# INDIVIDUAL DIFFERENCES IN OBSESSIVE-COMPULSIVE BEHAVIOUR: THE ROLE OF THE EYSENCKIAN DIMENSIONS AND RESPONSIBILITY.

MARIAN B. SCARRABELOTTI

A thesis submitted in partial fulfilment of the requirements for the degree of Master of Clinical Psychology, Department of Psychology of The Australian National University.

January 1992.

## Declaration.

I declare that this thesis reports my original work, that no part of it has been previously accepted or presented for the award of a degree or diploma by any university. To the best of my knowledge no material previously published or written by another person is included except where due acknowledgement is given.

Marian B. Scarrabelotti.

## Acknowledgements.

I am indebted to my husband, to Dr Julie Duck, and Associate Professor Mark Dickerson for their encouragement, advice, and practical assistance; Mr Rocco Crino, for providing access to patients at the St. Vincent's Anxiety Disorders Unit, Darlinghurst, Sydney; to the said patients; and to first year Psychology students at the A.N.U. without whom this research would not have been possible.

# Abstract.

In the 1950s and 1960s studies of Obsessive-Compulsive Disorder predominantly focused on the relation between personality dimensions and dysthymic disorders in general. Using criterion measures biased in favour of compulsions, OCD studies typically implicated introversion and neuroticism. More recently research has concentrated on descriptive features of obsessions identified in "normal" and "clinical" populations. These studies have claimed that normals and clinicals differ in degree, not in kind, in their experience of obsessions: the two groups have similarities in the form and content of obsessions but differences in the degree of controllability and discomfort experienced. Similarly studies of compulsions have found washing and checking factors in both groups with group differences in the severity of discomfort experienced. The present study reinvestigates the contribution of individual difference measures of personality to obsessions and compulsions through a normal and a small clinical sample. However this investigation uses the recently developed Padua Inventory (Sanavio, 1988) because it is the only self-report measure of both obsessions and compulsions which is also suitable for normal and clinical samples. In addition the Padua Inventory incorporates the major findings of recent decades as it measures degree of disturbance caused by obsessions and compulsions. Further the present study investigates not only the three Eysenckian dimensions but also "responsibility" which Salkovskis (1985, 1989a, 1989b) regarded as a key cognitive appraisal variable in obsessions and compulsions. Accordingly this study provides a basis for the future identification of additional traits which further improve the power of the predictive equation for obsessive-compulsive behaviour. Such refinements of the most likely personality features associated with OCD form an essential basis for the development of effective treatment interventions.

The main study investigated a large normal sample. After controlling for the effects of age, sex, and depression, neuroticism was the only important Eysenckian personality dimension using the Padua Inventory as the criterion measure; extraversion and psychoticism were not important. However Salkovskis' (1985, 1989a, 1989b) variable "responsibility", arguably a trait of psychoticism, added a further 11% to the 10% of variance explained by the Eysenckian variables.

A pilot study investigated the small clinical sample of 20. The same pattern of correlations persisted in this sample. Thus some support was also gained for the assumption in most current research in the area that obsessive-compulsive behaviour can legitimately be studied using normal samples which are readily available and numerous.

Finally, the implications of the findings that particular personality dimensions and traits may predispose to OCD, and that additional traits may further improve on the predictive power of the Eysenckian dimensions, are discussed. Furthermore the implications of the present findings for the use of normals to study clinical obsessive-compulsive behaviour, for the future use of the Padua Inventory as a measure of obsessions and compulsions, and for cognitive-behavioural treatments of OCD are also discussed.

# Table of Contents.

# List of Tables.

At some time most people experience intrusive, uninvited, and repetitive thoughts and perform unnecessary, repetitive behaviours. Typical examples might include uninvited sexual thoughts or senseless repeated checks to ensure an appliance is switched off. However for a small two percent of persons such thoughts become obsessive; that is, particularly frequent and uncontrollable (Parkinson & Rachman, 1981) and are accompanied by compulsive behaviours compelling time-consuming rituals which the sufferer "wants not to want" (Rapoport, 1990, p.198). Why is it that this small group has such a different experience to most? The main aim of the present research is to address this question by exploring particular individual differences, namely personality differences, and their relation to the severity of obsessive thoughts and compulsive behaviours.

Since 1978, when first proposed by Rachman and de Silva, the assumption of a "normal" analogue to "clinical" obsessions and compulsions has guided most of the psychological research in this area. Despite this, surprisingly little of the recent research has focused on the ability of normal personality theories of individual difference to explain or predict individual differences in the experience of obsessive thoughts and compulsive behaviours. An identification of the dimensional mix more likely to predispose individuals to this crippling psychological disorder would be of considerable clinical and theoretical importance, particularly in the refinement of recent cognitive behavioural treatment methods.

## HISTORICAL PERSPECTIVE ON OCD.

Obsessive Compulsive Disorder is not in any sense a new problem. In fact a syndrome identical to what we now call OCD has been recognized for nearly 300 years (Hunter & McAlpine, 1963). However both comprehensive theoretical explanations and successful treatments are comparatively recent.

Early descriptions focused on different aspects of this syndrome. English explanations stressed religious thought content and a relationship to melancholy (Johnson, 1759; Maudsley, 1895; Taylor, 1660). French phenomenologists emphasized the importance of anxiety, doubt (the inability to trust a perception) and loss of will (Esquirol, 1837; Janet, 1902).

