this temporary relief comes at a price. Indirectly the neutralization helps to preserve and strengthen the misinterpretation of anticipated

consequences (Rachman; 1997). It is assumed that this cycle of obsession-neutralization-relief-confirmation of belief is strengthened by repetition (Rachman; 1998).

Salkovskis emphasized that the neutralizing behavior is linked to the appraisals of responsibility. In Salkovskis's (1985, p. 679) words: "if the automatic thoughts arising from the intrusions do not include the possibility of being in some way responsible...then neutralizing is very unlikely to place, and the result is likely to be heightened anxiety and depression rather than an obsessional problem".

Rachman (1997, 1998) also proposed that obsessions are caused by catastrophic misinterpretations of the significance of one's intrusive thoughts. It can be deduced that the obsessions will persist for as long as the misinterpretations continue; and the obsessions will diminish or disappear as a function of the weakening/ elimination of the misinterpretations. Rachman has argued that when a person makes a catastrophic misinterpretation of the significance of his/her unwanted intrusive thoughts; this will increase the range and seriousness of potentially threatening stimuli. A wide range of stimuli are converted from neutrality into threat. The probability of evoking the anxiety has been increased by a wide range of potential stimuli. The person deduces a threat from the fact of feeling anxious, "if I am anxious, it must mean that there is danger present". This way of deduction has been called ex-consequential reasoning by Arntz et al (1995) (cited in Rachman, 1998). Hence, the catastrophic misinterpretation of one's anxiety can interact to increase the catastrophic misinterpretation of the intrusion.



Rachman (2002) has specified the cognitive theory of OCD for compulsive checking. According to him, compulsive checking occurs when people who believe that they have a special, elevated responsibility for preventing harm feel unsure that a perceived threat has been adequately reduced or removed. People with inflated sense of responsibility repeatedly check for safety in order to achieve certainty about the absence of the possibility of harm happening. Paradoxically, these attempts to check for safety can result in adverse affects that turn the checking behaviour into a self-perpetuating mechanism.

Rachman (2002) defined the factors that multiply the OCD symptoms, especially checking behaviours. One important “multiplier” is the person’s perceived responsibility. Compulsive checking is increased when perceived responsibility rises. A second “multiplier” is the perceived probability of the feared harmful event occurring. An increase in the perceived probability of an event will increase compulsive checking. A third “multiplier” is the perceived severity or “cost” of the feared harmful event-an increase in the perceived cost will increase compulsive checking. Only one of the three multipliers is essential for the equation. If the person’s perceived responsibility is reduced or moved, little or no compulsive checking will take place, regardless of the status of the remaining two multipliers.

According to Salkovskis (1985, 1989) and Rachman (1997, 1998) treatment should focus on changing the misinterpretations of the significance of the intrusive thoughts. The first step should be educational. Learning helps patients to well recognize problems and to dissolve some guilt and anxiety. The second step is to inform them about intrusive thoughts. The next stage is to collect

a full account of the content of the obsessions and to discuss the content in a calm, unbiased manner as a clinical problem rather than as a cause of shame, distress and threat. Treatment techniques are derived from the behavioural analysis of OCD (exposure, response prevention, thought- stopping, habituation training) with some exceptions have been assessed as unsuccessful techniques by them. These techniques were attempts to block or reduce the manifestation of the problems with a neglect of the underlying problems itself. Therefore, the catastrophic misinterpretations of the significance of the intrusive thought were left unchanged. They have suggested that these attempts failed because they did nothing to change the distressing misinterpretations of the intrusive thoughts and merely focused on the effects of the catastrophic misinterpretations. As the misinterpretations presumably persisted, the stressing obsessions soon re-appeared. Therefore, they suggested that without denial of the success of behavioural techniques, attempts at cognitive modification of obsessions should concentrate not only on modification of intrusions, which might have only transient effect on the belief system of the individual, but also on the automatic thoughts which are the consequences of intrusions, and beliefs.

### **1.3 Cognitive Distortions Related to OCD**

The operation of cognitive biases in OCD has been proposed by various researchers (Salkovskis; 1985, 1989; Rachman; 1993, 1997, 1998, 2002; Freston, Rheaume, & Ladouceur; 1996). Intrusive distressing thoughts (obsessions) are one of the core features of obsessive-compulsive disorder. Sufferers usually attempt to ignore, neutralize, or suppress their obsessional thoughts. There are some research

findings providing evidence to suggest that a majority of people experience unpleasant intrusions similar to the obsessions seen in OCD. In their study, Rachman and De Silva (1978; see also Clark & de Silva, 1985; Freeston, Ladouceur, Thibodeau, & Gagnon, 1992, 1991; Purdon & Clark, 1993; Salkovskis & Harrison, 1984) examined the differences and similarities between obsessive thinking in non-clinical sample and OCD patients. These authors reported that almost 80% of the non-clinical subjects experienced obsessions. In addition, they found remarkable similarities between “abnormal” and “normal” obsessions as far as the content of these obsessions is concerned. Differences between them were detected in respect to frequency, intensity, discomfort, and elicited resistance. Abnormal obsessions were found to be more frequent, intense, of longer duration and to produce more discomfort than normal obsessions. Related to compulsions, Muris et al. (1997) found that compulsions performed by OC patients were more frequent and intense, evoked more discomfort and were more often associated with distressing thoughts and negative mood state than compulsions performed by non-clinical subjects.

According to Salkovskis (1985, 1989) and Rachman (1993, 1997, 1998), the importance given to the interpretation of the intrusions determines the obsessive qualities (e.g. increased discomfort, tension, anxiety, resistance, distress). By this view, the significance which the person attaches to unwanted intrusive thoughts is the major determinant of whether or not the thoughts are transformed into obsessions.

Members of Obsessive Compulsive Cognitions Working Group (OCCWG) (1997) reviewed belief-domains that play important role in the

development and the maintenance of OCD. They defined six belief domains that are believed to be core cognitive deficits in OCD. These are inflated sense of responsibility, overestimation of threat and probability, tolerance of uncertainty, thought-action-fusion, excessive concern about the importance of controlling thought, and perfectionism. They developed two measures (Interpretation of Intrusions Inventory and Obsessive Beliefs Questionnaire) of cognitions relevant to current cognitive-behavioural models of OCD (OCCWG, 2001).

In the following section the literature review about the cognitive distortions related to OCD are discussed.

### **1.3.1 Inflated Responsibility**

This domain was defined as the belief that one has power which is pivotal to bring about or prevent subjectively crucial negative outcomes. These outcomes are perceived as essential to prevent (Rheaume, Freeston, Dudas, Letarde & Ladouceur, 1995a). Inflated sense of responsibility for harm is the cornerstone of Salkovskis' (1989, 1993) cognitive model of OCD. This belief will be examined in the present study and will be discussed later in detail.

### **1.3.2 Overimportance of Thoughts: Thought-Action Fusion (TAF) and OCD**

TAF was defined as the belief that the mere presence of a thought indicates that it is very important (OCCWG, 1997). The TAF refers to a set of cognitive biases that are thought to play a role in the development of OC problems. TAF consists of two related biases. The first is the probability or likelihood bias, which is the belief that merely thinking of a hypothetical situation

(e.g., car accident) increases the probability of unwanted events actually occurring. The second is the morality bias, which is the belief that thoughts are morally equivalent to actually carrying out the prohibited behaviours. It was found that together, probability and morality biases are specifically associated with OC symptoms (Shafran, Thordarson, & Rachman, 1996). According to Shafran et al. (1996) TAF is a fundamental part of the significance of catastrophic misinterpretation, because TAF represents the tendency to overevaluate the significance and consequences of intrusive thoughts.

The hypotheses about the connection between TAF and obsessive intrusion was supported by Rassin, Merckelbach, Muris & Spaan (1999). They reported that experimentally induced TAF resulted in more intrusions, more discomfort, and more resistance. Nevertheless, TAF led subject to engage in neutralizing behaviour in about 50% of the intrusions. Taken together, these findings demonstrate that TAF may contribute to the transformation of normal intrusions into obsessive intrusions.

Shafran, Thordarson, and Rachman (1996) proposed that the presence of TAF may cause an increased sense of responsibility. TAF refers to the tendency to assume incorrect causal relationships between one's thoughts and external reality. Plainly people who engage in one or both forms of TAF will experience an inflated sense of responsibility for their intrusions. Therefore, intrusive thoughts will be transformed into obsessional problems when individuals experience an inflated sense of responsibility for their own thoughts. In these circumstances, they will feel more discomfort than a person without such an inflated sense of responsibility. This hypothesis supported by Rachman et al. (1997 cited Rachman

& Shafran, 1999). In their study, subjects were asked to write and think about the following sentence, “I hope- (name of friend/ relatives) is in a car accident” under conditions of varying responsibility. Compared with the low responsibility condition, subjects under conditions of high responsibility responded to the TAF provocation task with significantly more anxiety, guilty, perceived moral wrongdoing and stronger urge to neutralize.

TAF is not only closely associated with inflated responsibility, neutralizing and obsessions, but there is also a strong relationship between TAF and feeling of guilt. A patient who believes that thinking about attacking a partner is the morally equivalent of actually attacking is liable to experience greater guilt than someone who does not hold that belief (Rachman & Shafran, 1999). In the line with these findings, TAF subscale was found to be significantly correlated with measures of obsessionality and guilt (Rachman et al., 1995).

### **1.3.3 Excessive Concern about the Importance of Controlling One’s Thoughts: Thought Suppression in OCD**

This belief reflects the overvaluation of the importance of exerting complete control over intrusive thoughts, images, and impulses, and the belief that this is both possible and desirable (OCCWG; 1997). There is some evidence to suggest that thought suppression plays an important role in the exacerbation of intrusive thought. Salkovskis (1985, 1989) proposed that obsessional thoughts give a person an urge to suppress the unwanted thought because they activate a highly aversive sense that one has become responsible for harm to oneself or others. However, such efforts are bound to fail, and evoke more strong and persistent intrusions. Rachman (1997, 1998) argued that interpretations of

significance lead to greater efforts to control the obsessions but such efforts will backfire, resulting in an increase in frequency and negative mood. Negative mood will in turn enhance the catastrophic personal significance of the thought; thereby the probability of control efforts will increase; that is, these suppression attempts lead to the paradoxical effect of increasing, rather than decreasing, the frequency of the unwanted thought.

In order to examine the effects of thought suppression systematically, Wegner et al. (1987) evaluated subjects under initial thought suppressions or expression conditions. Subjects instructed to suppress thoughts about “white bears” subsequently reported more “white bear” thoughts than did participants who were not instructed to suppress. Increased thought frequency during attempts to suppress has been termed the “immediate enhancement effect’ and increased thought frequency after suppression attempts has been termed the ‘rebound effect’ (Tolin, Abramowitz, & Foa, 2003).

Further evidence for the initial enhancement effect was provided by Salkovskis and colleagues (1994). In a series of experiments, they demonstrated that the suppression of personally relevant thoughts resulted in increased intrusions (Salkovskis & Campbell, 1994). In subsequent study, suppression over a four day period was evaluated. Results indicated that subjects who suppressed their thoughts experienced more thoughts and reported significantly more discomfort than subjects who thought about intrusions and recorded them without suppression (Trinder & Salkovskis, 1994). These results were replicated by Muris et al. (1996) and Tolin et al. (2002). The findings of these studies are consistent with the hypothesis that a cognitively- mediated tendency towards suppression

may be partially responsible for development and maintenance of disorders such as obsessive-compulsive disorder and post-traumatic stress. The results suggest that patients should be discouraged from suppressing their unwanted intrusive thoughts, but there is little evidence to suggest that expressing unwanted intrusive thoughts, the opposite of suppression, will bring any benefit (Trinder & Salkovskis, 1994; Salkovskis & Campbell, 1994). In addition, it is not clear whether thought suppression causes clinical levels of intrusive thinking as seen in depression, obsessive-compulsive disorder and anxiety, or whether thought suppression is the result of such problems (Muris et al., 1996).

Although, cognitive behavioural models of OCD have given a central place to thought suppressions, the relationship between thought suppression and OCD remains unclear. A number of studies have failed to identify thought suppressions as a predictor variable for increased intrusive phenomena. For example, Kelly and Kahn (1994) used a crossover design to examine suppression vs expression. Suppression of intrusive thoughts was not found to be associated with a paradoxical effect on the frequency of intrusions and subsequent distress. The study of Janeck and Calamari (1999) is the first experimental investigation of thought suppression in OCD patients. They detected no differences between suppression and monitor-only without suppression groups. However, OCD patients reported significantly higher frequency of intrusive thoughts related to core clinical obsessions than nonclinical subjects regardless of whether they attempted to suppress or monitor obsessional intrusions. Recently, Purdon and Clark's study (2001) has contributed to a growing literature that has found no paradoxical effects of suppression on neutral thoughts or obsessional thoughts. In



their study, there was no paradoxical effect of suppression on frequency for any type of target thought.

Clark and Purdon (1999, 2001) proposed that individuals vulnerable to developing obsessional problems may believe that obsessional thoughts are evidence that undesirable personality characteristics exist and their thoughts can and should be controlled. Therefore, failures in thought control are experienced as devastating because OCs tend to attach internal, negative meaning to their suppression failure. These negative and internal appraisals may lead to increased distress, which step up the motivation to suppress in future. Recently, Tolin et al. (2002) have reported consistent findings that people with OCD have a greater tendency to attribute their thought suppression failure to internal factors and give negative meaning (e.g., “I am mentally weak”) than subjects in control group.

Some authors have speculated that TAF and thought suppression may interact in the development of obsessional problems. There are some preliminary results that support this position. Results suggest that TAF triggers thought suppression, while thought suppression, paradoxically, promotes obsessive-compulsive symptoms (Rassin, Muris, Schmidt, & Merckelbach, 2000).

Studies have investigated thought control strategies employed by individuals with OCD and their relationship to symptom severity. Wells and Davies (1994) proposed five different strategies used to cope with distressing intrusive thoughts: distraction (e.g. I keep myself busy), social control (e.g. I ask my friends if they have similar thoughts), punishment (e.g. I get angry at myself for having the thought), worry (e.g. I dwell on other worries), re-appraisal (e.g. I challenge the thought's validity). These authors observed that the uses of worry

and punishment strategies were related to higher scores on measure of trait anxiety, indicating that these particular strategies may be especially maladaptive. Amir et al. (1997) and Abrawozit et al (2003) examined the thought control strategies used in OCD. Results revealed that compared to controls (non-anxious and anxious participants) OCD patients reported more frequent use of punishment and worry strategies, and less frequent use of distraction. Interestingly, punishment was the strongest discriminator of OCDs and non-patients because of the high frequency of its use by OCDs.

These findings are consistent with recently hypothesized cognitive conceptualization of OCD. Misappraisal of normally occurring intrusive thoughts results in distress and attempts to control the thoughts. The excessive use of punishment and worry as thought control strategies, and insufficient use of distraction strategies maintains mistaken interpretations and increases the distress associated with intrusive thoughts. This in turn evokes increased attempts to suppress the thought. Frequent failure of suppressing intrusive thoughts results in a greater frequency of the thought, greater emotional distress, and more preoccupation with the thought, which are qualities of abnormal obsessional fears (Abramowitz, Whiteside, Kalsy & Tolin, 2003).

#### **1.3.4 Overestimation of the Probability and Severity of Threat**

Danger expectancies are another cognitive mediator variable. This domain reflects an exaggeration of the probability or severity of harm. Examples include, “I believe that the world is a dangerous place”; “Bad things are more likely to happen to me than to other people” (OCCWG; 1997). It has been argued that

danger expectancies play a central role to OCD. Several writers have proposed that people with OCD or OC symptoms tend to overestimate the probability and cost of aversive events (Freeston, Rheume, & Ladouceur, 1996; Salkovskis, 1985). In the early 1970s, Carr argued that optimal treatment procedures for OCD must aim to maximize patient's opportunity to decrease excessive danger beliefs (Carr, 1971, 1974, cited in Menzies, Harris, Cumming, & Einstein, 2000).

Mediational role of danger expectancies in OCD has been supported by recent studies of compulsive Washers. It has been found that danger expectancies are the most likely mediator of washing-related behaviour in OCD when compared to rating of responsibility, perfectionism, anticipated anxiety, and self-efficacy. No other variable remained significantly related to any of the four measures of OCD washing when danger expectancies which include likelihood and severity of illness ratings were held constant (Jones & Menzies, 1997a). In a subsequent study, experimentally increasing danger expectancies leads to similar increases in cognitive and behavioral symptomatology among washers (Jones & Menzies, 1998b). Furthermore, treatment procedures aiming at decreasing danger expectancies (Danger ideation reduction Therapy, DIRT) lead to significant reductions in OCD symptomatology among washers. These treatment procedures do not include exposure, response prevention, or procedures attacking inflated personal responsibility (Jones & Menzies, 1997b, 1998a).

It is proposed that inflated sense of responsibility and danger expectancies are intricately linked constructs which are potential cognitive mediators in OCD phenomena. Ladouceur et al. (1995) have suggested that experimentally manipulated responsibility may inadvertently lead to changes in danger

expectancies. For example, Lopatka and Rachman (1995) and Shafran (1997) experimentally manipulated responsibility and in a condition of high responsibility the urge to neutralize, discomfort/anxiety and estimation of the probability of threat were all higher than in the low responsibility condition. The results from these studies indicate that responsibility and danger expectancies may interact. It may be that it is the appraisal of intrusions as being responsible for possible negative events that leads to an increase in the estimation of risk. Recently, the results of Menzies et al.'s study (2000) support the claimed general tendency for individuals to regard an outcome as more aversive if they are personally responsible for that outcome, rather than someone else being responsible. They suggest that increasing perceptions of personal responsibility will increase cost or severity estimates in subjective danger calculations, and that responsibility may influence OCD phenomena in this way.

### **1.3.5 Intolerance for Uncertainty**

Generally it has been reported that people with OCD often have difficulty making decisions that may arise from the belief about the need for certainty (Obsessive Compulsive Cognition Working Group (OCCWG), 1997). Frost and Shows (1993) demonstrated that people with OC symptoms as compared to control group appear to be more cautious and display greater doubt about the correctness of their decisions. OCD patients generally report lower tolerance about uncertainty, and this low tolerance of uncertainty may generalize to memory compared to non-OCD controls (Constans, Foa, Franklin, & Mathews, 1995).

It is assumed that compulsive checking is motivated by distrust of memory for previous checking. Recently some authors argued that people who check extensively may be motivated by the wish to reduce uncertainty. However, repeated checking, paradoxically, breeds doubt instead of confidence, in its turn, undermines trust in memory about the checked events (Rachman, 2002; Tolin, Abramowitz, Brigidi, Amir, Street et al., 2001; van den Hout & Kindt, 2003). Authors have hypothesized two possible consequences of repeated checking. Firstly, repeated checking decreases vividness and detail of recollections of the last checking operation in OCD checkers. Secondly, repeated checking will reduce confidence in memory about recent checked actions. In sum, repeated checking increases the familiarity, with increased familiarity vividness and detail of recollection decreases. Decreased vividness/details undermine memory confidence about any special case from a class of familiar events (Hout & Kindt, 2003). In line with these expectations, Hout & Kindt (2003) carried out three experimental studies with healthy participants. Results showed that repeatedly checking a virtual gas stove in a computer animation did not affect actual memory accuracy but it lead to strong and significant drops in vividness and detail of memory about last checking. Most importantly, memory confidence was significantly dropped by repeated checking. Their experimental studies confirmed that repeated checking reduces vividness and detail of the memory about the last checking, in its turn, diminishes trust in memory. Therefore, they suggest that a need for certainty and a critical attitude towards memory performance may not be problematic or abnormal. Clinical problems arise when the patient tries to fight memory distrust by repeated checking, because repeated checking increases

distrust and the patient may get trapped in a vicious cycle reinforced by checking behaviour and memory distrust (Hout & Kindt, 2003).

Pathological doubt is often observed in individuals with OCD (Rasmussen & Eisen, 1989). According to Reed (1985; cited in Tolin et al., 2001, p.914) OCD related doubt reflects uncertainty about the properties of the situation, or the action. For example, OCs frequently report uncertainty about whether they have performed actions correctly. In order to reduce their doubt, they are likely to engage in compulsive behaviours such as checking, washing, assurance-seeking, or repetitive activities. One hypothesis about the source of doubt is that OCs may have a general memory deficit. Authors have suggested that especially, checkers suffer from memory deficits about previous actions. Inability to recall a previous action would motivate the checkers to check the action and its results (Reed, 1977, cited in Tolin et. al., 2001).