In contrast the German view focused on the irrational nature of the thoughts. Westphal (1878), a German psychiatrist and neurologist, considered the central feature was not the anxiety or depressive elements, but the cognitive aspect. He

considered the basic pathology was the emergence of irrational thoughts and used the term "abortive insanity" to distinguish these thoughts, which were recognized as senseless, from more psychotic thoughts or true insanity. Current notions of Obsessive Compulsive Disorder include all these aspects and continue to be more descriptive than theoretical (Insel, 1990).

Recently the central descriptive features of OCD were clearly delineated by Crino (1990):

> Obsessive Compulsive Disorder (OCD) is characterized by persistent recurrent distressing thoughts, images, or ideas that invade conscious awareness against the individual's will. These are often of violence, contamination, harm to self or others, blasphemy, or sexual outrage. In the majority of cases they are accompanied by ego dystonic ritualistic behaviour that the individual feels compelled to perform (p.234).

Thus the thoughts are experienced as repetitive, distressing, not consciously evoked, and of circumscribed content; they are frequently accompanied by behaviour that is unnecessary but compelling.

Other recent OCD descriptions, including that of the Diagnostic and Statistical Manual-111 Revised Version (1987), specify additional reactions to the obsessive thoughts and rituals. These reactions include an appraisal, at least initially, that the thought or behaviour is senseless; as well as initial attempts to resist, suppress, or otherwise neutralize the unwanted thought or behaviour. However such descriptive additions form part of a number of different theories that attempt to explain how OCD develops and persists. Some of these theoretical accounts of OCD will be analysed later.

**INCIDENCE OF OCD.**

Early estimates of the incidence of Obsessive Compulsive Disorder in the general population were as low as 0.05%. More recent estimates however suggest a figure of 2%, but this is still comparatively low. Flament et al. (1988) estimated the point prevalence of OCD in the general adult American population to be between 1% and 2%, or between one and two million persons. Similarly Karno, Golding, Sorenson, and Burnam (1988) found that 1.3% of Americans experienced clinically significant symptoms in the month prior to interview. They also found that OCD was twice as common as schizophrenia or panic disorder in the general population.

However unwanted intrusive thoughts or obsessions are also frequently associated with a range of other psychological conditions. These include depression

(Rachman & Hodgson, 1980), sleep disorders (Borkovek, 1979), schizophrenia, and anorexia nervosa (Salkovskis & Kirk, 1989). Also OCD occurs with several types of neurological disorders: Sydenham's chorea, epilepsy, postencephalitic Parkinson's disease, motor tics, and toxic lesions of the basal ganglia (Rapoport, 1989). Further, obsessive-compulsives are usually embarrassed and secretive about their problem; under-reporting is a common feature (Beech & Vaughan, 1978).

Thus the prevalence of OCD may greatly exceed 2% of the population, given its frequent co-existence with other conditions and the likelihood of under-reporting.

## CHARACTERISTICS OF OBSESSIONS AND COMPULSIONS, DERIVED FROM RECENT FACTOR STUDIES OF NORMAL AND CLINICAL POPULATIONS.

There has been an immense resurgence of interest in isolating the identifying descriptive features of OCD. This is not surprising given the now commonly accepted view that obsessions and compulsions are universal; they can be studied in normal as well as in clinical populations. Thus subjects are now more accessible as well as more numerous. In fact over the past thirty years descriptive factor studies, rather than prospective predictive studies, have dominated the psychological literature. This recent return to an early phase in the theoretical development of obsessions and compulsions has prompted the development of new measures and new attempts at theory construction by, for example, Rachman and Hodgson (1980), Salkovskis (1985), and Insel (1990). However the emphasis has been predominantly at the descriptive and measurement level rather than at the level of theory.

### Normal and Clinical Obsessions.

Thus, as already noted, the first researchers to study normal obsessional phenomena as the basis for a better understanding of clinical OCD were Rachman and de Silva (1978). They developed a questionnaire (untitled) for use by normal as well as clinical populations which "inquired about the presence or otherwise of intrusive unacceptable thoughts and impulses, their frequency, and about whether or not these could be easily dismissed" (p.233). From their research they concluded that there was a normal analogue of clinical obsessional phenomena. This was based on two major findings: a 79.84% incidence of intrusive cognitions in a normal population, and similarities and differences between normal and clinical obsessions. The similarities were

in content, form, and in expressed relation to mood. Content analysis identified that "clinical obsessions are not as readily discernible ... even to experienced clinicians ... as might be expected" (p.239), that thoughts are more common than impulses, and depression and anxiety are often associated with thoughts and impulses. However the two groups differed in that "abnormal, clinical obsessions lasted longer, were more discomforting, more frequent, and more intense. They had lower acceptability, were more alien, provoked more urges to neutralize and were more likely to be of known onset. They were more often and more strongly resisted, and harder to dismiss.... They were similar in form and content, but not in frequency, subjectively felt intensity, nor in their consequences" (p.244). Hence quantitative not qualitative differences were identified. However it is of note that these conclusions were based on a sample of 124 normals and only eight obsessives.

**Normal Obsessions.**

In another study Parkinson and Rachman (1981) had 60 non-psychiatric volunteers rate their intrusive cognitions along twelve dimensions using ten-point rating scales. (The rationale for choosing these particular characteristics was not given, nor was the questionnaire titled). Performing a factor analysis on these data, they extracted five factors which described the structure of unwanted intrusive thoughts. The first dimension was General Unpleasantness which had high loadings on discomfort, tormenting qualities, stressfulness, unpleasantness, anxiety, and resistance. The second factor was Controllability, the third Number of Intrusions, the fourth Frequency, and the fifth Unacceptability. Moreover they found their normals reported "lower levels of distress, unpleasantness, and acceptability than those of psychiatric clients complaining of obsessions" (p.107). Like Rachman and de Silva (1978) they found similar form and content for all obsessions: "The content of the most commonly reported intrusive thoughts was the subject of death, with the second most common theme to do with harm coming to people, especially one's family and friends" (p.103).

Subsequently Salkovskis and Harrison (1984) administered Rachman and de Silva's (1978) questionnaire (with slight alterations) to 178 polytechnic and psychiatric nursing students. The data from the two normal populations were then pooled as there were no differences on any variables apart from sex. They found that controllability or ease of dismissal was a crucial variable with regard to intrusions, with the strongest correlations found being associated with it, for example, discomfort, frequency, type of intrusion. Like Rachman and de Silva (1978) they reported a high incidence of obsessions 88.2% among their normals, low frequency (66% had less than 10 intrusions per week),

and easy dismissal (control). Thus most had obsessions, but their occurrence was infrequent and they were easily dismissed.

In 1985, Clark and de Silva developed the Distressing Thoughts Questionnaire (DTQ) to investigate the structure of anxious and depressive thoughts in a sample of 303 college students. Six anxious and six depressive thought statements were rated on scales assessing such cognitive characteristics as frequency, sadness, worry, dismissal, and disapproval. Controllability and emotional intensity (which the authors defined as degree of self-reported sadness and worry) were the most salient features defining both types of cognitions. In 1988 Legg England and Dickerson reported that in 115 students uncontrollability was related to the arousing properties of thoughts and to attentional involvement with them, but was weakly related to the unpleasantness of their content. One possible prediction from this research is that content is important to the extent that it contributes to the arousing properties of the thought (or the experience of them).

Thus since Rachman and De Silva's (1978) study there has been considerable interest in examining the structure of obsessional thoughts in normal and clinical samples using the statistical procedure of factor analysis. In these studies normal populations reported obsessions which were similar in form and content to those of clinical populations. However the clinical populations were less able to control and more distressed by these obsessions than the normals, and their experience of the obsessions was quantitatively different. In the majority of these studies, self-reported controllability and distress seem to be the central descriptive features that discriminate between normal and clinical obsessions.

**Normal and Clinical Compulsive Behaviours.**

Also several studies have measured compulsive behaviours (rituals) in normal and clinical populations. These have predominantly employed the Maudsley Obsessional-Compulsive Inventory (MOCI) (Hodgson & Rachman, 1977), and the Compulsive Activity Checklist (CAC) (Freund, Steketee & Foa, 1987). The MOCI purports to measure the severity of obsessive-compulsive behaviours (Sternberger & Burns, 1990) while the CAC the degree to which compulsive behaviours interfere with daily activities. Research indicates that both measures have good psychometric properties with clinical and nonclinical samples (Foa, Steketee, Grayson, Turner & Latimer, 1984; Sanavio & Vidotto, 1985).

Studies on the CAC and MOCI have identified that contamination (Washing) and Checking factors were the only factors interpretable. Moreover they were common to the compulsive behaviours of normal and clinical populations, with the two groups reporting differences in severity of compulsions (Cottraux, Bouvard, Defayolle & Messy, 1988). Nonetheless, though the MOCL and the CAC are the two measures most frequently reported in the OCD literature, they do not measure the obsessive components of obsessive-compulsive behaviour (Sternberger & Burns, 1990). This poses a serious limitation on their usefulness.

In contrast to these two measures, the principal components analysis of the Padua Inventory (Sanavio, 1988) revealed two obsessive as well as two compulsive factors. According to Sternberger and Burns (1990) "The Padua Inventory appears to hold promise as an instrument which will allow an expanded study of obsessions and compulsions in clinical and nonclinical samples, particularly since it is the only self-report measure which includes obsessional dimensions as distinct from compulsive dimensions" (p.341).

**Measures of Obsessions and Compulsions.**

Few recent studies have reported the development of new measures of both obsessions and compulsions for normal and clinical populations. Two such scales are the clinician-rated Yale-Brown Obsessive Compulsive Scale (Goodman et al., 1989) and the self-report Padua Inventory (Sanavio, 1988). The Yale-Brown Obsessive Compulsive Scale (Goodman et al., 1989) is the most recently developed clinician-rated scale for measurement of obsessive-compulsive behaviour. It was designed specifically to provide a measure of the severity of symptoms of OCD (as defined by DSM-111-R, 1987) that was not influenced by the type, number, or content of the symptoms. This ten-item scale measures five symptoms: time spent in, interference from, distress caused by, resistance to, and control over obsessions and compulsions. Each item is rated from 0 (no symptoms) to 4 (extreme symptoms). The content validity is established by its strong reflection of DSM-111(R) diagnostic criteria.