Authors suggest that patients with OCD show a reduced capacity of differentiating between memories of performed actions and memories of imagined actions. Rather than difficulty in retrieving a memory trace, they may have difficulty determining whether the trace is attributable to a performed action or an imagined action. This process is referred to as a deficit in reality monitoring. Empirical studies of reality monitoring deficits in patients with OCD have yielded mixed results. In a study by Rubenstein et al. (1993) subclinical checkers had to observe, perform, or write down a series of 90 action statements. During the subsequent test phase, checkers were more likely to confuse whether they had performed, observed, or written these actions. These findings have been replicated in studies with compulsive checkers using a different method (Sher, Frost, & Otto,

1983; Sher, Mann, & Frost, 1984). Moreover, compulsive checkers were found to underestimate their ability at distinguishing memories of real and imagined events. A tendency to underestimate reality-monitoring ability could result in increased checking behaviour in order to reduce his/her uncertainty over whether a previous behaviour actually occurred or merely was thought to occur (Sher, Frost, & Otto, 1983; Dar, Rish, Hermesh, Taub, & Fux, 2000). Other investigations, however, failed to find evidence of memory deficits model of OCD (Foa, Amir, Gershuny, Molnar, & Kozak, 1997; McNally & Kohlbeck, 1993).

It is claimed that OC subjects suffer from memory deficits only for threat-related stimuli or activities instead of suffering from general memory deficits. For example, an individual who fears leaving the gas on will exhibit poor memory for whether or not they had turned the oven off, but will show normal memory performance for non-feared activities. Recently, Tolin et al. (2001) have supported this hypothesis. They found that when OC subjects were repeatedly exposed to threat-related stimuli, their level of confidence in remembering these stimuli paradoxically decreased.

In spite of the findings that indicate decreased memory confidence for threat related stimuli, a few studies investigated an enhanced memory for threat-related information (Constants, Foa, Franklin, & Mathews, 1995; Radomsky & Rachman, 1999). More recently, positive memory bias for threat-relevant information was replicated in a study by Radomsky, Rachman, and Hammond (2001). The most important aspect of their result is that positive memory bias for threat-relevant information was only present when feelings of responsibility were inflated. Under conditions of no responsibility, no memory bias was detectable.

Furthermore, responsibility appears to have had a greater impact on confidence in memory than on memory itself in OCD.

### **1.3.6 Perfectionism**

Perfectionism has been identified as another cognitive variable that plays an important role in the cognitive distortions seen in OCD. Perfectionism may manifest itself in many forms and has a long history of being recognized in the obsessional patient (Greisberg & McKay, 2003). Perfectionism has been recently described as the tendency to set high standards and employ over critical self-evaluations (Frost & Marten, 1990). Hamacheck (1978) points out that perfectionism can also be a positive personality trait and distinguishes perfectionism as “normal” and “neurotic perfectionism”. Neurotic perfectionists set high standard for themselves but allow little latitude for mistakes; therefore they never feel satisfied because nothing is done completely enough or well enough. Normal perfectionists also set high standards similar to neurotic perfectionists, but they feel satisfied when the standards have been achieved. Therefore, the psychological problems associated with perfectionism are related to tendencies of over criticism rather than with setting of excessively high standards (cited in Frost, Marten, Lahart, & Rosenblate, 1990).

Some empirical studies showed that maladaptive perfectionism plays an important role in OCD. For example, subclinical OC subjects were more perfectionist than non-compulsive individuals (Frost, Streketee, Cohn & Griess, 1994) and anxious controls (Gershuny & Sher, 1995). In studies among psychiatric patients, Hewitt and Flett (1991) have obtained a significant



correlation between perfectionism and OCD symptoms. Also, in a non-clinical study, hierarchical regression analysis demonstrated that perfectionism still accounted for a significant part of the Padua Obsessive inventory variance when the other variables (responsibility, perceived danger) were partialled out (Reheume, Ladouceur & Freeston, 2000a). Other researchers explored the link between dysfunctional perfectionism and OC type behaviours among non-clinical participant rather than perfectionism in general. Furthermore, dysfunctional perfectionistic participants reported more beliefs about responsibility, compared to functional perfectionistic participants (Rheume, Freeston, Ladouceur, Bouchard, Gallant et al., 2000b). Similarly, in a recent study where perceived responsibility was experimentally increased, high perfectionistic subjects reported more influence and responsibility for negative consequences than moderate perfectionistic subjects. The authors suggested that high perfectionistic tendencies could predispose individuals to overestimate their personal responsibility (Bouchard, Rheume & Ladouceur, 1999). This data were supported by Yorulmaz (2002) showing that responsibility attitudes, self-oriented perfectionism and socially prescribed perfectionism were positively associated with Obsessive-compulsive symptoms.

To sum, recent theories of OCD emphasize the importance of cognitive contents (beliefs and appraisals) and cognitive processes in the etiology and maintenance of OCD. When reviewed the literature, it can be concluded that six beliefs have central importance for OCD: inflated responsibility, overimportance of thoughts, excessive concern about the importance of controlling one's thoughts,

over estimation of the probability and severity of threat, intolerance of uncertainty, and perfectionism.

#### **1.4. Inflated Sense of Responsibility and OCD:**

In his cognitive theory of OCD, Salkovskis has given a central role to the inflated sense of personal responsibility in the development, maintenance and modification of OCD. According to him, the appraisal of intrusion in terms of responsibility for harm is the most important point in the cognitive model of OCD. Obsessional patients would appraise intrusive thoughts as a possible harm to themselves or others. This inflated sense of responsibility would produce automatic negative thoughts and increase discomfort. The obsessional patient would then attempt to reduce the anxiety either by cognitive neutralization by compulsive behavior such as repetitive checking (Salkovskis, 1985, 1989).

In their series of experiments on compulsive behaviour, Rachman and Hodgson (1980, cited in Rachman, 1993) observed that compulsive checkers experienced more discomfort and difficulty when they carried out the relevant activity in their own homes or work places. In clinical samples, Rachman observed a decrease in compulsive behaviours during the first days of hospitalization, but as the patients got used to their new environment, their compulsions reached to their pre-hospitalization levels. Rachman explained this short-term decrease in compulsive activities by decreased or reduced sense of responsibility, because patients had transferred responsibility to the hospital staff. He proposed that the presence of another person may serve to reduce the patient's sense of responsibility for the act, and therefore, allow him/her to experience less

discomfort, because patients transferred responsibility to someone else who is present (Rachman, 1993).

The operational definition of inflated responsibility has been made by Salkovskis, Rachman, Ladouceur and Freeston (1992, cited in Rheaume, Ladouceur, Freeston, & Letarde, 1995). They have defined inflated responsibility as having the belief that one has pivotal power to start or prevent subjectively crucial negative outcomes. These results may be at a concrete level, such as a car accident or on a moral level such as having unacceptable thoughts means that I'm a bad person.

In order to empirically test the validity of this definition of inflated responsibility in OCD, Rheaume and his colleagues (1995a) carried out two studies. To evaluate subjects' sense of responsibility level, they formed six ambiguous situations associated with major OCD themes like contamination, verification, somatic concern, loss of control, making errors, sexual and magical thinking. Each situation and related possible negative outcome was briefly described to participants. Then participants were asked to rate this outcome on four dimensions: probability, severity, influence, and pivotal influence using a 9-point likert scale. Results indicated that influence and pivotal influence were highly correlated with responsibility ratings, whereas severity and probability weakly correlated with responsibility. The second study was conducted to examine the effects of the order of the questions on the responsibility ratings. Results replicated the findings of the first study, showing that pivotal influence remained the strongest predictor of responsibility ratings. These two studies highlighted the role of perceived pivotal influence and influence in responsibility.

The best predictor pivotal influence indicates that individuals believe that he or she has a great deal of control over the outcome. To sum, influence and pivotal influence were better predictors of responsibility ratings than severity and probability.

Lopatka and Rachman (1995) carried out the first experimental study to examine the effects of the inflated sense of responsibility on OCD symptoms. They manipulated levels of responsibility of 30 Ss who qualified for the DSM-III-R diagnosis. Participants were instructed to perform a task at home that usually evoked an urge to check under “high-responsibility” instructions (HRI), “Low-responsibility” instructions (LRI), and “controlled” instructions (CI). Responsibility was manipulated using contracts. In the high responsibility condition, participants assumed complete responsibility for possible negative outcome. In the low responsibility condition, to decrease the subjects’ perceived responsibility, experimenter assumed complete responsibility for possible negative outcome. In the control conditions, there was no manipulation of the sense of responsibility. The results showed the measure of perceived responsibility was significantly higher in the high responsibility condition than in the control condition. Similarly, perceived responsibility scores were significantly lower in the low responsibility than in the control condition. Furthermore, low responsibility condition was followed by perceived discomfort, urge to check, probability of anticipated harm, severity of anticipated harm, estimated length of time needed to finish checking, perceived panic, and likelihood, timing, severity of anticipated criticism.

The second study using a sample of OCs was carried out by Shafran (1997). She manipulated responsibility in obsessional participants. The degree of responsibility was manipulated by varying the presence/absence of experimenter during a task. The manipulation was successful in increasing perceived responsibility for threat. In the high responsibility condition; estimates of the urge to neutralize, discomfort and probability of threat were all significantly higher than in the low responsibility condition. However, estimates of responsibility for thoughts and control over the threat did not change significantly between conditions. According to Shafran, one explanation for the lack of relationship between perceived responsibility for threat and control may be due to the fact that people with OCD may have a tendency for excessive control over all negative events, whether or not they can influence them. Hence, even in a low responsibility situation, participants perceive control. Related to the hypothesis that responsibility would more likely be associated with checking symptoms than cleaning or other symptoms, the manipulation of responsibility did not have different overall effects according to the type of compulsion (checkers, cleaners and others).

To demonstrate the relationship between different levels of perceived responsibility and performance of compulsions, Ladouceur et al. (1995) conducted two experiments by experimentally manipulating the degree of responsibility in sixty collage students from a non-clinical population. In the first experiment, a computerized sound recognition task developed to compare checking behaviours of subjects under high (HR) and low (LR) perceived responsibility conditions. Participants were asked to determine whether they had

heard a sound previously. They were allowed to listen to the sound as many times as they wanted before responding, which was evaluated as a checking behaviour. Results suggested that manipulation was successful in producing higher feelings of responsibility related to consequence; however, participants in the HR group did not exhibit more checking behaviour than participants in the LR group. The authors attributed the negative results to the weak effects of manipulation of perceived responsibility and the task difficulty. It may be that task difficulty masked the effects of manipulation. Therefore, the second experiment was carried out. Participants in the high responsibility condition was instructed to sort different kinds of pills for a project concerning the export of a medication for a virus which was presently very widespread in a South-East Asian country. Experimental manipulation of responsibility produced significantly more hesitation and checking behaviour, more preoccupation with not making errors and more anxiety during the classification task in the HR group than LR condition.

To test the effects of an experimental manipulation of both the influence and negative consequences on perceived responsibility and checking behaviour, Ladouceur and his colleagues (1997) conducted an experimental study. Seventy-seven subjects were divided into four experimental conditions: combined condition, influence condition, the negative consequence conditions and the control conditions. After the experimental manipulation, subjects from each condition had to classify capsules in semi-transparent bottles. Results indicate that perceived influence was a better predictor of perceived responsibility than was the overestimation of negative consequences. Furthermore, although increased

potential negative consequences were sufficient to trigger hesitation, a combined increase of perceived influence and negative consequences produced a stronger effect than each component alone on behavioural or subjective measures. The results of this study are consistent with those obtained by Rheume et al. (1995). Thus, Rheume et al. (1995) and Ladouceur et al. (1997) have empirically supported to the validation of an operational definition of responsibility as “the belief of possessing a pivotal power to provoke or prevent crucial negative consequences”. In addition, they provided sufficient evidence that the manipulation of perceived responsibility (both influence and negative consequences) produces compulsion-like behaviours and subjective preoccupations. This replicates earlier results obtained with non-clinical (Ladouceur et al., 1995) and OC subjects (Lopatka & Rachman, 1995; Shafran, 1997). Finally, results also supported the link between both components of the responsibility construct and checking behaviours proposed in the cognitive models of OCD by Salkovskis.

To evaluate the cognitive model of OCD of Salkovskis in a different aspect, Wilson and his colleagues (1999) carried out a study. The main aim of this study was to examine whether exaggerated responsibility is present in a variety of non-OCD contexts. For this study, Wilson developed and validated the Pervasive Responsibility Measure in 1998, and then used subsequent analyses to represent the schemata construct. Results indicated that OCD is indeed associated with responsibility, conceptualized as both automatic thoughts and pervasive schemas. The study supported the view that pervasive responsibility significantly contributes to the prediction of OC symptoms. Moreover, based on a mediational

analysis, this relationship appears to be mediated by automatic thoughts related to causing harm in the OCD context. In other words, pervasive responsibility yields effects on OCD severity through automatic thoughts. A second aim of the study was to investigate whether responsibility serves as an important construct for certain types of OCD only. Contrary to some hypotheses in the literature (e.g. Loparka & Rachman; Rachman, 1997, 1998, 2002), results indicated that responsibility was equally relevant for checking and for washing compulsions.

Some authors have examined how responsibility and perfectionism are linked together and to OCD symptoms. For example, Rheaume et al. (1995b) conducted a study in order to empirically test the relative importance of perfectionism and responsibility in obsessive-compulsive symptoms. Results indicated that responsibility was a better predictor of obsessive-compulsive symptoms than perfectionism. However, perfectionism was still a significant predictor of obsessive-compulsive symptoms, once responsibility had been partialled out. These results indicate that although responsibility is related to OC symptoms, perfectionism is also independently associated with OC symptoms.

Bouchard et al. (1999) examined the links between perfectionism and excessive responsibility. The relationship was studied by increasing and decreasing perceived responsibility in subjects showing different degrees of perfectionism (highly perfectionistic group (HP) and moderately perfectionistic group (MP)). Results indicate that more checking behaviours (hesitations, checking) observed in the high responsibility condition than low responsibility condition for HP subject and MP subjects. Furthermore, when responsibility is increased, HP subject report more influence and responsibility for negative



consequences than MP subjects. According to results, it can be concluded that dysfunctional perfectionistic tendencies could predispose individuals to overestimate their personal responsibility for negative events, which in turn could potentially contribute to an increase in checking behaviour. Increased responsibility has the effect of increasing checking behaviour, and furthermore, perfectionism could be conceived as playing a catalytic role in the perception of responsibility.

To explore further the relationship between OCD and inflated responsibility, Foa and colleagues (2001) compared non-anxious control participants (NACs), anxious control participants with generalized social phobia (GSPs) and participants with OCD (OCs). They predicted that OCs would exhibit a greater urge to rectify situations involving potential risk, would report more distress upon leaving such situations unrectified and would feel more personal responsibility if the unrectified situations resulted in harm. Three groups completed the obsessive- Compulsive Responsibility Scale, which included low-risk, OC-relevant, and high-risk situations. Results showed that compared to non-anxious control participants and anxious control participants, obsessive participants reported more urges, distress, and personal responsibility in low-risk situations and OC-relevant situations; no significant group differences were found for high-risk situation. The results of this study are coherent with Lopatka and Rachman's (1995) results that low, but not the HR condition affected urge to check and discomfort. Furthermore, these studies demonstrate a strong empirical support for the hypothesis that inflated responsibility is an important factor in OCD.

These findings highlight the importance of correcting responsibility schema and power issues in order to decrease OCD symptoms. To evaluate the efficacy of cognitive treatment for OCD through the mediation of correcting inflated responsibility, Ladouceur and colleagues (1996) conducted treatment sessions with four patients with OCD. Treatment was introduced at 5, 10, 15, and 17 days respectively, for four patients. Homework related to cognitive correction was included such as” try to notice if discomfort is accompanied by feelings of responsibility: pay attention to your internal monologues when experiencing an intrusion; evaluate your own share of responsibility in situations. After the treatment all subject reported a clinically significant decrease in checking rituals and a decrease in perceived responsibility. Therapeutic gains were maintained at follow-up (6 and 12 months). Results indicated that changing cognitions about inflated responsibility produced clinically significant changes without using any behavioural techniques. Authors suggest that cognitive therapy targeting inflated responsibility is a promising alternative to exposure – based treatment.

Thus, there is growing experimental evidence supporting the hypothesis that inflated responsibility plays an important role in OCD, Salkovskis et.al. (1999) discussed possible origins of inflated responsibility. The general cognitive theory of emotional problems as described by Beck (1976) proposes that early childhood experiences are crucial to the formation of many attitudes which may become dysfunctional later in the individual’s life. Such experiences may involve longer term socialization into the acceptance of a belief, or the beliefs can occur as a result of discrete traumatic events (cited in Salkovskis et al., 1999). They have proposed a set of more obvious patterns which may be involved in further

inflating levels of responsibility. These possibilities include: (1) an early developed and broad sense of responsibility for harm which is deliberately or implicitly encouraged or promoted during childhood by assuming actual responsibilities as a consequence of incompetent parenting; (2) Rigid and extreme codes of conduct and duty; (3) childhood experiences in which worries are prominent about possible danger in the family milieu where sensibility to ideas of responsibility develops as a result of over preparation to prevent possible danger; (4) an incident in which one's actions or inaction actually resulted in a serious misfortune which affects oneself or significant others; (5) an incident which appeared falsely or is coincidental, however, one's thoughts and/or actions or inaction are evaluated as causal factors for a coincidental misfortune.

In a similar vein, Tallis (1994) has reported two cases examples on how learned relationship between mental and real events may contribute to responsibility feelings and to origins of OCD. He suggested that critical learning incidents as a function of responsibility and guilt were instrumental in the development of OCD. According to some authors, although this may be true for some cases, the manifestations of responsibility are not always easily identified nor present for all cases (Rheaume et al, 1995; Ladouceur et al., 1995).

As discussed above, the cognitive-behavioural theory of obsessive-compulsive disorder proposes that the interpretation of unacceptable intrusive thoughts is a key factor influencing obsessional behaviour. Recently, Salkovskis et al. (2000) have specified two levels of responsibility-related cognitions: responsibility assumption (attitudes) and responsibility appraisals (interpretations). They propose that responsibility related cognitions could interact

with other cognitive factors such as general threat appraisals, thought-action fusion, and thought suppression. They have developed two new questionnaires specifically designed to measure two levels of responsibility-related cognitions, the Responsibility Attitude Scale (RAS) and the Responsibility Interpretations Questionnaire (RIQ). They suggested that if the cognitive theory is broadly correct, then it would be expected that intrusive thoughts will be associated with responsibility appraisals of intrusive thoughts. Responsibility appraisals was measured their study using a priming approach which seeks to identify the crucial interpretations only after the person has identified specific examples of unacceptable intrusive cognitions which have occurred in the previous 2 weeks. The subsequent ratings then focus on that type of intrusion. Responsibility assumptions (attitudes) might be expected to be rather less specific, as these are more distant from the experience of obsessional symptoms. Such assumptions should reflect the more generalized tendency to assume responsibility in a given situation, particularly situations involving intrusions and doubts. These measures were assessed in patients with OCD and in patients suffering from other anxiety disorder and in non clinical controls. These scales were found to have good reliability and internal consistency. Comparison between criterion groups indicated that both assumption and appraisals were specific to OCD. Furthermore, it was found that the responsibility measures did not make a unique contribution to the prediction of depression symptoms, and only a very minor contribution to clinical anxiety symptoms. These findings support the view that responsibility assumptions and appraisals are significantly increased in obsessionals compared to controls. This is consistent with the cognitive –behavioural theory.

This data were supported by Yorulmaz (2002) showing that RAS has high psychometric properties for nonclinical Turkish university population. The initial reliability and validity analyses revealed that RAS can be evaluated as reliable and valid scale for Turkish university population. The comparison of low OCS group and high OCS group showed that the high OCS group had significantly higher RAS scores than low OCS group, after depression and anxiety were controlled. Results from hierarchical regression analyses suggested that responsibility is better and more important predictors of OCD than perfectionism.

Mancini et al. (2001) designed a study to evaluate the specific contribution of responsibility assumptions to OC behaviour, in a nonclinical population. The second purpose of this study was to test the hypothesis that responsibility, as measured by RAS, is more salient in checking symptoms than cleaning symptoms as proposed by Salkovskis (1985), Rachman (1993, 2002), van Oppen and Arntz (1995). Results showed that responsibility can be considered a significant predictor of obsessions and compulsions behaviour, as measured by Padua Inventory Revised. A principle component analysis showed that RAS can be interpreted as a four factor scale: prevention, 'to feel dangerous', 'thought –action fusion', and 'self-granted power of harm'. According to results related to psychometric properties of the RAS, the reliability and internal consistency of RAS was found to be high. Related to the second hypothesis, regression analyses on PI-R subscales indicated the RAS is a better predictor of checking, explaining 15% of variance overall, than of washing, explaining just the 7% of the variance overall. Furthermore, regression analyses indicated that the first factor named as 'prevention' was significantly linked to the washing, and the fourth factor named

as 'self granted power' was significantly correlated to the checking subscale. These results seem to support that specific aspects of responsibility could play different roles in certain types of OCD.