The most recently developed self-report scale of obsessions and compulsions for normal and clinical samples is that of Sanavio (1988). Sternberger and Burns (1990) and Crino (R. D. Crino, personal communication, April 25, 1991) have recently used the Padua Inventory (Sanavio, 1988) with normal populations. Hafner and Miller (1990) reported using the P.I. in a study of 81 clinical OCDs in South Australia. Unfortunately however the allocation of subjects to the clinical OCD group was only

made on the basis of self-report questionnaire data prompting the authors to acknowledge their results needed to be treated with caution.

The Padua Inventory is a factorially derived self-report measure which requires the subject to read a list of 60 thoughts and behaviours and rate the degree of disturbance or difficulty these cause the individual. Accordingly the Padua Inventory incorporates the central findings of recent studies on normal and clinical OCD samples that distress and controllability are key discriminators between these populations.

The only reported replication of the Padua Inventory factors for a normal sample has been by Sternberger and Burns (1990). They administered the 60 PI items to 678 American college students and derived a factor structure of obsessions and compulsions which was very similar to the one extracted by Sanavio (1988) for his Italian sample. It comprised two obsessive as well as two compulsive factors respectively:

(i) Impaired Control over Mental Activities;
(ii) Urges and Worries of Losing Control over Motor Behaviours;
(iii) Contamination Behaviours; and
(iv) Checking Behaviours.

Hence, as in the studies of obsessions and the studies of compulsions, the above factor studies found similar form and content for normal and clinical obsessions and compulsive behaviours, with degree of disturbance or distress evoked as the essential discriminator between the two groups. Accordingly these studies suggest the possibility that OCD is not a discrete disease that one either has or does not have. Rather obsessive thoughts and behaviours seem to be common, but the experience of them varies for different individuals. Just why this is the case is the major question addressed in this study. In order to explore it one tool employed has been the P.I. It was chosen to be the dependent variable measure because it has sound psychometric properties, the ability to measure obsessive and compulsive behaviours in normal and clinical populations, and because few replication studies have been reported in Australia.

## PREDISPOSING AND COVARYING FACTORS IN OBSESSIONS AND COMPULSIONS.

In the OCD literature a range of characteristics have been discussed as potential causative factors. These include demographic and socio-cultural variables, personality variables, genetic and biological factors, and cognitive-behavioural factors. Despite these claims these studies mainly establish co-variance, or suggest

predispositional status. Nonetheless they provide an important basis on which to develop causative theoretical explanations.

## Demographic and Sociocultural Variables.

Demographic and sociocultural variables which have sometimes been considered important in relation to obsessive-compulsive behaviour include: sex, age, social class, intelligence, and culture.

### Sex

Sex has typically been regarded as insignificant in the incidence and experience of OCD. In fact, the majority of epidemiological studies report no sex differences in the incidence of OCD. The exception to this is the higher incidence of washing and cleaning rituals in women (Marks, 1987). This even frequency distribution amongst the sexes is atypical for the DSM-111(R) defined anxiety disorders. Apart from social phobia and obsessive-compulsive disorder, most of the anxiety disorders are more frequent in women than in men (Cameron & Hill, 1989). However Sanavio (1988) has recently found that females are more likely to report increased severity of obsessive-compulsive behaviour when measured by the Padua Inventory.

### Age

Like sex, age has typically been regarded as insignificant in OCD incidence and severity. OCD usually starts in adolescence and young adult life, as do most anxiety disorders and minor depression (Marks, 1987). However studies rarely differentiate between adult age groups in reporting severity of obsessive-compulsive behaviour. A recent exception to this was Sanavio's (1988) study of 967 normal Italians. He found a higher incidence of obsessional behaviour in his 16-20 year old and 46-70 age groups for males and females than for the middle 21-45 age group. This suggests younger and older normal Italian adults experience more severe obsessions and compulsions than the middle-aged adult group.

Thus in general, age and sex appear to be insignificant factors in the reported incidence of OCD. However they do seem to be important in the self-report of severity of obsessions and compulsions as measured by the Padua Inventory (Sanavio, 1988). Perhaps this discrepancy is in part due to cultural differences but also because other studies did not use samples of the extensive size and age range employed by Sanavio (1988).

**Social Class, Intelligence, and Culture.**

Many studies of OCD suggest it is not confined to one social class or intellectual group. Nonetheless several do suggest the majority of OCD sufferers are of above-average social class and intelligence (Black, 1974; Rachman & Hodgson, 1980). Further OCD is not confined to Western countries, but occurs widely in China, India, and Egypt as well (Marks, 1987).

Accordingly there are, in fact, mixed findings with respect to the importance of age, sex, social class, intelligence, and culture in OCD incidence and severity. This is in part a reflection of the differing criterion measures used across studies. Nonetheless the variables sex, age, social class, intelligence, and culture are typically regarded as insignificant.

**Personality Variables.**

Personality variables considered important in obsessive-compulsive behaviour include Obsessive Compulsive Personality and depression. The personality variables of interest in the present research are discussed on pages 15-26.

**Obsessive Compulsive Personality Disorder and OCD.**

The relationship between Obsessive Compulsive Personality Disorder (a personality disorder) and Obsessive Compulsive Disorder (an anxiety disorder) has been addressed by several studies. The obsessional personality, constitutional disposition, or temperament is typically identified by the following personality traits: "orderliness, cleanliness, fastidiousness, meticulousness, parsimony, pedantry, persistence, endurance, and unemotionality" (Marks, 1987, p.438). In addition the obsessional personality has a distinct cognitive style showing "intellectual rigidity and focussing on details, being deliberate in thought and action, and highly moralistic about self and others" (Emmelkamp, 1982, p.188; Pollack, 1979).

In one such study Kringlen (1965) compared the premorbid personality traits of obsessional patients with those of nonobsessional, neurotic, control patients. Seventy-two percent of the obsessional patients and 53% of the control patients were rated to have premorbid obsessional traits. Thus significantly more obsessional than control patients had premorbid obsessional personality traits, but such traits were also frequent in neurotic controls.

Subsequently Black (1974) in his literature review on the relationship between OCD and obsessional personality traits found on average that 71% of OCD patients had marked or moderate premorbid obsessive traits. However a substantial minority of those with OCD did not have an obsessive personality premorbidly (16% to 36% in five series reviewed by Black, 1974).

Finally Pollack's (1987) more recent review of the literature concluded that OCD appears to be more frequently associated with premorbid obsessive compulsive personality patterns than with other personality patterns. However Kringlen's (1965) study and those reviewed by Black (1974) and Pollack (1987) were retrospective and did not include adequate controls.

Rapoport (1990) claims that only 20% of the hundreds of OCD clients she has seen since 1974 fit the description of the obsessional personality. Her clinical experience is that "Many [OCDs] with perfectionist strivings or rituals are in fact highly selective in what to be perfect about, or where to clean up" (p.92). Unlike those with obsessive personality disorder, the OCDs display obsessional behaviour that is not generalized. Such reports throw doubt on the previous findings from retrospective studies and suggest that an obsessional personality is not necessarily important in the experience of OCD. In contrast to these studies, the present research investigates the role of H. J. Eysenck, M. W. Eysenck, and Barretts' (1985) normal personality dimensions in obsessive-compulsive behaviour.

**Depression and Obsessions and Compulsions.**

As already noted, early English explanations of OCD stressed religious thought content and a relationship to melancholy (Johnson, 1759; Maudsley, 1895; Taylor, 1660). Since then numerous studies of both normal and clinical populations have reported a relationship, though not a necessary one, between depression and obsessive-compulsive behaviour. Typically depression has been found to either accompany or exacerbate obsessions and compulsions. But as with many studies of OCD and obsessional personality traits most of this evidence comes from retrospective clinical analyses. This precludes firm conclusions about the functional relationship between the two phenomena (Sutherland, Newman & Rachman, 1982).

This evidence comes from a variety of types of studies. These include studies of clinical and normal obsessions and compulsions, psychobiological studies of clinical OCD, and treatment outcome studies of OCD.

*Studies of Depression and Clinical OCD.*

In one such retrospective study of 398 depressed clients Gittleson (1966) found 124 or 31.2% had obsessional thoughts either preceding or concurrent with the depression. Vaughan (1976) reported similar findings.

Videbech (1975) found that for depressed clients who also had obsessions the percentage of those with one or more obsessions rose from 23% to 66% during a depressive episode. From this study it appears for depressed clients episodes of depression increase obsessions. Curiously Gittleson (1966) found the opposite trend for a small subsample (13) in his study: obsessions decreased, and sometimes ceased with the onset of depression. From these studies of depressed patients it appears there is not a consistent pattern of relationships between depression and OCD.

By contrast Welner, Reich, Robins, Fishman, and van Doren (1976) investigated a sample of obsessional clients. They found that the frequency of the transition from obsessions to depression was three times more common than for its converse. Also the incidence of depressive symptoms increased during periods of heightened obsessional activity. In fact Rasmussen and Tsuang (1986) reported that amongst 44 DSM-111 (1980) diagnosed OCDs most had concomitant or lifetime histories of a major depressive disorder or another anxiety disorder. Thus these studies suggest that for OCD patients, depression is a frequent concomitant.

Taking these studies together, the firmest prediction that can be made is that obsessive-compulsive clients will be prone to develop depression and, less frequently, depressive clients will be prone to develop obsessions and compulsions (Rachman, 1978).

*Psychobiological Studies of Depression and Clinical OCD.*

Psychobiological studies also suggest that there are both common and unique features of OCD and depression. In one such study, Zohar and Insel (1987) found that on certain biological measures OCD clients resembled those with a major depressive disorder. Thus similar results were found on the Dexamethasone Suppression Test, and for rapid eye movement latency on the sleep electroencephalogram. However differences were evident on other biological measures such as REM density, platelet serotonin uptake, and H-imipramine binding. Also OCD clients may show, unlike depressives, an elevated level of the serotonin metabolite (5-hydroxy-indoleacetic acid) in the cerebrospinal fluid.

These results could be interpreted as evidence for at least some psychobiological overlap between OCD and depression. There are also differences. However, given that the etiological significance of each of these "markers" remains highly speculative, such conclusions can only be tentative. Other approaches such as the following comparison of responses to the same biological treatments are more conclusive.