To conclude, the inflated sense of responsibility, a core element in the cognitive model of OCD, is assumed to play an important role in the both the development and the maintenance of OC pathology.

### **1.5 Locus of Control and OCD**

In recent years, there has been considerable interest in examining the relationship between locus of control and self reported mental health problems (Holder & Levi, 1988). According to Rotter, individuals differ along a continuum on the extent to which they believe that events in their lives are controlled by themselves (internal locus of control) or by external sources, such as chance, powerful others (external locus of control) (Rotter, 1966 cited in Burger, 1984). Several research studies on this individual difference variable have investigated many behavioural and attitudinal differences between internals and externals (Archer, 1980).

The major area of considerable interest has been aimed to explore the relationship between locus of control and psychological distress. The results of numerous investigations supported the hypothesis that, in American society, individuals who believe that events in their life are controlled by external sources are likely to report higher levels of psychopathology and maladjustment than individuals who perceived themselves as having control over of their

reinforcements. In other words, research findings indicated that external locus of control shows significant relationship between psychopathology (Hale & Cochran, 1986).

Locus of control has been examined, especially, in depression. It has been observed that depressed persons express a general belief in external control of the events in their lives. Research findings confirm this observation that locus of control orientation and degree of depression were significantly related, that the relation was moderately strong, and that it was consistent across studies. Greater externality was associated with greater depression (Ganellen, 1984; Burger, 1984; Benassi, Sweeney, & Dufour, 1988).

Holder and Levi (1988) aimed to clarify the relationship between Levenson's locus of control scales and mental health problems. Levenson's locus of control scales is a multidimensional locus of control scales, which measures internal (I), powerful others (P), and chance (C) orientations. It has been suggested that two forms of externality (powerful others and chance) might relate differently to mental health variables. Results indicated that while all of the locus of control scales significantly and positively correlated with the SCL-90-R scores, internal locus of control scale negatively correlated with SCL-90-R. This study supports the finding (Burger, 1984; Ganellen, 1984) that all three of Levenson's locus of control scales are related to higher levels of psychopathology, while internality is associated with lower levels.

Some evidence suggests that locus of control acts as a mediator influencing the relation between life stressors and impairment of mental and physical health. It is suggested that this mediational effects may be the influence

of personality on coping processes. Consistent with this, findings suggests that internals reported lower levels of distress and better performance, associated with the use of particular types of coping strategies, specifically, more task centred behaviours and fewer emotion-centred behaviours (Anderson, 1977 cited in Parkes, 1984). In a similar vein, Parkes (1984) examined the relationship between locus of control and coping strategies in relation to specific stressful episodes reported by 171 female student nurses. He suggested that the relationship between locus of control and coping would be mediated by subjective appraisals of situational characteristics. Results showed significant interactions between locus of control and cognitive appraisal. Patterns of coping reported by internals were potentially more adaptive in relation to types of appraisal than those by externals. As predicted internals showed higher levels of Direct coping (a type of coping similar to the problem-focused coping strategy or task oriented behaviour) and low levels of Suppression (a tendency to cope by suppressing thoughts and feelings about stressful episode). Both Direct coping and Suppression were related to appraisal, whereas externals reported high levels of Suppression and low levels of Direct coping, this was not related to appraisal.

Petrosky Birkimer (1991) carried out a study to examine the joint contributions of LOC and Coping to psychological symptom reporting. Results indicated that different dimensions of locus of control (LC) predicted different types of symptoms. As predicted, internal LC was correlated negatively with reporting symptoms of depression and symptoms of interpersonal insensitivity. Chance LC was correlated positively with reporting overall symptoms and symptoms of depression and obsessive-compulsive disorder. In addition, powerful



others LC predicted overall symptom reporting as well as depression, obsessive-compulsive, and interpersonal insensitivity. However, when relationships among the various predictors were controlled via multiple regression, the only relationship that remained significant was a positive relationship between powerful others locus and obsessive compulsive symptoms. Related to coping strategies, direct coping was found stronger predictor for reduced symptom reporting. Furthermore, direct coping was found to be predicted strongly by the combination of increased age, perception of controllability of situations, and an internal locus of control. Older subjects reported fewer attributions to chance locus of control, more direct coping, and less symptomatology. This suggests a possible developmental trend toward better adjustment in these relatively young adults.

Some authors have suggested that significant relationship between locus of control and psychopathology might be specific for young population rather than elderly populations. It is not clear whether the same relationship exists for older adult and non-white population. For example, Hale et al. (1985) found that an external locus of control orientation was associated with higher levels of self-reported psychopathology for older women (60 and over), but not for older men (60 and over) (cited in Hale & Cochran, 1986). Similarly, Hale and Cochran (1986) found consistent findings that locus of control tend to be positively correlated with psychological distress for a sample of young white of both sexes and young black female students. However, the assumption that individuals with external locus of control were higher self-reported psychopathology was not supported for young black men and black and white elderly of both sexes. Thus, it

can be suggested that age and race might be mediating factor for locus of control and psychopathology.

Trait anxiety has been intimately linked by numerous theorists to the development of numerous forms of psychopathology. Archer (1980) examined the relationships between locus of control, trait anxiety, and psychopathology among 186 psychiatric inpatients. Results showed high trait anxiety and external locus of control orientations were related to greater psychopathology on multiple MMPI scale indices. In particular, low-anxious externals had the highest frequency of conduct-disordered patients, whereas high-anxious internals held the highest frequency of neurotic assignments, and the lowest frequency of psychotic diagnoses. He has defined the high-anxious internal individuals as those who “typically perceive reinforcement as potentially under personal control, but are uncertain or pessimistic about their ability to successfully perform such control”. He proposed that among high-trait-anxious individuals, the perception of internal control appears to be associated with stronger feelings of responsibility, worry, rumination, and inadequacy.

It has been postulated that a tendency to externalize locus of control is a predisposing personality trait for the development of agoraphobia. Research has indicated that compared with normals, agoraphobics seem to externalize locus of control more and they attribute good events to less global causes and bad events to more global causes than normals (Brodbeck & Michelson, 1987). Similarly, Hoffart and Martinsen (1990) examined locus of control (measured by Multidimensional Health Locus of Control Scales) and attributional styles in nondepressed agoraphobic patients, nonanxious depressed patients and patients

with both agoraphobia and depression. Results indicated that Agoraphobic patients, both with and without depression externalized mental health locus of control to chance more than did nonanxious depressed patients. Agoraphobic and comorbid patients attributed good events to more stable causes than did depressed patients.

Studies from different cultures have supported the relationship between locus of control and psychopathology. For example, Liu et al. (2000) examined associations of life events and locus of control with behavioural problems among 1365 Chinese adolescents. Findings indicated that high life-stress score and high external locus score significantly increased the risk for behavioural problems; similarly, perceived life-stress score had a significantly positive correlation with external locus score. Moreover, life stress and locus of control significantly interacted in causing behavioural problems. These findings support the stress-moderating effects of locus of control on psychopathology. Similar to this study, Dağ (1992) examined relationship among locus of control, learned resourcefulness, and psychopathology in a sample of university students from Turkey. Results revealed consistent findings with previous findings linking locus of control, learned resourcefulness (individual's repertoire of coping strategies), and psychological symptoms. There was a weak but a positive significant relationship between external locus of control and self-reported psychopathology; whereas increased learned resourcefulness was associated with decreased psychopathology.

Dağ (2002) developed a new locus of control scale for Turkish samples. Results, based on item analysis, pearson correlations, and factor analysis, showed

that the Locus of Control Scale was a reliable and valid instrument, and more useful than previous Turkish form of the Rotter's I-E Scale. Furthermore, as expected from the literature, external locus of control showed positive correlation with symptomatology, paranormal beliefs and low levels of coping skills.

The differences between checkers and non-checking anxious individuals on levels of locus of control were an exploratory interest of some research. It was speculated that locus of control may lead one to engage in checking behaviour in an attempt to control external threats because individual with high internal locus of control perceives higher level of personal control over the environment than with low internal locus of control. That is, checking, even when dysfunctional, may represent active coping efforts (Gershuny & Sher, 1995). To examine this hypothesis, Gershuny and Sher (1995) carried out a study. However, the exploratory examination of locus of control in checkers versus nonchecking anxious individuals did not produce significant differences. Results indicated that checkers exhibited more perfectionism, worry, and doubt than other groups (anxious control and nonanxious control groups). It is suggested that greater perfectionism, worry, and doubt may lead checkers to try to exert more control over perceived external threats in the form of compulsively checking to diffuse and prevent these threats.

In conclusion, external locus of control is very important personality variable which predisposes the individuals to develop psychopathology. Literature indicates that externality is positively related to several psychopathologies, especially depression.

## **1.6 Aims of the study**

The main aim of this study is to examine how responsibility assumptions, locus of control and their interaction account for overall OC symptoms and dimensions of OC symptoms in a young nonclinical population.

The second purpose of this study is to test the hypothesis that responsibility as measured by RAS, is more salient in checking symptoms than in cleaning symptoms. In fact several authors have proposed that responsibility has a more important role in certain types of OC symptoms (e.g. Salkovskis, 1985; Rachman, 1993; Van open & Artz, 1995).

A final aim of the study is to examine the psychometric properties of the Turkish version of MOCI and possible gender differences in overall OC symptomatology and its symptoms subtypes.

The hypotheses of the present study are as follows:

1. The factor structure of Maudsley Obsessive-Compulsive Inventory (MOCI) will be similar in a high school student sample, as found for a general sample in original Turkish adaptation study (Erol & Savaşır, 1988).
2. There will be gender differences in general obsessive-compulsive symptomatology and dimensions of obsessive-compulsive symptoms. Females will report more obsessive-compulsive symptoms than males. Related to types of obsessive-compulsive symptoms, females will report more cleaning symptoms than males, while male will report more checking symptoms than females.

3. Responsibility attitudes will be a significant predictor for general obsessive compulsive symptoms and its factors.
4. Locus of control will be a significant predictor for general obsessive-compulsive symptoms and its factors.
5. The interaction of responsibility attitudes and locus of control will predict obsessive-compulsive symptoms and its factors above and beyond responsibility and locus of control alone.
6. Responsibility will be stronger predictor of checking symptoms of obsessive-compulsivity than of washing symptoms of obsessive-compulsivity.

## CHAPTER 2

### METHOD

#### 2.1 Subjects

Research subjects consisted of 385 senior high school students from Fatih Sultan Mehmet High School in Ankara. The socio-demographic characteristics of the sample are presented in Table 1.

Table 1. The Socio- Demographic Characteristics of the Sample.

	Mean	SD	Range	N	%
Age	17.23	0.68	16-20		
Number of siblings	2.85	1.14	1-7		
Birth order of the subjects	2.00	1.19	1-7		
Years of Education of Father	9.60	3.77	5-17+		
Years of Education of Mother	7.17	3.24	0-17		
Gender	Male			152	39.5
	Female			233	60.5
Job of Father	Worker			38	10.3
	Civil Servant			125	34
	Self-Employed			142	38.6
	Retired			53	13.1
	Farmer			2	0.5
	Unemployed			8	2.2
Job of Mother	Housewife			343	89.6
	Worker			8	2.1
	Civil Servant			19	5.0
	Self-Employed			3	0.8
	Retired			10	2.6
Income (as classified by subjects)	High			18	4.7
	Moderate			337	87.8
	low			29	7.6
where subject lived most of his/her life	Metropolitan city(Ankara, İstanbul, İzmir			333	86.5
	City			44	11.4
	Town			4	1.0
	Village			4	1.0
	Current living condition	With the family			376
With close relatives				4	1.0
Dormitory				5	1.3

## **2.2 Materials**

The research instrument consisted of two main parts. The instrument was introduced with a brief written explanation of the present research. The first part contained questions about socio-demographic variables related to the subjects and their parents (see Appendix A).

The second part consisted of five scales: Responsibility Attitude Scale (see Appendix B), Maudsley Obsessive-Compulsive Inventory (see Appendix C), Locus of Control Scale (see Appendix D), Beck Depression Inventory (see Appendix E), and Trait- State Anxiety Inventory-Trait Anxiety Form (see Appendix F). These scales are described separately below.

### **2.2.1 Maudsley Obsessive-Compulsive Inventory (MOCI)**

Maudsley Obsessive-Compulsive Inventory (MOCI) is a self-report measure for assessing obsessive-compulsive symptoms. The original scale was developed by Rachman and Hodgson (1977). The scale consisted of 30 true-false questions. Examining the factor structure of the inventory, the authors obtained five factors. However, the fifth factor, which assessed obsessive rumination, was disregarded, because it had salient loadings only on two items. Therefore, four factors were used to form the MOCI subscales: checking (9 items), cleaning (11 items), obsessional slowness/ repetition (7 items), and doubting/ conscientiousness (7 items). Every item is scored 1 point if true, except the 11th item, which is scored 1 if false. The cumulative scores are 30 for total MOCI.

Studies using clinical samples generally reported high internal consistency for checking, slowness, doubting, and cleaning subscales, with coefficient alpha



ranging from .60 to .87. Test-retest reliability was around 0.80. Related to criterion validity, Hodgson, Ranking, and Stockswell (1977, unpublished, cited in Rachman & Hodgson, 1980) found that the MOCI total scale significantly discriminated patients with obsessive-compulsive disorder (OCD) from normal controls, anorectics, and patients with non-OCD anxiety disorders. Research which examined the convergent validity of the MOCI indicated that the MOCI showed large correlations with other OC measures, ranging from .23 to .77 (i.e., subscales of Leyton Obsessional Inventory, Compulsive Activity Checklist, Padua Inventory, and Yale-Brown Obsessive Compulsive Scale; Hodgson & Rachman, 1977, Sternberger & Burns, 1990; Sternberger & Burns, 1990b; Van Oppen, 1992; Van Oppen, Hoekstra, & Emmelkamp, 1995).

Several studies have examined the convergent and discriminant validities of MOCI washing and checking subscales. The MOCI washing subscale was found to have large correlations with the Padua inventory contamination subscale (r's ranging from .53 to .87) and small-to-medium correlations with the Padua checking subscale (r's ranging from -.05 to .33). A similar pattern of results was obtained for MOCI checking subscale, which had large correlations with Padua checking subscale (r's ranging from .62 to .84) and small-to-medium correlations with Padua contamination subscale (r's ranging from .24 to .34) (Sternberger & Burns, 1990, Van Oppen, 1992; Van Oppen, Hoekstra, & Emmelkamp, 1995). The MOCI washing subscale was found to have small-to-medium correlations with the MOCI checking subscale (r's ranging from .25 to .46; Hodgson & Rachman, 1977; Sternberger & Burns, 1990b). These results supported good

convergent and discriminant validities of the MOCI washing and checking subscales.

The scale was translated and adapted into different cultures. While developing the Italian version of the MOCI, the questionnaire was administered to 868 normal Italian subjects. Response analysis revealed three factors: checking behavior and worries, problems of contamination and cleaning, and doubts and intrusive thoughts. The internal consistency of the whole questionnaire was .77. The alpha coefficients for subscale scores were .68 (checking), .58 (cleaning), and .67 (dubting-ruminating) (Sanavio & Vidotto, 1985).

The Turkish adaptation study was performed by Erol and Savaşır (1988). The authors added 7 items related to rumination, which was explained by only 2 items in the original scale. As a result, the total 37 item MOCI can have a score of 37. First internal consistency analysis showed that alpha coefficient was 0.44 and authors rewrote some items in the original scale in negative form in order to control for acquiescence. The Cronbach's alpha of this revised scale was 0.81 for the 30 item scale and 0.86 for the 37 item scale. Erol and Savaşır (1988) also examined the factor structure of MOCI for a Turkish sample. They identified three factors: cleanliness-meticulousness, obsessive thinking, and checking/slowness. Alpha coefficients were 0.61, 0.66, and 0.65 respectively.

Reliability analysis for internal consistency was calculated for Turkish university students by Yorulmaz (2002). Alpha coefficient was found to be .82 for this sample. In the present study, the alpha reliability coefficient for the total MOCI was re-performed and found to be .76 for Turkish senior high school students. Although the internal reliability was slightly lower as compared to

Turkish adaptation study and the university students sample, the reliability coefficient of internal consistency was found to be satisfactory for senior high school students. The detailed analysis results related to the factor structure of MOCI and reliability of subscales will be presented in the results section.

### **2.2.2 Responsibility Attitude Scale (RAS)**

Responsibility Attitude Scale is a 26 items scale developed by Salkovskis, Wroe, Morrison, Richards, Reynolds & Thorpe (2000). The goal is to assess general attitudes, beliefs and predisposing characteristics of responsibility and harm concerns in OCD. The subjects are asked to indicate how much they agree or disagree with specific statements related to responsibility using a 7- point Likert Type scale where 1 stands for “totally disagree”, 4 stands for “neutral” and 7 for “totally agree”.

Salkovskis et al. (2000) examined the psychometric properties of RAS by giving the scale to 231 participants (144 non-clinical participants, 49 obsessional patients and 38 anxious control patients). The internal consistency of the 26 items of the RAS was .92. The test- retest reliability was .94. The criterion validity of the scale was assessed by comparing the scores of people who have been found to fulfil DSM-IV criteria for OCD with the scores of control groups. Results revealed that patients with OCD had significantly higher scores on RAS than non-clinical controls and anxious patients. The concurrent validity of RAS was investigated by examining the association between RAS and two measures of obsessionalism: MOCI and Obsessive- Compulsive Inventory (OCI) (Foa, Kozak, Salkovskis, Coles & Amir, 1998). Correlations were found .57 and .54,

respectively. When co-existing depression and anxiety were partialled out, correlations between RAS and MOCI and RAS and OCI didn't change.

RAS has been translated and adapted into Turkish by Yorulmaz (2002). The internal consistency of RAS was .88; the test-retest reliability was .55. The internal consistency of RAS with the second administration was the same as with the first ( $r = .88$ ). Its split half reliability was .86. These results indicated that RAS is also a reliable measure for Turkish university students.

In the present study, alpha coefficient of RAS was found to be .83. The reliability coefficient indicates that RAS is also a reliable measure for Turkish high school students.

### **2.2.3 Locus of Control Scale (LCS)**

The Locus of control Scale is a 47 –item scale developed by Dağ (2002) to assess whether individuals attribute the consequences of their behaviors to external or internal sources. It uses a 5- point Likert Type Scale, where 1 stands for “totally inappropriate”, whereas 5 stands for “totally appropriate”. The higher scores indicate external locus of control, whereas lower scores indicate internal locus of control. Probable range of scores is between 47 to 235.

The scale development was completed in two stages. In the first stage, a pool of 80 items containing almost all possible control areas were collected from some major locus of control scales, most of them with some partial change. This item-pool was administered to a sample of 272 participants. On the basis of item analysis, including item-total correlations and comparison of extreme groups, the 47 item Locus of Control Scale (LCS) was obtained. In the second stage, the 47

item LCS was administered to a new college sample of 111 participants. A subsample of the second sample was also administered the Rotter's I-E scale, the Rosenbaum's Learned Resourcefulness Schedule, the SCL-90-R, and the Paranormal Beliefs Scale (Dağ, 2002).

Related to the psychometric properties of locus of control for Turkish university sample, internal consistency analysis showed that alpha coefficient was .92. Test- retest reliability was .88. In order to assess the structural validity of LCS, the factor structure was examined. Results showed that LCS consisted of five factors: "to believe in internal control or personal control", "to believe in luck", "meaninglessness to strive", "fatalism", "belief in an unfaithful word". Alpha coefficients were .87, .79, .76, .74, .61 respectively. Based on convergent validity analysis results, LCS showed significant correlations with other major locus of control scales, including Rotter's I-E scale ( $r=.67$ ), Rosenbaum's Learned Resourcefulness Schedule ( $r=-.39$ ), the SCL-90-R( $r=.25$ ), and Paranormal Beliefs Scale ( $r=.46$ ). These results indicated that LCS was reliable and valid measure for Turkish university students.

For the present study, the Alpha coefficient of LCS was found to be .83. Total LCS score was used in the present study.

#### **2.2.4 State-Trait Anxiety Inventory (STAI)**

The inventory was developed by Spielberger, Gorsuch and Luschene (1970). It's a self report questionnaire consisting of 20 items for state (situational) and 20 items for trait (continual) anxiety. STAI state subscale asks individuals to rate how they feel "right now....at this moment" using a 4-point scale (1 standing

for “almost never”, 2 for “sometimes”, 3 for “mostly”, and 4 for “almost always) in response to a series of self report descriptive statements. The STAI trait subscale asks persons to rate how they ‘generally’ feel using a 4-point scale in response to a series of self descriptive statements (Mancini, Olimpio, & Ercole, 2001).