*Outcomes for Depression and OCD using Common Biological Treatments.*

Clomipramine, a tricyclic antidepressant, has been found to be effective in treating OCD. However it was in the course of treating clients with a depressive illness that its additional effect on obsessional symptoms was first noted (Cordoba & Lopez-Ibor, cited in Ananth, 1985). Subsequently several studies have shown that, even in nondepressed clients, Clomipramine significantly reduces OCD symptoms (DeVeaugh-Geiss, Landau & Katz, 1989; Jenike, 1990). To date Clomipramine has the most consistent and significant specific effect on OCD behaviour.

However Clomipramine is ineffective for at least one third of OCD clients (Rapoport, 1990). Furthermore clinical signs of OCD severity are not a sufficient basis for the prediction of effectiveness. Nonetheless it appears there may be a similar deficiency of the neurotransmitter serotonin in both depressives and some OCDs. One possible explanation of how clomipramine may redress this deficiency in OCD is that it blocks serotonin reuptake in the brain (Crino, 1990).

Thus there is evidence that OCD and depression have some common biological markers and an apparent similar deficiency of the neurotransmitter serotonin. This suggests for some clients there may be a common biological component to OCD and depression.

*Studies of Depression and Normal Obsessions and Compulsions.*

Studies of normal obsessions and compulsions have generally found a significant but weaker relationship with depression than was found for the clinical groups. For example Sternberger and Burns (1990) reported for their normal American population a significant correlation of 0.55 between obsessions and compulsions and depression. The former were measured by Sanavio's (1988) Padua Inventory and depression by Derogatis' (1983) Symptom Checklist-90 Revised. Similarly Sanavio, Bertolotti, Michielin, Vidotto, and Zotti (1986) reported a significant relationship between depression and severity of obsessions and compulsions. In fact this relationship

increased with age for the normal Italian sample tested. They used the Maudsley Obsessional-Compulsive Questionnaire (MOCQ) (Hodgson & Rachman, 1977) and the Depression Questionnaire (Sanavio et al., 1986).

In 1986, Dent and Salkovskis reported a correlation of 0.49 between depression and obsessions and compulsions in their sample of medical, university, and non-students. Depression was measured by the Beck Depression Inventory (Beck, Ward, Mendelson, Mock & Erbaugh, 1961) and obsessions and compulsions by the MOCQ (Hodgson & Rachman, 1977). Similar findings were reported for normal populations by several researchers including Rachman and De Silva (1978), Teasdale (1983), and Edwards and Dickerson (1987).

Taken together these studies of clinical and normal obsessions and compulsions suggest obsessive-compulsive behaviour can exist without depression, but that there is a close relationship between them. Of even greater interest the clinical studies of drug treatments point to the possibility of a common underlying biological imbalance in both depression and some OCDs. Thus it appears depression plays a most important though as yet unclear role in obsessive-compulsive behaviour and accordingly should be included in any such investigation.

**Genetic versus Environmental Factors.**

OCD is more prevalent among the relatives of OCD sufferers than among the general population. This suggests a possible genetic cause (Rapoport, 1989). Also several instances of monozygotic twins who were concordant for obsessionality have been reported in the literature (Parker, 1964).

However as Emmelkamp (1982) notes the findings from both of these types of studies could just as strongly implicate environmental as genetic factors. Rapoport (1990) considers this unlikely. Her experience is that parents keep their (compulsive) habits secret from their children, just as they keep them secret from everyone else. This throws some doubt on the hypothesis of environmental influence. However a more convincing argument against a "modelling theory" of OCD is that it is rare to see a child and a parent with the same obsessions or compulsions. For example one of Dr Rapoport's (1990) clients "Sam" had mental rituals, while his son "Zac" was compelled to wash, and a "Dr S". checked while his son "Jeffery" did his "stringing" rituals.

Such examples are consistent with the presence of an underlying biological predisposition that is genetically transferable.

Rapoport (1990) claims OCD is a genetic disease connected with neurological illnesses, often of the basal ganglia. The basis of substantiation is her own clinical experience and the findings from three independent laboratory studies that the caudate nucleus (one portion of the basal ganglia), and portions of the frontal lobes, behave differently in clients with OCD. Therefore, given increased familial incidence and the findings from monozygotic twin and neuropathology studies, it seems that evidence for a biological and possibly genetic basis of OCD cannot be disregarded.

**Biological and Cognitive-behavioural Factors: Treatment Outcome Studies of OCD.**

OCD treatment studies of the past twenty years also suggest the importance of depression (biological) in many cases and of learned (excluding modelling) behaviour in most. Prior to the 1960s, however, the prognosis for obsessive compulsive disorder was poor. Recommended treatments were psychotherapy, long term hospitalization, and psychosurgery. Then over the past two decades two effective treatment methods were developed: behaviour therapy and pharmacotherapy with clomipramine. In 1966 Meyer first successfully treated OCD using the behaviour therapy techniques of exposure and response prevention. Since then a large number of controlled and uncontrolled studies have been conducted (Crino, 1990). These indicate that 75% of patients with obsessive compulsive rituals show significant gains using these behavioural techniques (reviewed by Foa, Steketee & Ozarow; 1985).

Salkovskis' (1985, 1989a, 1989b) cognitive-behavioural model of OCD proposes that these methods are effective because they disrupt the conditioned pairing of obsessional thoughts with anxiety. This is effected by extinguishing the anxiety-reducing ritualistic (thought or behaviour) response.