Originally test- retest reliability of the scale ranged between .16 and .54 for state anxiety inventory and .73 and .86 for trait anxiety inventory. The internal consistency of the first part varied between .83 and .92, and .86 and .92 for the second part. Construct and criterion validity values were reported to be good (Spielberger, Gorsuch and Lushene, 1970).

Test retest reliability of this scale was found to range from .73 to .86 for college students, and .65 to .75 for high school students. Median stability coefficients were .77 for college and .70 for high school students (Speilberg, 1994).

In terms of validity, it had high correlations with Anxiety Scale Questionnaire (ISQ) and Manifest Anxiety Scale, ranging from .73 to .85, also it discriminate normal individuals from psychiatric patients for whom anxiety has been the most important symptom (Speilberg, 1994).

The adaptation study of STAI to Turkish population was done by Öner and Le Compte (1985). According to this study, the alpha coefficient of trait anxiety inventory ranged between .83 and .87, while that of state anxiety inventory ranged between .94 and .96. Test –retest reliability was found to be between .71 and .86 for trait anxiety inventory, between .26 and .68 for state anxiety inventory.

Internal consistency and Criterion and construct validity was demonstrated to be satisfactory.

In the present study, only trait anxiety inventory was given to the participants. Alpha coefficient was found to be .81.

### **2.2.5 Beck Depression Inventory (BDI)**

The Beck depression Inventory (BDI) is a 21-item scale. It was initially developed in 1961 and revised in 1978 by Beck, Steer and Garbin (1988) to measure emotional, somatic, cognitive, and motivational symptoms of depression. Subjects answer how they felt over the last week by choosing the best option. All items are rated between 0-3 point with 4 options, which demonstrates the level or severity of depression. The highest cumulative point is 63.

The internal consistency of BDI was between .73 and .95. Test-retest reliability ranged from .60 to .83 for non-psychiatric patients, and from .48 to .86 for psychiatric patients (Beck, Steer and Garbin, 1988).

Two independent adaptation studies were performed in Turkey one by Tegin (1980) and the other by Hisli (1988, 1989). The first study was carried out for the first form of BDI developed in 1961 and the second study used the revised form. The only difference between the two forms is in the wording of the items.

The reliability and validity of both Turkish forms are similar. The split half reliability of BDI was found to be between .74 and .78 for university students, and .61 for depressive patients. Test-retest reliability was reported to be .65 and .73 (Tegin, 1980; Hisli, 1988. 1989). Hisli also found that the criterion validity of the BDI with university sample was .65-.68. The concurrent validity of scale, when

correlated with Minnesota Multiphasic personality Inventory Depression Scale, was found to be .63, for the psychiatric sample (Hisli, 1988), and .50 for university sample (Hisli, 1989). Hisli also indicated that the cut of score of BDI for the Turkish sample was .17.

In the present study, the BDI adapted by Hisli (1988, 1989) was used. The internal consistency Cronbach Alpha reliability was .81 for Turkish high school students.

### **2.3 Procedure**

The Research instrument was administrated to senior high school students during regular class hours. Except the first part of the instrument which included an explanation for the research and socio-demographic information, the scales were presented in a randomized sequence, in order to eliminate the errors related to the influence of ordering. The research instrument was only given to voluntary participants. Each administration took about 40 to 55 minutes.

### **2.4 Analyses**

Before the analyses, all data was screened through various SPSS programs for accuracy of data entry, missing values, and outliers, fit between the distributions of the variables used in the study, and the assumptions of multivariate analysis. The missing cases on major variables were replaced with series mean. Using Mahalonobis distance with  $p < .001$ , only one case was identified as a multivariate outliers. Furthermore, 4 cases were found to be



univariate outliers; and five outliers were extracted from analyses, using 380 cases for the following analyses.

Prior to the main analyses, reliability analyses were performed for all scales used, namely RAS, MOCI, LCS, BDI, and TAI. Secondly, factor analyses were conducted in order to examine the factor structure of the MOCI for high school students.

Analysis of variance with repeated measures was performed in order to examine gender differences in dimensions of obsessive-compulsive symptomatology.

For the main analysis, hierarchical regression analyses were performed in order to examine the predictive power of responsibility attitude, locus of control, and the interaction of these variables on overall obsessive-compulsive symptomatology and specific factors of obsessive-compulsive symptoms. Interaction terms (RAS x LCS) were entered as last items in all regression analyses, to control the variance shared by the main effects of responsibility attitudes and locus of control orientations, and to see whether the interaction items acted above and beyond the main effects of these variables, to predict obsessive-compulsive symptomatology and its' dimensions.

## **CHAPTER 3**

### **RESULTS**

In this section first, factor analysis, reliability results and gender differences for Maudsley Obsessive-Compulsive Inventory (MOCI) will be presented. Secondly, as the main analyses of the study, regression analyses examining the predictors of obsessive-compulsive (OC) symptomatology will be presented

#### **3.1 Factor Analysis of the Maudsley Obsessive-Compulsive Inventory (MOCI)**

Factor analysis was conducted to examine the factor structure of the MOCI for Turkish high school students. Principle component extraction was used to estimate the number of factors. Correlation matrices among the 37 items revealed numerous correlations in excess of .30.

An initial principle component analysis revealed '13' factors with eigenvalues over 1. These factors explained a total of 56.48% of the variance. Scree plot revealed that a three-factor solution was the best one. Accordingly, the three-factor solution was preferred, which was consistent with the factor structure of the Turkish Adaptation Scale (Erol and Savaşır, 1988). Three factors were rotated using a varimax rotation procedure. Results indicated that variables were well defined by a 3 factors solution. Factor structure, loadings of each item on

these factors, percent of explained variance, and the reliability coefficients of the three factors are shown in Table 2.

These three factor solution explained 23.52% of the variance. The first factor explained 8.91%, the second factor explained 7.34%, and the third factor explained 7.27% of the variance.

A factor loading that exceeded .30 was accepted as the inclusion criteria. According to this criterion, 11 items were identified under the first factor with factor loadings ranging from .33 to .60 (items 2, 4, 8, 10, 16, 30, 31, 32, 33, 34, 37). The second factor contained 11 items with factor loadings ranging from .33 to .58 (items 1, 3, 5, 13, 17, 18, 19, 21, 23, 24, and 35). Finally, the last factor contained 7 items with loadings between .40 and .61 (items 6, 12, 15, 20, 22, 25, and 28). The eight items whose loadings were under .30 were excluded from further analyses (7, 9, 11, 14, 26, 27, 29, & 36). Three items (10, 12 & 30) had above .30 loadings on both factor 1 and 3. Two of those items were included under the first factor (10&30), while the other item (12) was included under the third factor due to their theoretical relation with these factors.

The first factor was labeled as rumination. The second factor was named as 'cleanliness-meticulousness'. Finally, the third factor was titled as 'checking'.

In general the factor structure obtained in this study was similar to the factor structure of the Italian version of the MOCI (Sanavio & Vidotto, 1985), and to the factor structures of the Turkish Adaptation scale (Erol and Savaşır, 1988).

Table 2. Factor Structure of the Maudsley Obsessive-Compulsive Inventory

Factor 1: Rumination Cronbach Alpha = .72 % explained variance = 8.91	Factor Loadings		
Items	<u>Factor1</u>	Factor2	Factor3
2-I frequently get nasty thoughts and have difficulty in getting rid of them.	<b>.61</b>	.05	.02
34-I frequently find things to be worry	<b>.61</b>	.18	-.08
37-Sometimes unimportant thoughts stick in my mind and these disturb me for days.	<b>.58</b>	-.03	.12
8-I find that almost everyday I am upset by unpleasant thoughts that come into my mind against my will.	<b>.57</b>	-.04	.19
33-Most of time I feel that I made a big mistake or badness.	<b>.57</b>	.19	-.04
30-Even when I do something very carefully I often feel that it is not quite right.	<b>.46</b>	-.02	.32
32-I made my biggest struggles with myself.	<b>.46</b>	.19	-.03
31-Since I don't feel myself well, I sometimes cannot do anything for days, weeks, even for months.	<b>.39</b>	-.07	.18
4-I am often late because I can't seem to get through every thing on time.	<b>.37</b>	-.07	.05
10-I usually have serious doubts about the simple everyday things I do.	<b>.38</b>	-.11	.41
16- I take a long time to dress in a morning.	<b>.36</b>	.07	.01

Factor 2: Cleanliness/meticulousness Cronbach Alpha = .62 % explained variance = 7.34	Factor Loadings		
Items	Factor1	<u>Factor2</u>	Factor3
17- I am excessively concerned about cleanliness.	.06	<b>.59</b>	.05
13- I use so much soap.	.14	<b>.51</b>	.03
5-I worry unduly about contamination if I touch an animal	.02	<b>.50</b>	.11

“Factor 2 (continued)”

Items	Factor1	Factor2	Factor3
1- I avoid using public telephones because of possible contamination.	.08	<b>.49</b>	.18
21- I am unduly concerned about germs and diseases	-.09	<b>.49</b>	.15
19-I cannot enter dirty toilets.	-.03	<b>.43</b>	.04
23-I stick to very strict routine when doing ordinary things.	-.22	<b>.41</b>	.01
24- I feel that my hands are dirty after touching money.	-.11	<b>.38</b>	.05
3-I am more concerned than most people about honesty	.11	<b>.37</b>	-.10
18-One of my major problems is that I pay too much attention to detail.	.16	<b>.35</b>	.30
35-I consider before deciding even about unimportant little things and starting working.	.19	<b>.33</b>	.14

Factor 3: Checking Cronbach Alpha = .65 % explained variance = 7.27	Factor Loadings		
Items	Factor1	Factor2	Factor3
20- My major problem is repeated checking.	.13	-.05	<b>.62</b>
28-I spent a lot of time every day checking things over and over again.	.27	-.07	<b>.60</b>
25-I usually count when doing a routine task	.19	.02	<b>.54</b>
22- I tend to check things more than once	.07	.18	<b>.49</b>
6-I frequently have to check things (e.g. gas or water taps, doors, etc.) several times.	-.06	.26	<b>.46</b>
12-I tend to get behind in my work because I repeat things over and over again.	.34	-.10	<b>.44</b>
15- I check letters over and over again before posting them.	-.07	.28	<b>.41</b>

Excluded Items	Loadings		
	Factor1	Factor2	Factor3
36-I have a habit of counting unimportant things at commercials such as bulbs.	.26	-.02	.13
11-Neither of my parents was very strict during my childhood.	-.21	-.11	.08
26-I take rather a long time to complete my washing in the morning.	.22	.27	.03
14-Some numbers are extremely unlucky.	.06	.01	.29
29-Hanging and folding my clothes at night takes up a lot of time.	.14	.07	.27
7-I have very strict conscience	-.07	.24	.27
27-I use a great deal of antiseptics.	-.14	.20	.17
9-I worry unduly if I accidentally bump into somebody	-.01	-.02	.10

### 3.1.2 Reliability Analysis and Descriptive Statistics for the MOCI Subscale Scores

29 items were used in the calculation of MOCI total score. The alpha reliability for total inventory was .76 for the present sample of Turkish high school students. The alpha reliability score for the rumination, cleanliness-meticulousness, and checking were .72, .62, and .65, respectively.

Ranges, means, and standard deviations of MOCI subscale scores according to gender are presented in order to provide a general view about the characteristics of the subjects, as can be seen from Table 3. Factor scores of MOCI were obtained by summing up the responses to items under each factor. The means of total item summation were used in the analyses.

Table 3. Means, Standard Deviations, and Ranges of Total MOCI and Its Subscales According to Gender.

<b>Subscales</b>	<b>Gender</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Range</b>
<b>Rumination</b>	<b>Female</b>	<b>.50</b>	<b>.24</b>	<b>0-1</b>
	<b>Male</b>	<b>.46</b>	<b>.25</b>	<b>0-1</b>
	<b>Whole Sample</b>	<b>.49</b>	<b>.24</b>	<b>0-1</b>
<b>Checking</b>	<b>Female</b>	<b>.40</b>	<b>.27</b>	<b>0-1</b>
	<b>Male</b>	<b>.41</b>	<b>.27</b>	<b>0-1</b>
	<b>Whole Sample</b>	<b>.40</b>	<b>.27</b>	<b>0-1</b>
<b>Cleanliness/ Meticulousness</b>	<b>Female</b>	<b>.60</b>	<b>.21</b>	<b>0-1</b>
	<b>Male</b>	<b>.51</b>	<b>.20</b>	<b>0-1</b>
	<b>Whole Sample</b>	<b>.57</b>	<b>.21</b>	<b>0-1</b>
<b>Total MOCI</b>	<b>Female</b>	<b>14.92</b>	<b>4.71</b>	<b>4-26</b>
	<b>Male</b>	<b>13.63</b>	<b>4.71</b>	<b>2-28</b>
	<b>Whole Sample</b>	<b>14.57</b>	<b>4.84</b>	<b>2-28</b>

When inter-correlations between subscales of MOCI were examined, as can be seen from Table 4, results indicated that ‘checking’ was significantly and positively correlated with ‘rumination’ and ‘cleanliness’ ( $r=.37$ ,  $.25$ ,  $p<.001$ , respectively). On the other hand, the relationship between rumination and cleanliness subscales was not significant ( $r=.10$ ,  $p>.05$ ).

Table.4. Correlation Coefficients among MOCI Subscales

	<b>Rumination</b>	<b>Cleanliness</b>	<b>Checking</b>
<b>Rumination</b>	1.00		
<b>Cleanliness/Meticulousness</b>	.10	1.00	
<b>Checking</b>	.37**	.25**	1.00

**Note:** Correlation is significant at the 0.01 level (2-tailed)

### 3.1.3 Gender Differences for the Maudsley Obsessive-Compulsive Inventory and Its Subscales

In order to examine the gender differences in the subscales of Maudsley Obsessive-compulsive Inventory, 2 (sex) X 3(factors of Maudsley Obsessive-compulsive Inventory) Anova with repeated measures on the last factor was conducted. The results of this analysis are presented in Table 5. This analysis yielded significant main effects for subscales of MOCI,  $F(2,756) = 48.59, p < .000$ , and for gender,  $F(1, 361) = 4.97, p < .05$ , and a subscales of MOCI x gender interaction,  $F(2,756) = 3.79, p < .001$ .

Table 5. Analysis of Variance for MOCI Subscales and Gender

source	SS	df	MS	F
GENDER	.38	1	.38	4.97*
ERROR	27.63	361	.08	-
MOCI	4.31	2	2.16	48.59***
MOCI*gender	.33	2	.17	3.79*
Error	33.55	756	.043	-

\*\*\*= $p < .000$ , \*\*= $p < .001$ , \*= $p < .01$

**NOTE:** MOCI: Maudsley Obsessive Compulsive Inventory, RAS: Responsibility Attitude Scale, LCS: Locus of Control Scale.

To understand the causes of main effect for OC symptomatology, multiple comparisons among means were conducted by using Tukey's HSD at .05 significance level. As can be seen from Table 5, these post-hoc comparisons revealed that, individuals reported higher cleaning symptoms ( $M=.57$ ) as compared to rumination ( $M=.49$ ) and checking ( $M=.40$ ) symptoms. Furthermore, the differences between checking and rumination symptoms were statistically



significant, showing that individuals reported more rumination symptoms ( $M=.49$ ) than checking ( $M=.40$ ).

Table 6. Mean scores of the Dimensions of MOCI

Rumination	Cleanliness	Checking
.49 <sub>a</sub>	.57 <sub>b</sub>	.40 <sub>c</sub>

Note: the means that do not share the same subscript are significantly different from each other at .05 alpha level of Tukey's HSD.

Related to significant gender main effect,  $F(1,361) = 4.97, p < .05$ , results indicated that females reported significantly more obsessive compulsive symptoms ( $M=17.54$ ) than males ( $M=15.99$ ).

This analysis also showed a significant interaction of gender by MOCI, ( $F(2,756) = 3.79, p < .05$ ). Post hoc analysis following the Analysis of Variance revealed that males and females significantly differ from each other in terms of their reported cleaning symptoms. As can be seen from Table 7, Females received significantly higher scores for the cleaning subscale ( $M=.60$ ) as compared to males ( $M=.51$ ). On the other hand males and females did not significantly differ from each other in terms of their rumination ( $M=.49$  and  $.47$  for females and males, respectively) and checking scores ( $M=.39$  and  $.42$  for females and males, respectively). Furthermore, there were significant differences among all MOCI subscales for females; they reported more cleaning symptoms ( $M=.60$ ) than rumination ( $M=.49$ ) and checking ( $M=.39$ ). Similarly, males showed significantly higher cleaning scores ( $M=.51$ ) than checking scores ( $M=.42$ ). However, there were no significant differences between their other subscales. Thus, for females cleaning is the most pronounced symptom, whereas for males cleaning and

rumination symptoms appear as equivalent symptoms, only cleaning being higher than checking.

Table 7. Means Scores of Dimensions of MOCI for Males and Females

	Rumination	Cleanliness	Checking
Male	.47 <sup>ac</sup>	.51 <sup>a</sup>	.42 <sup>bc</sup>
Female	.49 <sup>a</sup>	.60 <sup>b</sup>	.39 <sup>c</sup>

Note: The means that do not share the same subscript are significantly different from each other at .05 alpha level of Tukey's HSD.

### 3.2 Descriptive Statistics for the Major Variables of the Study

Means and standard deviations of various variables were computed in order to see the distribution of the sample. The means, standard deviations, and ranges of the variables that are used in the present study are displayed in Table 8. For the scores of overall responsibility attitude, and locus of control, the mean total scores were used; whereas total scores were used for BDI, TAI and MOCI.

Table 8. Means, Standard Deviations of Major Variables of the Study

Variable	Mean	Standard Deviation	Range
Responsibility Attitude	4.47	.83	1.81-6.31
MOCI	14.42	4.84	2.00-28
Rumination/slowness	3.35	2.69	0-1.00
Cleanliness	6.21	2.21	0-1.00
Checking	2.82	1.89	0-1.00
Locus of Control	120	17.39	74.51-183
BDI	16.13	8.19	2.00-44
TAI	47.02	8.31	27-72

MOCI: Madusley Obsessive-Compulsive Inventory; TAI: Trait Anxiety Inventory; BDI: Beck Depression Inventory

As can be seen from Table 8, senior high school students have quite high depression and anxiety scores. This is an expected finding from this sample in that these students have been preparing for university entrance exam. Therefore, they may experience high levels of depression symptoms.

### **3.3 Regression Analyses: Predictors of Maudsley Obsessive-Compulsive Inventory (MOCI) Scores and Its Factors (Rumination, Cleanliness, Checking)**

The main hypotheses of the present study were tested via multiple regression analyses. The total score of MOCI and its three subscales were used as the predicted variables. After controlling for the effects of socio-demographic variables (gender, number of siblings, birth order of subject, years of education of the mother, years of education the father, and previous psychiatric history), depression, trait anxiety, responsibility attitude, locus of control, and the interaction of responsibility attitude with locus of control were used as predictors, entered in various steps in these analyses. To specifically test research hypotheses, all variables were entered as blocks in four separate steps in all regression analyses, as given in Table 9. The variables in the first and second steps were entered in the analyses hierarchically.

Table 9. The Sequence of Variables Entered in the Regression Analyses.

<b>Predictor Variables</b>
<b>Block 1:Socio-demographic variables</b>
Gender
Number of siblings
Birth order of subject
Years of education of the mother
Years of education of the father
Previous psychiatric history

“Table 9 (continued)”

<p><b>Block 2:</b> Trait-anxiety Depression</p> <p><b>Block 3:</b> Responsibility Attitude Scale scores (RAS) Locus of Control Scale scores(LCS)</p> <p><b>Block 4:</b> RAS X LCS</p>
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### 3.3.1 Correlation Coefficients among the Variables Used in Regression Analysis

Correlation coefficients were computed between the major variables to be included in the regression analysis. Table 10. shows these correlation coefficients.

As can be seen from Table 10, correlations among the measures of the present study revealed that the responsibility attitude scores were significantly and positively correlated with BDI ( $r=.23$ ,  $p<.001$ ), TAI ( $r=.27$ ,  $p <.001$ ) and MOCI ( $r=.45$ ,  $p<.001$ ). Similarly, Locus of Control Scale scores were significantly and positively correlated with BDI ( $r=.23$ ,  $p<.001$ ), TAI ( $r=.27$ ,  $p <.001$ ) and MOCI ( $r=.19$ ,  $p<.001$ ). Locus of control scores had no correlations with responsibility. MOCI scores, on the other hand, were positively correlated with gender (male: 1, female: 2), trait anxiety ( $r=.48$ ,  $p <.001$ ), depression ( $r=.41$ ,  $p <.001$ ) and previous psychiatric history of the subject (yes: 2, no: 1) ( $r= .23$ ,  $p <.001$ ).

Related to MOCI subscales, RAS positively and significantly correlated with all factors of MOCI ( $r=.32$ ,  $.31$ ,  $.29$  for rumination, cleanliness, and checking, respectively). Locus of control showed a significant and positive relationships between checking ( $r=.12$ ,  $p<.05$ ) and rumination symptoms ( $r=.26$ ,  $p<.01$ ).

Table 10. Correlation Coefficients Among Demographic Variables and Dependent Variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>1. Gender</b>	1.00														
<b>2. Sibling</b>	.06	1.00													
<b>3. SeqSub</b>	.05	.70**	1.00												
<b>4. EduMo</b>	.04	-.28**	-.18**	1.00											
<b>5. EduFa</b>	.01	-.21**	-.09	.49**	1.00										
<b>6.PrePsyHis</b>	.14**	-.02	-.05	-.01	-.02	1.00									
<b>7. SES</b>	-.14**	-.04	-.07	-.20**	-.18**	.01	1.00								
<b>8. BDIT</b>	.13**	-.07	-.05	-.06	-.03	.22**	.05	1.00							
<b>9. TAIT</b>	.20**	-.03	-.06	-.08	-.03	.23**	.07	.62**	1.00						
<b>10. MOCI</b>	.14**	-.02	-.04	.00	-.02	.23**	.01	.41**	.48**	1.00					
<b>11. RAS</b>	.00	.01	.00	-.05	-.08	.09	.11	.23**	.27**	.45**	1.00				
<b>12. LCS</b>	.09	-.05	-.00	.04	.01	.08	-.10*	.23**	.27**	.19**	.01	1.00			
<b>13. Clnliness</b>	.19**	.00	.00	.04	-.05	.06	-.02	.04	.09	.61**	.29**	-.17	1.00		
<b>14. Check</b>	-.01	.01	.00	.01	.07	.15**	-.01	.17**	.20**	.70**	.31**	.12*	.25**	1.00	
<b>15.Rumn/slown</b>	.08	-.03	-.07	-.03	-.04	.26**	.03	.52**	.63**	.73**	.32**	.26**	.10	.37**	1.00

\*\*Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Note:** Gender: gender of the subjects, 1: male, 2: female; Sibling: number of sibling; EduMo: education years of mother of the subject, EduFa: education years of the father of the subject; PrePsyHis: previous psychiatric history, 1: no any psychiatric history 2: had previously any psychiatric history; SES: income of the subject/family, 1: high 2: moderate 3: low, BDITot: total Beck Depression Inventory score; TAIT: total Trait Anxiety Inventory Score; MOCI: total Maudsley Obsessive-Compulsive Inventory score; RAS: total Responsibility Attitudes Scale score; LCS: score Locus of Control Scale score; Clnliness: cleanliness score of Maudsley Obsessive-Compulsive Inventory; Check: checking score of Maudsley Obsessive-Compulsive Inventory; Rumn/slown: rumination/slowness score of Maudsley Obsessive-Compulsive Inventory

### **3.3.2 Predictors of General Obsessive-Compulsive Symptomatology: Responsibility Attitudes, Locus of Control, and the Interaction of Responsibility Attitudes with Locus of Control**

The first multiple regression analysis was conducted to examine whether Locus of control x Responsibility Attitude interaction would predict obsessive-compulsive symptomatology above and beyond the main effects of responsibility attitude and locus of control.

Socio-demographic variables were entered in the first step in order to control for their effects, prior to the remaining steps. In the second step, depression and trait anxiety were entered as other control variables. Responsibility attitude and locus of control were entered in the third step, and finally, the interaction variable, responsibility attitude x locus of control, was entered in the last step, as given in Table 9.

As can be seen from Table 11, the first block explained 6% of the total variance (previous psychiatric history and gender, respectively:  $F(1,351) = 16.69$ ,  $p < .001$ ;  $F(1,351) = 4.15$ ,  $p < .05$ ). With the addition of second block, the explained variance increased to 20% ( $F(1,349) = 82.42$ ,  $p < .001$ ,  $F(1,348) = 8.43$ ,  $p < .05$  for trait anxiety and depression, respectively). In the third step, adding the responsibility attitudes and locus of control explained an additional 11% of the variance in obsessive-compulsive symptomatology and explained variance increased to 37% ( $F(2,346) = 31.85$ ,  $p < .001$ ). Finally, the addition of the interaction term increased the explained variance to 38%, and F change was statistically significant ( $F(1,345) = 4.75$ ,  $p < .05$ ).

Examination of the individual betas in the final step indicated that, trait anxiety and depression were still significant predictors of obsessive-compulsive

symptomatology ( $\beta = .26, p < .001, .13, p < .05$ , respectively). In addition to this, only the interaction between responsibility attitude and locus of control maintained its significance in the last step ( $\beta = .81, p < .05$ ).

Table 11. Hierarchical Regression Analysis Predicting MOCI Scores with Responsibility Attitudes, Locus of Control, and Their Interaction

steps	Variables	$\beta$	t	Pr	R <sup>2</sup>	R <sup>2</sup> Chang	df	F <sup>1</sup>
1	PrePsyHist	.21	4.09***	.21	.05	.05	1,351	16.69***
2	PrePsyHist Gender	.20 .11	3.80*** 2.03*	.20 .11	.06	.01	1,350	4.15*
3	PrePsyHist Gender Trait anxiety	.11 .03 .44	2.29** .72 9.19***	.12 .04 .44	.24	.18	1,349	84.42***
4	PrePsyHist Gender Trait anxiety Depression	.10 .04 .35 .17	1.99* .78 5.84*** 2.90*	.11 .04 .30 .15	.26	.02	1,348	8.43*
5	PrePsyHist Gender Trait anxiety Depression RAS LCS	.09 .06 .28 .13 .35 .07	2.06* 1.29 4.67*** 2.25* 7.88*** 1.72	.11 .07 .26 .13 .39 .09	.37	.11	2,346	31.85***
6	PrePsyHist Gender Trait anxiety Depression RAS LCS RASxLCS	.08 .05 .26 .13 .34 .03 .81	1.83 1.22 4.60*** 2.37* -.95 -1.80 2.18*	-.11 -.07 .26 .13 .37 .04 .12	.38	.01	1,345	.475*

Total Adjusted R<sup>2</sup>= .37

<sup>1</sup>F values are for each step. Pr=Partial correlation for between set predictors.

\*\*\*p<.000, \*\*p<.001, \*p<.05

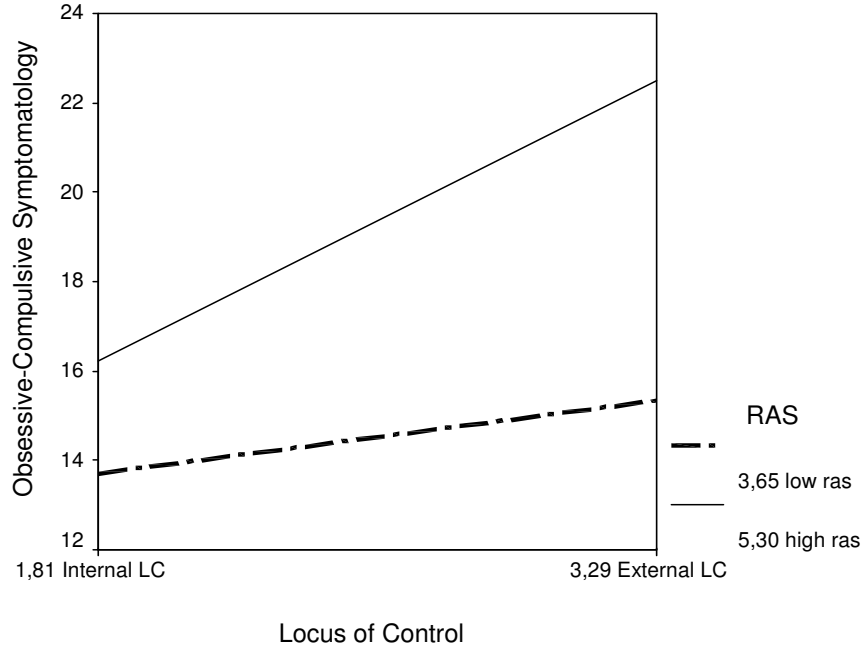
**Note:** PrePsyHist: previous psychiatric history, MOCI: Maudsley Obsessive-Compulsive Inventory.; RAS: Responsibility Attitudes Scale; LCS: Locus of Control Scale

As can be seen from Table 11, the interaction term was significant. To understand the nature of this interaction between responsibility attitudes and locus

of control, the procedure outlined by Aiken and West (1991) was followed. According to this procedure, simple regression lines for moderated variables are plotted for significant interaction effects by using centered data. This involves plotting to simple regression lines showing the regression of obsessive-compulsive symptomatology on locus of control with high and low responsibility attitudes. High responsibility was represented as one standard deviation above the mean and low responsibility attitudes was represented as one standard deviation below the mean. The results are shown in Figure 1.

To better understand the pattern of this interaction, a test was conducted to examine whether the slopes of these two regression lines were significantly different from zero. These probes revealed that, for subjects with high responsibility attitudes, obsessive-compulsive symptomatology severity was lower among those with internal locus of control as compared to those with external locus of control (simple slope  $\beta=.29$ ,  $t(377) = 4.70$ ,  $p < .001$ ). However, for Participants with low responsibility attitudes, simple slope was not significant indicating that their levels of obsessive-compulsive symptomatology were not significantly different for low (indicating internality) and high (indicating externality) locus of control subjects. In other words, high responsibility attitudes and the presence of external locus of control orientation produced the highest MOCI scores, whereas the occurrence of internality and high responsibility attitudes had a dampening effect by producing lower MOCI scores. When the RAS is low, the locus of control level did not influence MOCI scores.





**Figure.1. Interaction between Responsibility Attitudes and Locus of Control in Prediction General Obsessive-Compulsive Symptomatology**

**3.3.3 The Predictors of Obsessive-Compulsive Inventory Subscales: Rumination Cleanliness/Meticulousness, and Checking**

After examining the prediction of the total MOCI, three regression analyses were conducted separately on the MOCI subscales (rumination, checking, and cleanliness-meticulousness) to examine responsibility, locus of control and their interaction in predicting MOCI subscales. In other words, to see whether responsibility x locus of control interactions would predict specific MOCI subscales above and beyond the main effects of responsibility and locus of control. To specifically test research hypotheses, variables were entered as given in Table 9.

### **3.3.3.1 Predictors of Rumination: Responsibility Attitudes, Locus of Control, and the Interaction of Responsibility Attitudes with Locus of Control**

The first regression analysis was performed to see the predictive power of the locus of control, responsibility, and their interaction on rumination subscale scores. As can be seen from Table 12, after step one, demographic variables explained 5% of the total variance ( $F(1,351) = 20.21, p < .000$  for previous psychiatric history). Addition of trait anxiety and depression as other control variables in the second block contributed an additional 37% of the variance in rumination and explained variance increased to 42% ( $F(1,350) = 197.72, p < .000$ ;  $F(1,350) = 15.24, p < .001$ , respectively). The addition of the responsibility attitude scores and locus of control scores in the third step explained an additional 3% of the variance ( $F(2,347) = 9.62, p < .000$ ). Finally, the addition of the interaction term increased the explained variance to 46 %,  $F$  Change was statistically significant ( $F(1,346) = 5.32, p < .05$ ).

Examination of the beta weights for individual predictors in the final step indicated that trait anxiety and depression were still significant predictors of rumination symptoms ( $\beta = .42, t(346) = 8.26, p < .000$ ;  $\beta = .18, t(346) = 3.59, p < .000$ , respectively). The interaction between responsibility and locus of control weakly but significantly predicted rumination symptoms ( $\beta = .80, t(346) = 2.31, p < .05$ ).

Table.12. Hierarchical Regression Analyses Predicting Rumination Symptoms Scores with Responsibility Attitudes, Locus of Control and Their Interaction

steps	Variables	$\beta$	t	Pr	R <sup>2</sup>	R <sup>2</sup> chang	df	F <sup>1</sup>
1	PrePsyHist	.23	4.49***	.23	.05	.05	1,351	20.21***
2	PrePsyHist	.10	2.37*	.13	.39	.34	1,350	197.73***
	Trait anxiety	.60	14.06***	.60				
3	PrePsyHist	.08	1.98*	.11	.42	.03	1,349	15.75***
	Trait anxiety	.48	9.28***	.45				
	Depression	.21	3.97***	.21				
4	PrePsyHist	.08	2.01*	.11	.45	.03	2,347	9.62***
	Trait anxiety	.43	8.33***	.41				
	Depression	.18	3.46**	.18				
	LCS	.09	2.28*	.12				
	RAS	.16	3.88***	.20				
5	PrePsyHist	.07	1.76	.09	.46	.01	1,346	5.32*
	Trait anxiety	.42	8.26***	.41				
	Depression	.18	3.59***	.19				
	LCS	-.39	-1.82	-.09				
	RAS	-.46	-1.61	-.09				
	RASxLCS	.80	2.31*	.12				

**Total Adjusted R<sup>2</sup> =.46**

<sup>1</sup>F values are for each step. Pr=Partial correlation for between set predictors.

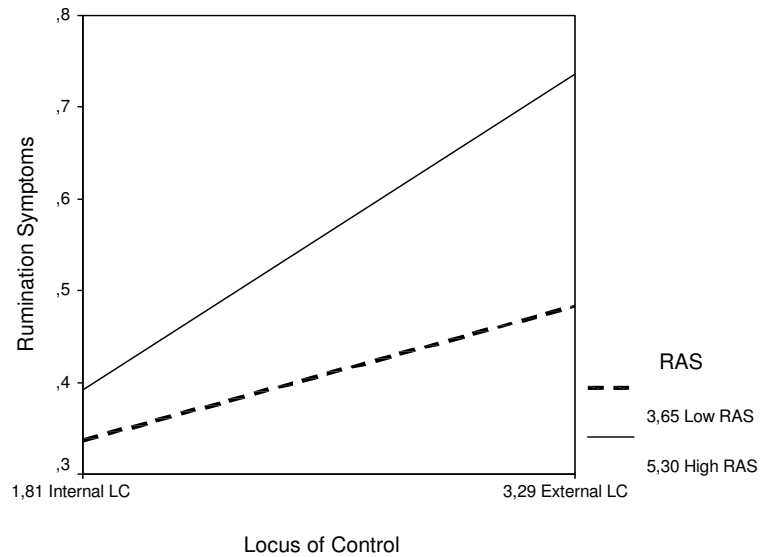
\*\*\*p<.000, \*\*p<.01, \*p<.05.

Note: PrePsyHist: previous psychiatric history, RAS:Responsibility Attitude Scale scores, LCS: Locus of Control Scale scores

As can be seen from Table 12, the interaction term, responsibility x locus of control, was significant for prediction of rumination symptoms. To understand the nature of this interaction between responsibility attitude and locus of control, the procedure outlined by Aiken and West (1991) was followed. According to this procedure, simple regression lines for moderated variables are plotted for significant interaction effects by using centered data. This involves plotting the simple regression lines showing the regression of rumination on locus of control with high and low responsibility attitude. High responsibility was represented as

one standard deviation above the mean and low responsibility attitude was represented as one standard deviation below the mean. The results are shown in Figure 2.

To better understand the pattern of this interaction, a test was conducted to examine whether the slopes of these two regression lines were significantly different from zero. Plotting the interaction between locus of control and responsibility on rumination indicated that simple slopes were significant for both high (simple slope  $\beta=.35$ ,  $t(374) = 5.52$ ,  $p < .000$ ) and low responsibility (simple slope  $\beta=.15$ ,  $t(374) = 2.24$ ,  $p < .05$ ). These results indicated that for individuals with high responsibility, rumination symptoms were higher among those with external locus of control, as compared to those with internal locus of control. Similarly, for individual with low responsibility, rumination symptoms were higher among participants with internal locus of control than participants with external locus of control. So, high sense of responsibility increases rumination symptoms for both low and high locus of control. However, individual experiences the highest rumination symptoms in the case that he/she also believe that his/her life is controlled by external source such as chance, fate, powerful others.



**Figure 2. Interaction between Responsibility Attitudes and Locus of Control in Prediction Rumination Symptoms**

### 3.3.3.2 Predictors of Checking Subscale: Responsibility Attitudes, Locus of Control, and the Interaction of Responsibility Attitudes with Locus of Control

The second regression analysis was performed to see the role of locus of control, responsibility, and their interaction in predicting checking symptoms. As can be seen from Table 13, after step one, demographic variables explained 1% of the total variance ( $F(1,351) = 4.67, p < .05$  for previous psychiatric history). With the addition of second block, the explained variance was 5% ( $F(1,350) = 17.48, p < .000$  for trait anxiety). Addition the locus of control and responsibility attitude scores in the third step explained an additional 7% of the variance and explained variance increased to 13 % ( $F(1,348) = 25.25, p < .000$ ). Finally, the addition of the interaction term did not significantly improve  $R^2$ ;  $F$  change was not statistically significant.

Examination of beta weights for individual predictors in the final step indicated that trait anxiety was the mere significant predictor of the checking ( $\beta=.13$ ,  $t(348)=2.43$ ,  $p<.05$ ).

Table13. Hierarchical Regression Analyses Predicting Checking Scores with Responsibility Attitudes, Locus of Control and Their Interaction

steps	Variables	$\beta$	t	Pr	R <sup>2</sup>	R <sup>2</sup> <sub>chang</sub>	df	F <sup>1</sup>
1	PrePsyHist	.12	2.16*	.12	.01	.01	1,351	4.67**
2	PrePsyHist	.07	1.23	.07				
	Trait anxiety	.22	4.18***	.22	.06	.05	1,350	17.48**
3	PrePsyHist	.06	1.18	.07				
	Trait anxiety	.14	2.46*	.13				
	LCS	.08	1.54	.08				
	RAS	.26	5.03***	.26	.13	.07	2,348	13.45***
4	PrePsyHist	.05	1.05	.06				
	Trait anxiety	.13	2.44*	.13				
	LCS	-.23	.84	-.05				
	RAS	-.13	.38	-.02				
	RASxLCS	.51	1.16	.06	.13	.00	1,347	1.343

<sup>1</sup>F values are for each step

**Total Adjusted R<sup>2</sup> =.12**

Pr=Partial correlation for between set predictors. \*\*\* $p<.000$ , \*\* $p<.01$ , \* $p<.05$

NOTE:PrePsyHist : previous psychiatric history, RAS:Responsibility Attitude Scale score, LCS: Locus of Control Scale scores

### 3.3.3.3 Predictors of Cleanliness/Meticulousness Subscale: Responsibility Attitudes, Locus of Control, and the Interaction of Responsibility Attitudes with Locus of Control

The third regression analysis was performed to see the role of locus of control, responsibility, and their interaction in predicting cleanliness symptoms.

As can be seen from Table 14, with all of the predictors in the equation, 13 % of

the variance on cleanliness was explained. After step one with demographic variables in the equation, the explained variance was 4% ( $R^2=.04$ ,  $F(1,351) = 13.21$ ,  $p < .000$  for gender). Trait anxiety and depression were not significant predictors of cleanliness in the second block. The addition of responsibility in the third step significantly increased the explained variance to 9% ( $F(2,349) = 19.99$ ,  $p < .000$ ). However, locus of control was not predictive of cleanliness in the third step. Finally, the addition of the interaction variables in the last step did not increase the explained variance.

Examination of beta weights for individual predictors in the final step indicated that gender was the unique significant predictor of cleanliness ( $\beta = .19$ ,  $t(348) = 3.91$ ,  $p < .001$ ).

Table.14. Hierarchical Regression Analysis Predicting Cleanliness Scores with Responsibility Attitudes, Locus of Control and Their Interaction

steps	Variables	$\beta$	T	Pr	$R^2$	$R^2$ chang	df	$F^1$
1	Gender	.19	3.63***	.19	.04	.04	1,351	13.21***
2	Gender	.19	3.96***	.21				
	LCS	-.05	-.98	-.05				
	RAS	.29	5.83***	.32	.13	.09	2,349	19.99***
3	Gender	.19	3.91***	.21				
	LCS	-.26	-.96	-.05				
	RAS	.02	.07	.00				
	RASxLCS	.35	.79	.04	.13	.00	1,348	.63

<sup>1</sup>F values are for each step.