Also, as mentioned above, since the 1980s there have been a number of controlled clinical trials of the tricyclic antidepressant clomipramine, (Jenike, 1990; Rapoport, Elkins & Mikhelsen, 1980). In general these controlled trials have found that clomipramine is more effective than other tricyclic antidepressants, monoamine oxidase inhibitors, or placebo (DeVeaugh-Geiss et al., 1989). Indirectly these findings suggest a biological factor in OCD.

However few studies have adequately compared the effectiveness of behaviour therapy and (or) clomipramine. Nor have they established whether, for instance, the more serious the disorder the more essential is pharmacological treatment. What evidence there is is equivocal as some moderate and more severe cases of OCD are resistant to clomipramine treatment (Jenike, Armentano & Baer, 1987).

Nonetheless current findings suggest exposure and response prevention are usually successful, provided any pre or co-existing depression is treated first. However it has also been found that biological treatment with clomipramine is particularly successful in treating obsessions, as well as obsessions and depression. In contrast behaviour therapy is specifically effective in extinguishing compulsive behaviours. Thus, in the range of individual experiences of obsessions and compulsions, both biological and learning factors appear to play a role.

**Summary of Predisposing and Co-varying Factors.**

In summary, there is some evidence that genetic and biological factors and (or) the existence of depression may predispose individuals to the experience of obsessions and compulsions. Obsessive Compulsive Personality Disorder is only sometimes important, and typically, age, sex, social class, intelligence, and culture are not implicated.

## THEORETICAL EXPLANATIONS OF OCD

However of even greater potential importance are the existing theoretical formulations of OCD from which such factors emerged. Psychoanalytic, cognitive, learning, cortical arousal, and cognitive-behavioural theories have each made their own contribution to the understanding of OCD. This study attempts to incorporate the key aspects of the range of factors suggested by these theoretical positions into a refined Eysenckian (biological) cortical arousal theory of OCD. This refinement consists of the inclusion of a cognitive appraisal measure of "responsibility", one of the traits of psychoticism, into a predictive equation for obsessive-compulsive behaviour. Of particular relevance to the present study are the contributions of cognitive, learning, cortical arousal, and cognitive-behavioural theories to the understanding of obsessions and compulsions.

**Cognitive Theories.**

Cognitive theories have emphasized the high attentional involvement of uncontrollable obsessional thoughts whether they are pleasant or unpleasant (Legg England & Dickerson, 1988). Not surprisingly then it has been found that those with obsessions tend to be deficient in a variety of cognitive processing abilities such as decision making, allocating attention, classifying information, and judging probabilities (Fransella, 1974; Gordon, 1985; Mothersill & Neufeld, 1985; Persons & Foa, 1984). Furthermore, Legg England (1986) found that those with OCD will have impaired ability to perform problem-solving tasks because their attention will be focused on obsessions from which they have difficulty in disattending.

Such findings suggest an important descriptive refinement to what obsessional thoughts are and what responses they elicit. However cognitive theories in isolation cannot account for why it is that in some individuals excessive attention is directed to obsessional thoughts.

**Learning Theories.**

Classical conditioning learning theories describe the maintenance of OCD in terms of paired associations between the obsessions and anxiety or fear after a triggering traumatic event. Eysenck and Rachman (1965) proposed that all dysthymic disorders were due to classical conditioning of fear responses. However according to Emmelkamp (1982) there is little evidence to support this interpretation as identifiable triggering events occur in OCD as frequently as not. Also some obsessions appear resistant to extinction by behaviour therapy techniques based on learning theory alone.

By contrast operant conditioning theories emphasize the reinforcing role of anxiety reduction through the compulsive behavioural response to the anxiety elicited (Mather, 1970). Predictions from learning theories have suggested that if the anxiety-reducing response is prevented, and the client learns to pair relaxation with the stimulus thought, the compulsive behaviour response will be extinguished. However as for cognitive theory operant learning approaches are insufficient in themselves to explain individual differences in responses to obsessions. Some habituate to obsessions immediately, whereas others respond with anxiety and are slow to get used to them. The intriguing question is why?

## Cortical Arousal Theories.

The cortical arousal theories of individual difference as outlined by H. J. Eysenck (1957, 1967, 1981, 1987) and Gray (1970, 1981) appear to best account for individual variation in the experience of obsessions and compulsions. These theories predict that the particular individual combination of three biologically based personality dimensions will, in interaction with the environment, enable predictions about how the individual acquires and extinguishes behaviour. However in their explanation of OCD, H. J. Eysenck and M. W. Eysenck (1985) have focused on the role of the extraversion and neuroticism dimensions and given little attention to the potential role of psychoticism. On the basis of Salkovskis' (1985, 1989a, 1989b) findings the present study also explores the additional contribution to OCD of the psychoticism dimension through one of its traits, responsibility.

Thus H. J. Eysenck and M. W. Eysenck (1985) argue that those in a state of high cortical arousal (as measured by a high introversion score) who have strong reactions to stimuli (as measured by a high neuroticism score), will be more likely to condition to obsessions and compulsions and to be resistant to their extinction (or slow to habituate). That is, they will tend to give intrusive thoughts excessive attention and feel compelled to continue to do so. Hence, unlike the majority of individuals, they will be distressed by their obsessions and compulsions. Perhaps this is partly because they experience them as uncontrollable.