**Total Adjusted  $R^2 = .13$**

Pr=Partial correlation for between set predictors. \*\*\* $p < .000$ , \*\* $p < .01$ , \* $p < .05$

NOTE:PrePsyHist : previous psychological history, RAS:Responsibility Attitude Scale score, LCS: Locus of Control Scale scores

The analyses conducted separately on the MOCI subscales showed that, as can be seen Table 15, RAS a weak predictor of rumination ( $R^2=.02$ ,  $\beta=.16$ ,  $p<.05$ ), and moderate predictor of cleanliness ( $R^2=.09$ ,  $\beta=.29$ ,  $p<.000$ ) and checking ( $R^2=.07$ ,  $\beta=.27$ ,  $p<.000$ ). However locus of control was only significant predictor of rumination. Furthermore, interaction between responsibility and locus of control significantly predicted only rumination symptoms. Related to control variables, with all variables in the equation, results indicated that only gender significantly predicted cleanliness subscale. Trait anxiety and depression were significant predictors of rumination subscale, and trait anxiety was only significant control variable as a predictor of checking subscale.



Table15. Summary Table of Prediction of MOCI Subscales from Responsibility Attitudes, Locus of Control, and Their Interaction

variables	Rumination			Checking			Cleanliness- Meticulousness		
	$\beta$	t	Pr	$\beta$	T	Pr	$\beta$	t	Pr
Prepsyhist	.23	4.49***	.23	.12	2.16*	.12			
Gender							.19	3.61***	.19
<b>After block 1:</b> R <sup>2</sup> =.05 R <sup>2</sup> chance=.05 F <sup>1</sup> =20.21***			R <sup>2</sup> =.01 R <sup>2</sup> chance=.01 F <sup>1</sup> =4.67*			R <sup>2</sup> =.04 R <sup>2</sup> chance=.04 F <sup>1</sup> =13.21***			
TraitAnx	.60	14.06***	.60	.22	4.18***	.22			
Depression	.21	3.97**	.21						
<b>After block 2:</b> R <sup>2</sup> =.42 R <sup>2</sup> chance=.37 F <sup>1</sup> =15.75***			R <sup>2</sup> =.06 R <sup>2</sup> chance=.05 F <sup>1</sup> =17.48***						
LCS	.09	2.28*	.12						
RAS	.16	3.88***	.20	.26	5.03***	.26	.29	5.83***	.31
<b>After block 3:</b> R <sup>2</sup> =.45 R <sup>2</sup> chance=.03 F <sup>1</sup> =9.62*			R <sup>2</sup> =.13 R <sup>2</sup> chance=.07 F <sup>1</sup> =13.45***			R <sup>2</sup> =.13 R <sup>2</sup> chance=.09 F <sup>1</sup> =19.99			
RASX LCS	.80	2.31*	.12						
<b>After block 4:</b> R <sup>2</sup> =.46 R <sup>2</sup> chance=.01 F <sup>1</sup> =5.32*									

<sup>1</sup>F values are for each step. Pr=Partial correlation for between set predictors. \*\*\*p<.000,

\*\* p<.001, \* p<.01

**Note:** Prepsyhist: previous psychiatric history; LCS: Locus of Control Scale;  
RAS: Responsibility Attitudes Scale

## **CHAPTER 4**

### **DISCUSSION**

The present study aimed to evaluate the specific contributions of responsibility attitudes, locus of control, and their interaction in predicting obsessive-compulsive symptomatology in a non-clinical population. Furthermore, this study aimed to test the effects of responsibility attitudes, locus of control, and their interaction on certain dimensions of obsessive-compulsive symptoms, namely, rumination, checking, and cleanliness. In other words, this research investigated whether responsibility attitudes, locus of control and their interaction serves differentially for various dimensions of obsessive-compulsive symptomatology. The findings of this study were presented in the results chapter. In this chapter, these findings will be discussed within the relevant literature.

The sequence of the discussion will be as following: firstly, the results of factor analysis for Maudsley Obsessive-Compulsive Inventory (MOCI) and gender differences in general and dimensions of OC symptomatology will be discussed. Later, the predictive roles of responsibility attitudes, locus of control and their interactions in OC symptomatology will be presented. Finally, the effects of the variables mentioned above on the dimensions of OC symptomatology will be discussed.

#### **4.1 Factor Structure of the Maudsley Obsessive-Compulsive Inventory (MOCI) and Gender Differences in General and Dimensions of OC Symptomatology**

The Maudsley Obsessive-Compulsive Inventory (MOCI) was developed by Hodgson and Rachman (1977) as an instrument for assessing the existence and extent of different kinds of obsessive-compulsive complaints. It is a self-administered scale consisting of 30 items, and is a useful tool for clinicians and researchers while investigating the type and extent of obsessional-compulsive complaints. A principal-component analysis of the responses of 100 obsessive patients revealed two major types of complaint; checking and washing compulsions and two minor types; slowness and doubting. The fifth component (ruminating) was decided to be ignored because it consisted of only two items. Therefore, four factors were used to form the MOCI subscales: checking, cleaning, obsessional slowness/ repetition and doubting/ conscientiousness (Hodgson & Rachman, 1977). However, it is of interest to note that Rachman and Hodgson (1980) examined the factor structure of MOCI using 50 neurotic subjects and 50 night-school students. Their results showed that there were significant differences between the factor structure of neurotic subjects and of normal subjects. Checking, cleaning, and doubting component were very similar for the two groups. However, the slowness component was only identified in the obsessional neurotic group (cited in Sanavio & Vidotto, 1985). According to these findings, the authors concluded that checking, cleaning, and doubting are the principal components in both normal and abnormal obsessional behavior while the slowness component only occurs in patients with clinically-evident obsessional complaints.

The factor structure of MOCI was examined in different cultures. The Italian version of the MOCI administered to 868 normal Italian subjects identified three factors with cleaning, checking, and doubting-ruminating (Sanavio & Vidotto, 1985). Similarly, the Turkish adaptation study (Erol & Savaşır, 1985) identified the same three factors: checking/slowness, cleanliness/ meticulousness, and obsessive thinking.

A factor analysis was performed in the present study in order to examine the factor structure of the MOCI in a high school student sample. The results revealed three factors. In the light of the literature, the factors were labelled as cleanliness/meticulousness, checking, and rumination. This factor structure was similar to the Turkish adaptation study (Erol & Savaşır, 1988) with minor differences. These differences lie in the number and convergence of items under these three factors. Furthermore, the three- factor solution, which resembles the Italian version, was at the same time the factor structure of the original scale except the slowness subscale.

In addition to these, both the total scale and subscales had low to moderate Cronbach Alpha internal consistency reliabilities which were also consistent with the previous studies (Erol & Savaşır, 1988, Hodgson & Rachman, 1977; Sanavio & Vidotto, 1985). Thus, it can be concluded that MOCI is a reliable and valid measure for the Turkish high school sample, with a factor structure that is in line with previous studies.

In order to examine possible gender differences in symptom subtypes of OCD, Analyses of Variance with repeated measures was conducted. According to results, females have been found to have more symptomatology than males.

Although, epidemiological studies in adult samples have shown that females have slightly higher likelihood of developing the disorder (Rasmussen & Tsuang, 1986; Weissman, Bland, Canino, Greenwal, Hwu, Lee, 1994, Karno, Golding, Sorenson & Burnam, 1988), the studies in young subjects show that boys have outnumbered girls (Honjo, Hirano, Murase, Kaneko, Sugiyama et.al., 1989; Adams, 1973; & Wakabayaski, 1987, cited in Honjo et al., 1989). More recently, Fireman et al. (2001) reported that recognized OCD was more prevalent among male than female patients younger than 18; however, in the 18-44 age group, recognized OCD was more prevalent among females than males. Similarly, epidemiological studies showed that three times as many prepubertal boys as girls are diagnosed with OCD, but that the incidence of OCD in females increases remarkably after puberty (Mendlowicz, Marques, & Versani, 2003). Therefore, the finding of the present study is consistent with the early studies in the adult sample whereas it is inconsistent with the studies carried out with younger samples.

The examination of the scores on the subscales of MOCI showed that there were significant differences. The subjects reported higher cleaning symptoms than rumination and checking symptoms. Furthermore, students reported more rumination symptoms than checking. In other words, the highest score was for cleaning, followed by rumination and checking symptoms among Turkish high school students. That is, the obsessive and compulsive phenomenology of our sample is broadly consistent with the ones that are referred to by other studies (Grabe et al., 2000; Ramussen & Eisen, 1991; Ramussen & Tsuang, 1986; Sobin et al., 1999; Ball, Baer and Otto; 1996). Several clinical data reported that obsessive fear of contamination together with handwashing compulsion is the most common

phenomenological presentation of OCD. The next common obsessive thought is pathological doubt coupled with checking compulsions (Grabe et al., 2000; Ramussen & Eisen, 1991; Ramussen & Tsuang, 1986; Sobin et al., 1999). In their review of behavioral treatment studies, Ball, Baer and Otto (1996) reported that cleaning compulsions were seen almost twice as often as checking. Furthermore, the basic types and frequencies of OCD symptoms have been found to be consistent across cultures and time (Grabe, et al., 2000). This data were supported by research with Turkish samples. Tek et al. (1998) showed that contamination obsessions and cleaning washing compulsions were the most frequent symptoms in a Turkish sample. Therefore, the findings of present study support Tek et al.'s suggestion (1998) that the order of the frequencies of obsessions and compulsions of the Turkish sample resembled the Western and Indian samples, in that cleaning is the most prominent symptom group.

Gender related differences were also observed in the presentation of the three dimensions of obsessive-compulsive symptoms, namely, cleaning, rumination and checking. The present study showed that males and females were significantly different from each other only in their cleaning symptoms. Females received higher scores in cleaning subscale when compared to males. The higher frequency of contamination obsessions together with cleaning/washing compulsions in females have already been reported by several studies (Bogetto et al., 1999; Lensi et al., 1996; Leckman et al., 1997; Locher and Stein, 2001; Noshirvani et al., 1991). Therefore, the findings of the present study related to the gender difference in cleaning symptoms are consistent with the relevant literature. However, it should be noted that some studies report contrasting findings, such as

increased contamination obsessions with cleaning compulsions in males (Fischer et al., 1997).

Furthermore, females reported higher cleaning symptoms than checking and rumination, which is again consistent with the literature (Bogetto et al., 1999; Lensi et al., 1996; Leckman et al., 1997; Locher and Stein, 2001; Noshirvani et al., 1991). Females also reported to have more rumination symptoms than checking symptoms. Similarly, males also reported more cleaning symptoms than checking symptoms. However, for males, there were no significant differences in the presentations of their other symptoms. The finding showing that males also reported more cleaning symptoms than checking is inconsistent with the findings of earlier reports. In general, the studies found that women dominate OCD cleaning or washer subtype, while men mostly suffer from checking compulsions (Jones & Menzies, 1997). Similarly, Gibbs and Oltman (1995) reported that patients with checking compulsions tend to be male with a young age of onset. This difference between the findings of the present study and relevant literature might stem from socio-cultural factors including the religious nature of upbringing and education styles in our society. The emphasis on ritualistic cleansing procedures, which implies the washing of several parts of body in specific order, each three times before ritual worship, may explain the high prevalence of cleaning symptoms among our male samples.

To conclude, the factor structure of the MOCI in a high school student sample was similar to the original Turkish adaptation Study in a general sample (Erol and Savaşır, 1985). The examination of the scores on the subscales of MOCI indicated that cleaning was the most common symptom subtype, followed by

rumination and checking symptoms among Turkish high school students. Related to the gender differences, in line with the expectations, females reported more OC symptoms than males. Furthermore, gender related differences were found in the subscales of MOCI. Females received significantly higher scores for cleaning subscale than male. Contrary to the hypothesis which stated that males would report more checking symptoms than females, there were no significant differences between their checking and rumination subscale scores. Moreover, for females, cleaning was the highest reported symptom subtype, followed by rumination and checking. Similarly, males reported more cleaning symptoms than checking. However, there were no significant differences between their other subscales. So, the first hypothesis states that the factor structure of MOCI will be similar in a high school student sample, as found for general sample in original Turkish adaptation study was supported. Furthermore the hypotheses related to gender differences were supported, except the hypothesis stated that males would report more checking symptoms than females.

#### **4.2 Predictors of General Obsessive-Compulsive Symptomatology: Responsibility Attitudes, Locus of Control, and the Interaction of Responsibility Attitudes with Locus of Control**

The present study aimed to evaluate the specific contributions of responsibility attitudes, locus of control, and the interaction in predicting OC symptomatology. It was proposed that both the sense of responsibility and locus of control would be positively related to OC symptoms. That is, subjects with high responsibility and with external locus of control would suffer from higher levels of OC symptomatology. In addition an interaction of responsibility and



locus of control was expected. In other words, OC symptomatology would be higher in subjects with high levels of responsibility and external locus of control.

Related to hypothesis which stated that the sense of responsibility would be positively related to OC symptoms, the analysis revealed that there was a significant positive relationship between responsibility and general OC symptomatology. Higher degree of obsessive-compulsivity was associated with higher degree in responsibility attitudes. That is, the inflated sense of responsibility is associated with increased level of obsessive-compulsive symptomatology. In other words, people who report more OC symptoms tend to have more responsibility attitudes. This finding is consistent with the comprehensive cognitive theory of OCD developed by Salkovskis (1989, 1993), questionnaire data (Freeston et al, 1992; Foa et al., 2001; Salkovskis, 1999; Rachman et al., 1995) and experimental manipulation studies (Lopatka and Rachman, 1995; Ladouceur et al, 1995; Rheaume et al., 1995; Shafran, 1997).

In the cognitive-behavioural formulation of obsessions, Salkovskis has given a central role to inflated sense of personal responsibility in the development, maintenance and modification of OCD. He has hypothesized that clinical obsessions are intrusive cognitions so that according to patient the occurrence and content of these intrusive cognitions indicates that they may be responsible for harm to themselves or others unless they take action to prevent it. According to Salkovskis (1985, 1989), if an appraisal does not include an element of responsibility, the person is likely to be anxious or depressed rather than having obsessional problems. Therefore, the cognitive theory proposes that, in

obsessional problems, the occurrence and/or content of intrusions (thoughts, images, impulses, and/or doubts) are interpreted by the person as involving responsibility for harm to themselves or others. This appraisal leads both to more adverse mood including anxiety and depression, and to the decisions and motivation to engage in neutralizing behaviours which can include a range of behaviours such as compulsive checking, washing or covert ritualizing. Moreover, the likelihood of further intrusions are increased by adverse mood and neutralizing behaviors. All of them lead to long sequences of intrusions-neutralizing-intrusion-neutralizing-intrusion... Therefore, appraisal of responsibility is crucial for an obsessional episode (Salkovskis et al, 1999, 2000; Salkovskis, 1985, 1989, 1993). So, the finding of the present study showing that higher degree of obsessive-compulsivity was associated with higher degree in responsibility attitudes is consistent with the cognitive model of OCD (Salkovskis; 1985, 1989).

Results of the present study did not support the proposed main effects of locus of control. Locus of control was not a significant predictor of obsessive-compulsive symptoms, which means that locus of control orientations are not associated with general OC symptomatology. The literature indicated that external locus of control shows significant relationship with self reported mental health problems (Hale & Cochran, 1986; Hollender & Levi, 1988; Rotter, 1966, 1975, 1980, 1989). Locus of control has been examined, especially, in depression. It has been observed that depressed persons express a general belief in external control of the events in their lives (Burger, 1984; Benassi, Sweeney, & Dufour, 1988; Ganellen, 1984). To our knowledge, there is no study that directly examined the

relationship between locus of control orientations and general OC symptomatology. However, Petrosky and Birkimer (1991) reported that locus of control was a multidimensional construct: internal, powerful others, and chance orientations, and different dimensions of locus of control might relate differently to types of symptoms. As proposed, they found that; chance and powerful others orientations were correlated with overall symptoms and symptoms of depression and OCD. In addition, when relationships among the various predictors were controlled via multiple regression, there was only positive significant relationship between powerful others orientation and obsessive compulsive symptoms. The present study examined the predictive role of overall locus of control score for general OC symptomatology. Therefore, the nonsignificant main effect of locus of control on general OC symptomatology might have resulted from the methodological design differences. As proposed by Petrosky and Birkimer (1991), different dimensions of locus of control might relate differently to types of symptoms. Hence, it can be useful to examine the relationship between different dimensions of locus of control and different types of OC symptoms in further research.

According to the literature, an inflated sense of responsibility is a core element in OC symptomatology, while external locus of control orientation is an important personality variable to predispose the individuals to develop the psychopathology, especially depression. Therefore it was expected that the interaction of responsibility and locus of control would have a significant predictive role in OC symptoms above and beyond each alone. As expected, the interaction of responsibility and locus of control was a significant predictor of OC

symptomatology. The results revealed that, inflated sense of responsibility and the presence of external locus of control produced the highest OC symptoms, whereas inflated sense of responsibility and internality produced lower OC symptoms. That is, internality has a dampening effect by producing lower obsessive-compulsive symptoms in an individual who has high responsibility for harm. In other words, for people with high responsibility attitudes, obsessive-compulsive symptomatology severity is higher among those with high locus of control scores (indicate externality) when compared to those with low locus of control score (indicate internality). That is, a person who has high level of responsibility will suffer from high obsessive-compulsive symptoms in the case that s/he is also an externally oriented person.

It can be concluded that having external locus of control orientation may not be sufficient for obsessive-compulsive symptoms as long as the person does not have the inflated sense of responsibility to prevent harm. If the person starts to feel responsible for the events which are not under his/her control, then he/she tends to show higher level of symptoms when compared to a person who feels inflated responsibility for the events which are under his/her control. Therefore, externality seems to have a triggering effect on OC symptom levels in individuals with high responsibility for harm. It is important to note that when the level of responsibility attitudes was low, externality or internality did not influence the levels of OC symptom. This means that if the person has little responsibility attitudes, s/he is less likely to suffer from OCD regardless of their locus of control orientations. So, it can be proposed that an inflated sense of responsibility is a core element in OC symptomatology, while externality is an important factor in

OC symptomatology in the case that the person has high responsibility to prevent harm.

Analysis also revealed the significant main effects of depression and trait anxiety. That is, higher levels of depressive symptomatology and anxiety are associated with increased level of OC symptoms. These findings are consistent with the literature, where anxiety and depression are very important affective components of the OCD and they can be considered among important vulnerability factors for OCD (Rachman, 1997; Salkovskis, 1989).

#### **4.3 Predictors of Maudsley Obsessive-Compulsive Inventory Subscales: Rumination, Cleanliness, and Checking**

The further aim of the present study was to examine the linear and moderating relationship between responsibility attitudes and locus of control orientation on specific MOCI subscales. In line with previous research, it was hypothesized that responsibility would be more salient in checking symptoms versus cleaning symptoms. The analyses conducted separately on the MOCI subscales showed that RAS was a weak predictor of rumination symptoms, explaining only 2% of the variance overall, and moderate predictor of cleaning and checking symptoms. It was almost equally relevant for cleaning and checking symptoms. RAS explained slightly more variance in cleaning (explaining 9% of the variance overall) than checking (explaining 7% of the variance overall). Furthermore, the correlations between measures of responsibility and checking behavior (.31) did not exceed the correlations between measures of responsibility and cleaning (.29). Therefore, contrary to the hypothesis, the present results

suggest that responsibility is equally relevant for checking and cleaning. Therefore, sixth hypothesis that responsibility would be more salient in checking symptoms versus cleaning symptoms was not supported. Several authors proposed that responsibility has more important role in certain kinds of OC symptoms, particularly in checking as opposed to cleaning (Lopatka & Rachman, 1995; Rachman, 1993; Salkovskis, 1985; Van Oppen and Arntz, 1995). However, some research findings indicated that responsibility was equally relevant for checking and for cleaning compulsions (Shafran, 1997; Wilson et al., 1999). Therefore, although the finding of present study is contrary to current literature which generally has proposed that responsibility is more salient in checking symptoms than cleaning symptoms (Rachman, 1993; Salkovskis, 1985; Van Oppen & Arntz, 1985), it is consistent with Shafran's (1997) and Wilson et al.'s studies which states that responsibility does not have different overall effects according to the type of OC symptoms.

The present study also aimed to evaluate the specific contribution of locus of control to different dimensions of OC symptoms. Results indicated that locus of control only significantly predicted rumination symptoms. That is, high levels of locus of control (indicate external locus of control) are associated with high levels of rumination symptoms. Locus of control did not significantly predict other dimensions of OCD: checking and cleaning. It can be proposed that if the individual shows an overt behavior to prevent the danger, whether functional or not, locus of control does not play a significant role in OCD. However, as seen in the rumination, if there is no overt behavior, locus of control orientations (externality) have an important effect on the OC symptomatology. It can be

proposed that individuals who display rumination might believe that their lives are controlled by external sources, and they can not prevent the harm. Therefore, they do not perform an overt behavior to prevent harm. In this case external locus of control has an important effect on the OC symptomatology. However, checking or cleaning, even when dysfunctional, may represent active coping efforts in an attempt to control external threats, and locus of control has not an important role in OC symptomatology when individuals try to control external threats by active coping behaviors. Or, it may seem plausible that external orientation leads to person to ruminate without taking action with the belief, that any action will be useless. According to this results, it can be suggested that locus of control serves as an important construct for certain types of OCD, especially, for rumination symptoms.

Furthermore, the interaction between responsibility and locus of control only significantly predicted rumination. This means that; for people with high responsibility, rumination was higher among those with high locus of control, as compared to those with low locus of control. Similarly, individuals with low responsibility reported lower rumination in low locus of control than individuals in high locus of control. According to these results, it can be concluded that for people with high responsibility attitudes, the likelihood of suffering from higher levels of rumination symptoms increases when they also have externally oriented locus of control. But, if they have little responsibility attitude with internal locus of control, the likelihood of suffering from rumination symptoms is dramatically lessened.

As mentioned earlier, trait anxiety and depression form the affective component of OCD (Rachman, 1997; Salkovskis, 1993). However, the present study revealed that depression and anxiety had different effects on the different dimensions of OC symptomatology. According to the results, depression and anxiety were significant predictors of rumination subscale. This finding was consistent with the literature. Van Oppen et al. (1995) observed that rumination showed high positive correlation with anxiety and depression indicating that this subscale could be sensitive not only to obsessivity but also to general emotional factors.

Another important finding of the present study was related to trait anxiety. Trait anxiety was only a significant predictor of the checking subscale. This is consistent with the literature, stating that checkers experience more anxiety than noncheckers during a memory task (Hodges & Spielberger, 1969; cited in Sher & Mann, 1984). It can be concluded that individuals who suffer from high levels of rumination symptoms experience both depression and anxiety which lead to high levels of rumination symptoms, while individuals who display repetitive checking experience only high levels of anxiety. If we take anxiety as a sign of future threat perception, checking seems to represent a behavior to prevent future threat. We may conclude that actually trying to do action to control the external events may have a role in decreasing depression level as an opposed to people who display only rumination.

In summary, the overall results of the present study indicated that responsibility attitudes will be a significant predictor for general OC symptomatology and its factors. Responsibility was a weak predictor of



rumination symptoms, and moderate predictor of cleanliness and checking symptoms. It was almost equally relevant for cleaning and checking symptoms. Locus of control only significantly predicted rumination symptoms. Therefore, if the individual shows an overt behavior to prevent the external danger, locus of control does not play a significant role in OCD. Furthermore, the interaction of responsibility attitudes with locus of control predicted general OC symptoms and specifically rumination symptoms. Therefore, it can be suggested that locus of control and its interaction with responsibility attitudes play important role in certain types of OC symptoms.

#### **4.4. Limitations of the Present Study**

There are certain methodological weaknesses of the present study. The first one is about the generalizability of the results. The sample used in this study is a high school sample with limited age range, which prevents the generalization of the results to other samples. Thus, the study needs to be replicated in adult samples with a wider age range. Particularly, the effects of locus of control on the different age and education groups needs to be examined, because the literature indicates that the relationship between locus of control and psychopathology may vary according to demographic variables such as age, sex, and race. Considering the issue of generalization, it is important to examine the relationship between locus of control and OCD in different age groups, education levels and in clinical OCD groups.

Another limitation of the study might be that the subscales of MOCI had low to moderate alpha coefficients. Furthermore, the reliability coefficient of

internal consistency was found to be moderate. This alpha coefficient was lower as compared to the Turkish adaptation study (Erol & Savaşır, 1988) and the university students sample (Yorulmaz, 2002). Therefore, the findings should be evaluated cautiously. Thus, the study needs to be replicated with other measures of OCD in order to obtain more reliable and valid assessment of the variables of the present study.

The sample used in this study is a nonclinical sample. Therefore, the findings should be evaluated cautiously. Although some authors reported that almost eighty percent of non-clinical subjects experienced obsessions (Clark & de Silva, 1985; Freeston et al., 1992; Freeston et al, 199, Purdon & Clark, 1993; Rachman and De Silva, 1978; Salkovskis & Harrison, 1984), the concepts examined in the present study are also more related to psychopathology and thus the study needs to be replicated with OCD patients in order to obtain more reliable and valid assessment of the variables of the present study.

The cross-sectional design used in the present study provides information on relationships rather than causal directions. Therefore, future research employing a longitudinal design will provide more reliable results on the direction of the effects noted.

Lastly, the finding, in which the interaction of responsibility attitudes with locus of control was significantly associated with general obsessive-compulsive symptomatology and rumination dimension, is an interesting novel finding. As far as we know, this is the first study to show such a relationship. Therefore, it should be re-examined in a future research.

#### **4.5 Therapeutic Implications**

The findings of this study supported the role of inflated responsibility in obsessive-compulsive disorder as introduced by Salkovskis (1985, 1989). He proposed that people with OCD have a tendency to feel an exaggerated sense of responsibility for actual, imaginary or anticipated misfortunes, to feel pivotally responsible for such misfortunes, and sense of inflated responsibility influences their interpretation of the obsessions. Also, the present study showed that although locus of control is not a significant predictor of general obsessive-compulsive symptomatology, external locus of control has a triggering effect on OC symptom levels in individuals with high responsibility for harm. In other words, locus of control is a very important factor in OCD when coupled with an inflated sense of responsibility.

The finding showing that inflated sense of responsibility plays a central or pivotal role in obsessive-compulsivity indicate that therapeutic strategies for treatment OCD should aim to deflate the responsibility to more realistic and rational levels, and give an opportunity for patient to experience the effect of shifting responsibility.

According to Salkovskis (1985, 1989) and Rachman (1997, 1988) treatment of OCD should focus on changing the misinterpretations of the significance of the intrusive thoughts. According to them, treatment techniques derived from the behavioural analysis of OCD (exposure, response prevention, thought- stopping, habituation training) with some exceptions are unsuccessful techniques, because the main aim of these techniques is to block or reduce only the manifestation of the problems neglecting of the underlying problems.

Therefore, the catastrophic misinterpretations of the significance of the intrusive thought are left unchanged. They have suggested that these attempts failed because they did nothing to change the distressing misinterpretations of the intrusive thoughts and they merely focused on the effects of the catastrophic misinterpretations. As the misinterpretations presumably persisted, the stressing obsessions soon re-appeared. They concluded that without denial of the success of behavioral techniques, attempts at cognitive modification of obsessions should concentrate not only on modification of intrusions, which might have only transient effect on the belief system of the individual, but also on the automatic thoughts which are the consequences of the intrusions, and beliefs. As discussed earlier, an important proportion of patients experience a considerably inflated sense of responsibility, particularly for potentially negative events, and inflated responsibility can influence their interpretation of the obsessions. In these cases cognitive therapy of OCD should aim to deflate the responsibility to more realistic and rational levels. The findings of the present study supports these suggestions related to treatment procedure.

Ladouceur et al (1996) evaluated the efficacy of a cognitive treatment whose therapeutic strategies were based on a) targeting inflated responsibility, b) awareness of automatic thought, c) correction of negative automatic thoughts, and d) development of adequate perceptions of personal responsibility. Results indicated that changing cognitions about inflated responsibility produced clinically significant changes. These findings highlight the importance of correcting responsibility schema and power issues to decrease the OCD symptoms without using any behavioral techniques. Authors suggested that cognitive therapy

targeting inflated responsibility might be a promising alternative to exposure – based treatment.

Even though responsibility may be an important factor to consider, the present study highlights the importance of targeting and correcting the beliefs about personal control. However, locus of control is an important factor in obsessive-compulsive symptomatology in the case that individual also experiences inflated sense of responsibility for harm. The findings of the present study show that patients who experience a high sense of responsibility to control external threats and who also believe that their lives are controlled by external sources show more OC symptoms, especially rumination. Therefore, therapeutic procedures of OCD should aim to challenge and change this belief related to externality, in addition to other therapeutic strategies aiming to decrease inflated sense of responsibility.

Earlier researchers described personal characteristics of externals and internals. They have described internals as more independent and confident than externals and more prone to relying on their own efforts and resources to maintain their sense of personal control over life events (Lefcourt, 1972; & Phares, 1976; cited in Archer, 1980; Miller, 1979; Strickland, 1989). In addition, it is emphasized that internals have used different coping strategies when compared to externals. They usually use effective and productive coping strategies such as self-monitoring, self-regulation (including appropriate goal-setting), self-efficacy, and self-control mechanisms. Such attention, understanding, and self-striving serve not only to help in responding to life events well and effectively, but can also serve to disrupt dysfunctional patterns of behavior. However, externals use

maladaptive and unproductive cognitive coping strategies to cope with stressful life events (Strickland, 1989). Therefore, it can be suggested that the therapy sessions designed to help clients change their beliefs related to externality may be important to encourage the patient to develop and adopt more effective coping techniques.

A few investigations have examined the effects of formal therapeutic procedures on locus of control. They found that patients judged by therapists as 'improved' reported a significant increase in internality than among a sample of untreated patients. On the other hand, those patients who were not judged as 'improved' did not shift towards the internal direction (Masters, 1970; Smith, 1970; cited in Lefcourt, 1972). Similarly, a study by Dua (1970) found that clients treated with primary strategy involved altering the patient's perception of control reported significant decreases in externality in comparison to an untreated control group (cited in Lefcourt, 1972). Furthermore, decreasing externality was followed by therapeutic improvement. Therefore, it can be concluded that it will be beneficial to challenge and change this belief related to externality, in addition to other therapeutic strategies aiming to decrease inflated responsibility.

It is important that locus of control and its interaction with responsibility only significantly predicted rumination symptoms. Therefore, clinical work may especially focus on challenging and changing beliefs about external locus of control, if the patient reports more rumination symptoms than checking and cleaning. These patients display only covert ruminative cognitive behaviors, not any overt behaviors to prevent harm. On the other hand, checkers or cleaners, even when dysfunctional, may represent active coping efforts to control external

threats. It can be speculated that they may perceive higher levels of personal control over the environment than individuals who display only rumination. Here it may be more important to encourage the development of beliefs regarding internal controls in patients who suffer from obsessional thinking rather than checking or cleaning. Therefore, it may be helpful to initially inquire the type of symptoms of the patient and if the symptoms are especially related to rumination, then therapeutic targets to change external beliefs in addition to other therapeutic strategies related to responsibility should be utilized.

#### **4.6 Suggestions for Future Research**

Future research dealing with responsibility and locus of control should involve various adult samples with a wide age range and different education levels. Particularly, the effects of locus of control on OCD need to be examined for different age and education groups. The literature states that this variable shows significant differences as a result of natural events. Among the simplest of natural events, age change alone has been found to influence I-E scores, older children being more internal than younger children (Penk, 1969; cited in Lefcourt, 1972). Therefore, its relationships with OCD should be reexamined in different age range and education level and also in clinical OCD groups.

Furthermore, it may be useful to examine family influences factor in the development of responsibility attitudes. Research design using longitudinal methods will provide more valid tests of developmental aspects.

The sample used in this study is a nonclinical sample. Therefore, the findings should be evaluated cautiously. The concepts examined in the present

study are also more related to psychopathology and thus the study needs to be replicated with OCD patients in order to obtain more reliable and valid assessment of the variables of the study.

The present study did investigate the relationship between dimensions of locus of control and general obsessive-compulsive symptomatology. The literature indicates that different dimensions of locus of control are correlated with different psychological disturbances. However, there has been no research on the relationship of different dimensions of locus of control (internal control, chance, powerful others, fate) and subtypes of OCD. Therefore, future research might investigate the effects of different aspects of locus of control on subtypes of OCD.

Contrary to current literature which posits that responsibility is more prominent in patients with checking compulsions (Salkovskis et al, 2000); the present study found that responsibility more or less equally predicted both types of compulsions. However, it was a weak predictor of rumination. Therefore, future research might investigate the different effect of responsibility in different subtypes of OCD with different methodology and samples. The effects, especially, should be examined in clinical samples.

Furthermore, Mancini et al, (2001) found that responsibility as measured by Responsibility Attitude Scale (salkovskis et al., 2000) can be interpreted in four dimensions: 'prevention', 'self-granted power of harm', 'to feel dangerous' and 'thought-action fusion'. Results indicated that specific aspects of responsibility could play different roles in certain types of OCD. While prevention was significantly linked to washing, self granted power was significantly correlated with the checking subscale. Therefore, it might be helpful to investigate



the effects of different aspects of responsibility on different subtypes of OCD to understand and support models of OCD.

The present study examined the effects of cognitive distortions related to the sense of responsibility on OCD. It also examined the role of locus of control as an important personality variable which predisposes individuals to psychopathology in general and specific dimensions of OCD. However, the literature indicated that there are various other cognitive factors that are related to the development and the maintenance of OCD, such as thought-action fusion, the beliefs concerning controlling one's thoughts, over estimation of probability and severity of threat, intolerance for uncertainty, and perfectionism. In order to understand the nature of OCD further, other cognitive distortions can be studied in future studies.

Lastly, the finding, in which the interaction of responsibility with locus of control were significantly associated with general obsessive-compulsive symptomatology and rumination dimension, is an interesting finding. This is the first study to show such a relationship. Therefore, in future research, it should be re-examined in adult populations and clinical samples, representing different education and age variations.

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## APPENDICES

### APPENDIX A

#### DEMOGRAPHIC INFORMATION SHEET (DEMOGRAFİK BİLGİ FORMU)

Bu araştırma, öğrencilerin karşılaştıkları yaşam olayları, etkilenme biçimleri ve duygulanım düzeyleri arasındaki ilişkileri anlamak amacıyla yapılmaktadır. Bu nedenle, çeşitli gruplarda toplanan soruları cevaplamanız istenmektedir. Araştırmanın sonuçları açısından, sağlıklı bilgiler elde edilmesi için yönergelerin dikkatlice okunması, verilen cevaplarda samimi olunması ve cevaplandırılmamış soru bırakılmaması son derece önemlidir. Cevaplar grup halinde değerlendirileceği için isim belirtilmesine gerek yoktur. Elde edilen veriler bilimsel bir araştırma için kullanılacak ve kesinlikle gizli tutulacaktır. Yardımlarınızdan dolayı şimdiden teşekkür ederiz.

Mujgan Altın  
ODTÜ Psikoloji Bölümü  
Yüksek Lisans Öğrencisi

Araştırma ile ilgili açıklamaları okudum ve çalışmaya katılmayı kabul ettim.

İmza:  
Tarih:

1. CINSİYETİNİZ: KADIN _____ ERKEK _____	2. YAŞINIZ:
3. Doğum yeriniz:	4. Okuduğunuz alan: ____ Eşit ağırlık ____ Sayısal ____ Sözel
5. Genel Akademik not ortalamanız :	6. Sınıfınız:
7. Annenizin mesleği:	8. Babanızın mesleği:
9. Kardeş sayısı:	10. Siz kaçınıcı çocuksunuz:
11. Anne ve babanız sağ mı? Anne: Evet _____ Hayır _____ (Kaç yıl önce kaybettiniz ? _____) Baba: Evet _____ Hayır _____ (Kaç yıl önce kaybettiniz ? _____)	
12. Annenizin en son bitirdiği okul: ____ İlkokul ____ Ortaokul ____ Lise ____ Üniversite ____ Üniversite Üzeri	
13. Babanızın en son bitirdiği okul: ____ İlkokul ____ Ortaokul ____ Lise ____ Üniversite ____ Üniversite Üzeri	
14. Yaşamınızın çoğunu geçirdiğiniz yer: ____ Büyük şehir (İstanbul, Ankara, İzmir) ____ Şehir ____ Kasaba ____ Köy	
15. Ailenizin gelir düzeyi: ____ Yüksek ____ Orta ____ Düşük	
16. Lise eğitiminizi sürdürürken kaldığınız yer: ____ Aile yanı ____ Yurt ____ Akraba yanı ____ Diğer (belirtiniz)	
17. Bugüne kadar psikolojik sorunlarınız oldu mu? Evet _____ (belirtiniz ) ..... ..... Hayır _____	
18. Bu sorunlarınız için yardım aldınız mı? Evet _____ Kimlerden (belirtiniz)..... Hangi kurumlardan? ( belirtiniz) ..... Hayır _____	
19. Ailenizde psikiyatrik tanı alan var mı? Evet _____ (kim olduğunu ve hangi tanıyı aldığını lütfen belirtiniz _____) Hayır _____	

## APPENDIX B

### RESPONSIBILITY ATTITUDE SCALE (SORUMLULUK TUTUMLARI ÖLÇEĞİ)

Bu anket, insanların zaman zaman benimsediği tutum ve inançları sıralamıştır. Her ifadeyi dikkatlice okuyunuz ve okuduktan sonra o ifadeye ne derece katıldığınızı belirtiniz. Kararınızı ifade etmek için DÜŞÜNCENİZİ EN İYİ TANIMLAYAN rakamı daire içine alınız.

**Tamamen Katılıyorsanız 7** rakamını,

**Hiç Katılmıyorsanız 1** rakamını,

**Eğer ifade ile ilgili hiçbir fikriniz yoksa” yada “kararsızsınız” 4** rakamını işaretleyiniz.

Her bir ifade için, yalnızca bir durumu seçtiğinizden emin olunuz. İfadenin, sizin için tipik bir tutum olup olmadığına karar vermek amacıyla değerlendirme yaparken ÇOĞUNLUKLA nasıl olduğunuzu düşününüz.

	Hiç katılmıyorum						Tamamen Katılıyorum
1. Yanlış giden şeylerden çoğu zaman kendimi sorumlu hissedirim	1	2	3	4	5	6	7
2. Bir tehlikeyi önceden görmeme karşın bir harekette bulunmazsam, suçlanacak kişi konumuna kendim düşerim.	1	2	3	4	5	6	7
3. Yanlış giden şeyler için kendimi sorumlu hissetmek konusunda fazla hassasım.	1	2	3	4	5	6	7
4. Kötü şeyler düşünmem, kötü şeyler yapmam kadar fenadır.	1	2	3	4	5	6	7
5. Bazı davranışların sonuçları üzerinde, bunları ben yapmamış olsam bile oldukça fazla endişelenirim.	1	2	3	4	5	6	7
6. Bana göre bir felaketi önlemek üzere harekete geçmemek, bir felakete yol açmak kadar kötüdür.	1	2	3	4	5	6	7
7. Birine zarar verme ihtimali bulunduğunu bildiğimde, ne kadar imkansız görünse de hep bunu engellemeye çalışırım.	1	2	3	4	5	6	7
8. En küçük hareketlerin bile sonuçlarını mutlaka düşünmeliyim.	1	2	3	4	5	6	7

	Hiç katılmıyorum						Tamamen Katılıyorum
9. Çoğu kez diğer insanların benim hatam olarak görmedikleri şeylerin sorumluluğunu kendi üzerime alırım.	1	2	3	4	5	6	7
10. Yaptığım her şey ciddi problemlere yol açabilir.	1	2	3	4	5	6	7
11. Başkalarına veya bir şeylere zarar vermeme sık sık ramak kalıyor.	1	2	3	4	5	6	7
12. Başkalarını tehlike ve kötülüklerden korumalıyım.	1	2	3	4	5	6	7
13. Başkalarına asla en ufak bir zarar bile vermemeliyim.	1	2	3	4	5	6	7
14. Davranışlarım için ayıplanacağımı biliyorum.	1	2	3	4	5	6	7
15. Yanlış giden şeyler üzerinde en ufak bir etkim varsa, onu önlemeye çalışmalıyım.	1	2	3	4	5	6	7
16. Bana göre, en ufak bir felaket olasılığı olduğunda harekete geçmemek felakete neden olmak kadar kötüdür.	1	2	3	4	5	6	7
17. Eğer başkalarını etkileyecekse, en basit bir dikkatsizlik bile benim için affedilmez bir şeydir.	1	2	3	4	5	6	7
18. Günlük hayatı ilgilendiren durumlarda, hareketsiz kalmam, kötü niyetle yapılan davranışlar kadar zarar verici olabilir.	1	2	3	4	5	6	7
19. Çok küçük bir zarar verme olasılığı bulunsa bile ne yapıp edip onu engellemeye çalışırım	1	2	3	4	5	6	7
20. Başkalarına çok zarar vermiş olduğuma bir kez inanırsam, kendimi asla affetmem	1	2	3	4	5	6	7
21. Geçmişte yaptıklarımın çoğu, başkalarına bir zarar gelmesini engelleme niyeti taşımıştır.	1	2	3	4	5	6	7
22. Başkalarının, benim yaptığım şeylerin tüm sonuçlarından korunduklarından emin olmalıyım.	1	2	3	4	5	6	7
23. Başkalarının, benim değerlendirmelerime pek güvenmemeleri gerektiğini düşünüyorum.	1	2	3	4	5	6	7
24. Eğer herhangi bir şey için suçlanmayacağımdan <u>emin</u> olamıyorsam, suçlanacak biri konumunda olduğumu hissederim.	1	2	3	4	5	6	7
25. Eğer yeterince önlem alırsam, başkalarına zarar verecek kazaları önleyebilirim.	1	2	3	4	5	6	7
26. Çoğu kez, eğer yeterince dikkatli olmazsam, kötü şeylerin olabileceğini düşünürüm.	1	2	3	4	5	6	7

## APPENDIX C

### MAUDSLEY OBSESSIVE-COMPULSIVE INVENTORY (MAUDSLEY OBSESIF-KOMPULSIF ENVANTERİ)

Aşağıdaki cümleleri dikkatle okuyunuz. Size uygunsa “DOĞRU” yu, uygun değilse “YANLIŞ”ı daire içine alınız. Lütfen soruların hepsini cevaplandırınız.

1. Bana bir hastalık bulaşır korkusuyla herkesin kullandığı telefonları kullanmaktan kaçınırım	DOĞRU	YANLIŞ
2. Sık sık hoşla gitmeyen şeyler düşünür, onları zihnimden uzaklaştırmakta güçlük çekerim	DOĞRU	YANLIŞ
3. Dürüstlüğe herkesten çok önem veririm	DOĞRU	YANLIŞ
4. İşleri zamanında bitiremediğim için çoğu kez geç kalırım	DOĞRU	YANLIŞ
5. Bir hayvana dokununca hastalık bulaşır diye kaygılanırım	DOĞRU	YANLIŞ
6. Sık sık hava gazını, su musluklarını ve kapıları birkaç kez kontrol ederim	DOĞRU	YANLIŞ
7. Değişmez kurallarım vardır	DOĞRU	YANLIŞ
8. Aklıma takılan nahoş düşünceler hemen her gün beni rahatsız eder	DOĞRU	YANLIŞ
9. Kaza ile başkasına çarptığımda rahatsız olurum	DOĞRU	YANLIŞ
10. Her gün yaptığım basit günlük işlerden bile emin olamam	DOĞRU	YANLIŞ
11. Çocukken annem de babam da beni fazla sıkmazlardı	DOĞRU	YANLIŞ
12. Bazı şeyleri tekrar tekrar yaptığım için işimde geri kaldığım oluyor	DOĞRU	YANLIŞ
13. Çok fazla sabun kullanırım	DOĞRU	YANLIŞ
14. Bana göre bazı sayılar son derece uğursuzdur	DOĞRU	YANLIŞ
15. Mektupları postalamadan önce onları tekrar tekrar kontrol ederim	DOĞRU	YANLIŞ
16. Sabahları giyinmek için uzun zaman harcarım	DOĞRU	YANLIŞ
17. Temizliğe aşırı düşkünüm	DOĞRU	YANLIŞ
18. Ayrıntılara gereğinden fazla dikkat ederim	DOĞRU	YANLIŞ
19. Pis tuvaletlere giremem	DOĞRU	YANLIŞ
20. Esas sorun bazı şeyleri tekrar tekrar kontrol etmemdir	DOĞRU	YANLIŞ
21. Mikrop kapmaktan ve hastalanmaktan korkar ve kaygılanırım	DOĞRU	YANLIŞ
22. Bazı şeyleri birden fazla kontrol ederim	DOĞRU	YANLIŞ
23. Günlük işlerimi belirli bir programa göre yaparım	DOĞRU	YANLIŞ

24. Paraya dokunduktan sonra ellerimi kirli hissedirim	<b>DOĐRU</b>	<b>YANLIŐ</b>
25. AlıŐtıĐım bir iŐi yaparken bile birkaç kere yaptıĐımı sayarım	<b>DOĐRU</b>	<b>YANLIŐ</b>
26. Sabahları elimi yüzümü yıkamak çok zamanımı alır	<b>DOĐRU</b>	<b>YANLIŐ</b>
27. Çok miktarda mikrop öldürücü ilaç kullanırım	<b>DOĐRU</b>	<b>YANLIŐ</b>
28. Her gün bazı şeyleri tekrar tekrar kontrol etmek bana zaman kaybettirir	<b>DOĐRU</b>	<b>YANLIŐ</b>
29. Geceleri giyeceklerimi katlayıp asmak uzun zamanımı alır	<b>DOĐRU</b>	<b>YANLIŐ</b>
30. Dikkatle yaptıĐım bir iŐin bile tam doĐru olup olmadığına emin olamam	<b>DOĐRU</b>	<b>YANLIŐ</b>
31. Kendimi toparlayamadıĐım için günler, haftalar hatta aylarca hiç bir şeye el sürmediĐim olur	<b>DOĐRU</b>	<b>YANLIŐ</b>
32. En büyük mücadelelerimi kendimle yaparım	<b>DOĐRU</b>	<b>YANLIŐ</b>
33. ÇoĐu zaman büyük bir hata yada kötülük yaptıĐım duygusuna kapılırım	<b>DOĐRU</b>	<b>YANLIŐ</b>
34. Sık sık kendime bir şeyleri dert ederim	<b>DOĐRU</b>	<b>YANLIŐ</b>
35. Önemsiz ufak şeylerde bile karar verip iŐe girişmeden önce durup düşünürüm	<b>DOĐRU</b>	<b>YANLIŐ</b>
36. Reklamlardaki ampuller gibi önemsiz şeyleri sayma alışkanlıĐım vardır	<b>DOĐRU</b>	<b>YANLIŐ</b>
37. Bazen önemsiz düşünceler aklıma takılır ve beni günlerce rahatsız eder.	<b>DOĐRU</b>	<b>YANLIŐ</b>

## APPENDIX D

### LOCUS OF CONTROL SCALE (KONTROL ODAĞI ÖLÇEĞİ)

Bu anket, insanların yaşama ilişkin bazı düşüncelerini belirlemeyi amaçlamaktadır. Sizden, bu maddelerde yansıtılan düşüncelere ne ölçüde katıldığınızı ifade etmeniz istenmektedir.

Bunun için, her maddeyi dikkatle okuyunuz ve o maddede ifade edilen düşüncenin *sizin* düşüncelerinize uygunluk derecesini belirtiniz. Bunun için de, her ifadenin karşısındaki seçeneklerden sizin görüşünüzü yansıtan kutucuğa bir (X) işareti koymanız yeterlidir. “Doğru” ya da “yanlış” cevap diye bir şey söz konusu değildir.

Tüm maddeleri eksiksiz olarak ve içtenlikle cevaplayacağınızı umuyor ve araştırmaya yardımcı olduğunuz için çok teşekkür ediyoruz.

	Hiç Uygun Değil	Pek Uygun Değil	Uygun	Oldukça Uygun	Tamamen Uygun
1. İnsanın yaşamındaki mutsuzlukların çoğu, biraz da şanssızlığına bağlıdır.					
2. İnsan ne yaparsa yapsın üşütüp hasta olmanın önüne geçemez.					
3. Bir şeyin olacağı varsa eninde sonunda mutlaka olur.					
4. İnsan ne kadar çabalarsa çabalasın, ne yazıkki değeri genellikle anlaşılmaz.					
5. İnsanlar savaşları önlemek için ne kadar çaba gösterirlerse gösterebilirler, savaşlar daima olacaktır.					
6. Bazı insanlar doğuştan şanslıdır.					
7. İnsan ilerlemek için güç sahibi kişilerin gönlünü hoş tutmak zorundadır.					
8. İnsan ne yaparsa yapsın, hiç bir şey istediği gibi sonuçlanmaz.					
9. Bir çok insan, raslantıların yaşamlarını ne derece etkilediğinin farkında değildir.					
10. Bir insanın halen ciddi bir hastalığa yakalanmamış olması sadece bir şans meselesidir.					
11. Dört yapraklı yonca bulmak insana şans getirir.					
12. İnsanın burcu hangi hastalıklara daha yatkın olacağını belirler.					



	Hiç uygun değil	Pek uygun değil	Uygun	Oldukça uygun	Tamamen uygun
13. Bir sonucu elde etmede insanın neleri bildiği değil, kimleri tanıdığı önemlidir.					
14. İnsanın bir günü iyi başladıysa iyi; kötü başladıysa da kötü gider.					
15. Başarılı olmak çok çalışmaya bağlıdır; şansın bunda payı ya hiç yoktur ya da çok azdır.					
16. Aslında şans diye bir şey yoktur.					
17. Hastalıklar çoğunlukla insanların dikkatsizliklerinden kaynaklanır.					
18. Talihsizlik olarak nitelenen durumların çoğu, yetenek eksikliğinin, ihmalin, tembelliğin ve benzeri nedenlerin sonucudur.					
19. İnsan, yaşamında olabilecek şeyleri kendi kontrolü altında tutabilir.					
20. Çoğu durumda yazı-tura atarak da isabetli kararlar verilebilir.					
21. İnsanın ne yapacağı konusunda kararlı olması, kadere güvenmesinden daima iyidir.					
22. İnsan fazla bir çaba harcamasa da, karşılaştığı sorunlar kendiliğinden çözülür.					
23. Çok uzun vadeli planlar yapmak her zaman akıllıca olmayabilir, çünkü bir çok şey zaten iyi ya da kötü şansa bağlıdır.					
24. Bir çok hastalık insanı yakalar ve bunu önlemek mümkün değildir.					
25. İnsan ne yaparsa yapsın, olabilecek kötü şeylerin önüne geçemez.					
26. İnsanın istediğini elde etmesinin talihle bir ilgisi yoktur.					
27. İnsan kendisini ilgilendiren bir çok konuda kendi başına doğru kararlar alabilir.					
28. Bir insanın başına gelenler, temelde kendi yaptıklarının sonucudur.					
29. Halk, yeterli çabayı gösterse siyasal yolsuzlukları ortadan kaldırabilir.					
30. Şans ya da talih hayatta önemli bir rol oynamaz.					
31. Sağlıklı olup olmamayı belirleyen esas şey insanların kendi yaptıkları ve alışkanlıklarıdır.					
32. İnsan kendi yaşamına temelde kendisi yön verir.					

	Hiç uygun değil	Pek uygun değil	Uygun	Oldukça uygun	Tamamen uygun
33. İnsanların talihsizlikleri yaptıkları hataların sonucudur.					
34. İnsanlarla yakın ilişkiler kurmak, tesadüflere değil, çaba göstermeye bağlıdır.					
35. İnsanın hastalanacağı varsa hastalanır; bunu önlemek mümkün değildir.					
36. İnsan bugün yaptıklarıyla gelecekte olabilecekleri değiştirebilir.					
37. Kazalar, doğrudan doğruya hataların sonucudur.					
38. Bu dünya güç sahibi bir kaç kişi tarafından yönetilmektedir ve sade vatandaşın bu konuda yapabileceği fazla bir şey yoktur.					
39. İnsanın dini inancının olması, hayatta karşılaşacağı bir çok zorluğu daha kolay aşmasına yardım eder.					
40. Bir insan istediği kadar akıllı olsun, bir işe başladığında şansı yaver gitmezse başarılı olamaz.					
41. İnsan kendine iyi baktığı sürece hastalıklardan kaçınabilir.					
42. Kaderin insan yaşamı üzerinde çok büyük bir rolü vardır.					
43. Kararlılık bir insanın istediği sonuçları almasında en önemli etkidir.					
44. İnsanlara doğru şeyi yaptırmak bir yetenek işidir; şansın bunda payı ya hiç yoktur ya da çok azdır.					
45. İnsan kendi kilosunu, yiyeceklerini ayarlayarak kontrolü altında tutabilir.					
46. İnsanın yaşamının alacağı yönü, çevresindeki güç sahibi kişiler belirler.					
47. Büyük ideallere ancak çalışıp çabalayarak ulaşılabilir.					

→

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## APPENDIX E

### BECK DEPRESSION INVENTORY (BECK DEPRESYON ENVANTERİ)

Aşağıda, kişilerin ruh durumlarını ifade ederken kullandıkları bazı cümleler verilmiştir. Her madde bir çeşit ruh durumunu anlatmaktadır. Her maddede o ruh durumunun derecesini belirleyen 4 seçenek vardır. Lütfen bu seçenekleri dikkatle okuyunuz. **Son bir hafta içindeki (şu an dahil) kendi ruh durumunuzu göz önünde bulundurarak, size en uygun ifadeyi bulunuz.** Daha sonra o maddenin yanındaki harfi yuvarlak içine alınız.

- 1- a- Kendimi üzgün hissetmiyorum  
b- Kendimi üzgün hissediyorum  
c- Her zaman için üzgünüm ve kendimi bu duygulardan kurtaramıyorum  
d- Öylesine üzgünüm ve mutsuzum ki dayanamıyorum
- 2- a- Gelecekte umutsuz değilim.  
b- Geleceğe biraz umutsuz bakıyorum  
c- Gelecekte beklediğim hiçbir şey yok  
d- Benim için gelecek yok ve bu durum düzelmeyecek
- 3- a- Kendimi başarısız görmüyorum.  
b- Çevremdeki birçok kişiden daha fazla başarısızlıklarım oldu sayılır.  
c- Geriye dönüp baktığımda, çok fazla başarısızlığımın olduğunu görüyorum  
d- Kendimi tümüyle başarısız bir insan olarak görüyorum.
- 4- a- Her şeyden eskisi kadar zevk alabiliyorum  
b- Her şeyden eskisi kadar zevk alamıyorum.  
c- Artık hiçbir şeyden gerçek bir zevk alamıyorum.  
d- Bana zevk veren hiçbir şey yok. Her şey çok sıkıcı.
- 5- a- Kendimi suçlu hissetmiyorum  
b- Arada bir kendimi suçlu hissettiğim oluyor.  
c- Kendimi çoğunlukla suçlu hissediyorum.  
d- Kendimi her an için suçlu hissediyorum.
- 6- a- Cezalandırıldığımı düşünmüyorum  
b- Bazı şeyler için cezalandırılabilirim hissediyorum.  
c- Cezalandırılmayı bekliyorum.  
d- Cezalandırıldığımı hissediyorum

- 7- a- Kendimden hoşnutum.  
b- Kendimden pek hoşnut değilim.  
c- Kendimden hiç hoşlanmıyorum.  
d- Kendimden nefret ediyorum.
- 8- a- Kendimi diğer insanlardan daha kötü görmüyorum  
b- Kendimi zayıflıklarım ve hatalarım için eleştiriyorum.  
c- Kendimi hatalarım için çoğu zaman suçluyorum.  
d- Her kötü olayda kendimi suçluyorum.
- 9- a- Kendimi öldürmek gibi düşüncelerim yok  
b- Bazen kendimi öldürmeyi düşünüyorum, fakat yapmadım.  
c- Kendimi öldürebilmeyi isterdim.  
d- Bir fırsatını bulursam kendimi öldürürüm.
- 10- a- Her zamankinden daha fazla ağladığımı sanmıyorum.  
b- Eskisine göre şu sıralarda daha fazla ağlıyorum.  
c- Şu sıralarda daha fazla ağlıyorum.  
d- Eskiden ağlayabilirdim, ama şu sıralarda istesem de ağlayamıyorum
- 11- a- Her zamankinden daha sinirli değilim.  
b- Her zamankinden daha kolayca sinirleniyor ve kızıyorum.  
c- Çoğu zaman sinirliyim.  
d- Eskiden sinirlendiğim şeylere bile artık sinirlenemiyorum.
- 12- a- Diğer insanlara karşı ilgimi kaybetmedim.  
b- Eskisine göre insanlarla daha az ilgiliyim.  
c- Diğer insanlara karşı ilgimin çoğunu kaybettim.  
d- Diğer insanlara karşı hiç ilgim kalmadı.
- 13- a- Kararlarımı eskisi kadar kolay ve rahat verebiliyorum.  
b- Şu sıralar kararlarımı vermeyi erteliyorum.  
c- Kararlarımı vermekte çoklukla güçlük çekiyorum.  
d- Artık hiç karar veremiyorum.
- 14- a- Dış görünüşümün eskisinden daha kötü olduğunu sanmıyorum.  
b- Yaşlandığımı ve çekiciliğimi kaybettiğimi düşünüyorum ve üzülüyorum.  
c- Dış görünüşümde artık değiştirilmesi mümkün olmayan olumsuz değişiklikler olduğunu hissediyorum.  
d- Çok çirkin olduğumu düşünüyorum.
- 15- a- Eskisi kadar iyi çalışabiliyorum  
b- Bir işe başlayabilmek için eskisine göre kendimi daha fazla zorlamam gerekiyor.  
c- Hangi iş için olursa olsun, yapabilmek için kendimi zorluyorum.  
d- Hiçbir iş yapamıyorum.

- 16- a- Eskisi kadar rahat uyuyabiliyorum.  
b- Şu sıralarda eskisi kadar rahat uyuyamıyorum.  
c- Eskisine göre 1 veya 2 saat erken uyanıyor ve tekrar uyumakta zorluk çekiyorum..  
d- Eskisine göre çok erken uyanıyor ve tekrar uyuyamıyorum.
- 17- a- Eskisine kıyasla daha çabuk yorulduğumu sanmıyorum.  
b- Eskisinden daha çabuk yoruluyorum.  
c- Şu sıralarda neredeyse her şey beni yoruyor.  
d- Öyle yorgunum ki hiçbir şey yapamıyorum
- 18- a- İştahım eskisinden pek farklı değil.  
b- İştahım eskisi kadar iyi değil  
c- Şu sıralar iştahım epey kötü  
d- Artık hiç iştahım yok
- 19- a- Son zamanlarda pek fazla kilo kaybettiğimi sanmıyorum  
b- Son zamanlarda istemediğim halde üç kilodan fazla kaybettim.  
c- Son zamanlarda istemediğim halde beş kilodan fazla kaybettim  
d- Son zamanlarda istemediğim halde yedi kilodan fazla kaybettim  
Daha az yemek yemeye çalışarak kilo kaybetmeye çalışıyorum. Evet ( )  
Hayır ( )
- 20- a- Sağlığım beni pek endişelendirmiyor.  
b- Son zamanlarda ağrı, sızı, mide bozukluğu, kabızlık gibi sorunlarım var.  
c- Ağrı sızı gibi sıkıntılarım beni epey endişelendirdiği için başka şeyler düşünmek zor geliyor.  
d- Bu tür sıkıntılar beni öyle endişelendiriyor ki, artık başka hiçbir şey düşünemiyorum.
- 21- a- Son zamanlarda cinsel yaşamımda dikkatimi çeken bir şey yok.  
b- Eskisine oranla cinsel konularla daha az ilgileniyorum.  
c- Şu sıralarda cinsellikle ilgili konularla daha az ilgileniyorum.  
d- Artık cinsellikle hiçbir ilgim kalmadı.

## APPENDIX F

### TRAIT ANXIETY SCALE (SÜREKLİ KAYGI ÖLÇEĞİ)

Aşağıda kişilerin kendine ait duygularını anlatmada kullandıkları bir takım ifadeler verilmiştir. Her ifadeyi dikkatlice okuyun, daha sonra da genel olarak nasıl hissettiğinizi, ifadelerin sağ tarafındaki rakamlardan uygun olanını işaretlemek suretiyle belirtin. Doğru yada yanlış cevap yoktur. Herhangi bir ifadenin üzerinde fazla zaman sarf etmeksizin, genel olarak nasıl hissettiğinizi gösteren cevabı işaretleyin.

	Hemen hiç bir zaman	Çok Bazen zaman zaman	Hemen her zaman	
1. Genellikle keyfim yerindedir.	1	2	3	4
2.Genellikle çabuk yorulurum	1	2	3	4
3.Genellikle kolay ağlarım	1	2	3	4
4. Başkaları kadar mutlu olmak isterdim.	1	2	3	4
5.Çabuk karar veremediğim için fırsatları kaçıırım.	1	2	3	4
6.Kendimi dinlenmiş hissedirim	1	2	3	4
7.Genellikle sakin, kendine hakim ve soğukkanlıyım.	1	2	3	4
8.Güçlüklerin yenemeyeceğim kadar biriktiğini hissedirim	1	2	3	4
9.Önemsiz şeyler hakkında endişelenirim.	1	2	3	4
10.Genellikle mutluyum.	1	2	3	4
11.Her şeyi ciddiye alır ve etkilenirim.	1	2	3	4
12.Genellikle kendime güvenim yoktur.	1	2	3	4
13.Genellikle kendimi emniyette hissedirim.	1	2	3	4
14.Sıkıntılı ve güç durumlarla karşılaşmaktan kaçınırım.	1	2	3	4
15. Genellikle kendimi hüzünlü hissedirim.	1	2	3	4
16. Genellikle hayatımdan memnunum.	1	2	3	4
17. Olur olmaz düşünceler beni rahatsız eder.	1	2	3	4
18. Hayal kırıklıklarımı öylesine ciddiye alırım ki hiç unutmam.	1	2	3	4
19. Aklı başında ve kararlı bir insanım.	1	2	3	4
20. Son zamanlarda kafama takılan konular beni tedirgin eder.	1	2	3	4