### What is the Cortical Arousal Explanation of Individual Differences?

An arousal theory of the biological basis of individual differences was in fact first proposed by the Austrian Psychiatrist Otto Gross (1902). He put forward an arousal view of the causal factors in extraverted and introverted behaviours, personality concepts traceable to the four temperaments theory of the ancient Greek Physician, Galen.

Then 44 years ago, Eysenck (1947) proposed a three-dimensional descriptive model of personality including introversion-extraversion (E), neuroticism (N), and psychoticism (P). His model was an hierarchical one that conceptualized each of three broad dimensions or types subdivided at a lower level into narrower and more specific traits. For example, the neuroticism dimension or type was defined by the interrelationships of the traits anxious, depressed, guilt feelings, low self-esteem, tense, irrational, shy, moody, and emotional.

Subsequently he developed a psychobiological arousal model to provide a causative explanation of the three dimensions (Eysenck, 1957, 1967, 1981, 1987). Eysenck (1957) initially described the psychobiology of extraversion and introversion in terms of the constructs "excitation" and "inhibition" (as they were employed by Pavlov (1927) and Hull (1943)). These constructs were conceived as hypothetical neural processes upon which the acquisition and extinction of behaviour depended. Eysenck proposed introverts were characterized by higher levels of cortical excitability and lower levels of cortical inhibition than extraverts, predicting introverts would display enhanced sensitivity and efficiency in the process of sensory stimulation and in conditioning.

Based on this theory he developed the Eysenck Personality Inventory or EPI (1959), a self report questionnaire measure of personality. Eysenck employed the method of factor analysis to order individual test items into traits, and the association of traits into types.

In 1967, drawing on developments in physiological psychology, he extended his 1957 causal explanation to a two level arousal system. In this proposal, cortical arousal (high for introverts and low for extraverts) was responsible for introversion-extraversion differences. However differences in the dimension neuroticism-stability were due to limbic arousal or activation which was high for neurotics, low for stables (Eysenck, 1987, p.1).

According to Eysenck these levels of cortical arousal were "produced by differential thresholds and reactions to the reticular activating system and its reciprocal relations with the cortex" (Eysenck, 1987, p.1). Limbic activation was related to the activities of the sympathetic (which produces physical manifestations of emotions, e.g., sweating) and the parasympathetic system (which returns these physical manifestations back to normal) (Eysenck, 1987). The physiological structure alleged to underlie the neuroticism dimension is the visceral brain or limbic system which comprises the amygdala, hippocampus, septum, cingulum, and hypothalamus. These physiological structures relating to neuroticism are mainly concerned with emotion.

The two subsequent revisions to the EPI (1959) - the Eysenck Personality Questionnaire or EPQ (Eysenck & Eysenck, 1975) and the EPQ-R (Eysenck, Eysenck & Barrett, 1987) - have been guided by the above biological conceptualizations and their adequate empirical testing. These revisions have also produced psychometric and conceptual refinements.

A particularly important aspect of Eysenck's theory was his prediction that, because the three dimensions were continuous, any personality whether normal or abnormal could be diagramatically represented in three dimensional space.

Such predictions prompted a burst of research activity in the 1950s and 1960s, in which relationships between personality dimensions and broad "psychiatric" classifications were explored. However since that time there has been little interest in the literature in exploring Eysenck's biologically based personality dimensions and their relation to individual variation in, for instance, the experience of obsessions and compulsions. This was largely because of the work of writers such as Mischel (1969), Shweder (1975), and D'Andrade (1965) who tried to substitute trait psychology with "situationalism". During the 1970s their work was regarded as affording a serious challenge to the viability of conceptualizations of relatively stable personality dimensions.

Since then there has been a revival of interest in factor models of stable personality dimensions. Some researchers, for example, John (1989), McCrae (1989), and Zuckerman, Kuhlman, and Camac (1988) have proposed a five factor model. Yet recent extensive research has demonstrated that Eysenck's three dimensions are the central underlying descriptive factors in all personalities, as measured by a variety of questionnaires (Digman, 1990; Eysenck & Eysenck 1985; McKenzie 1988).

This dimensional feature of Eysenck's scale lends itself well to the testing of recent conceptualizations of obsessions and compulsions. Such conceptualizations propose that the major difference in the experience of obsessions and compulsions by clinicals and normals is quantitative: one of degree of disturbance or discomfort evoked. What then is the empirical evidence for a cortical arousal theory of Eysenck's three personality dimensions?

**Empirical Evidence Supporting a Cortical Arousal Theory of Introversion-Extraversion.**

The simple notion that introverts have a chronically higher level of cortical arousal than extraverts has proven extraordinarily successful in accounting for an enormous variety of findings. Eysenck & Eysenck (1985) reported that a huge volume of research has successfully identified many significant behavioural differences between introverts and extraverts in the performance of the following tasks:

> classical conditioning, operant conditioning, sensory thresholds, pain tolerance, vigilance, sensory deprivation, time estimation, perceptual defense, critical flicker fusion, visual constancies, sleep-wakefulness patterns, verbal learning, figural after effects, visual masking, rest pauses in tapping, speech patterns, expressive behaviour, and reminiscence (p.237).

Of particular relevance to the questions being explored in this research is the finding that introverts generally condition better than extraverts and also habituate (get used) to stimuli more slowly. Eysenck and Eysenck (1985) claimed it was likely that part of the slowness to habituate shown by introverts reflected their high level of arousal. However he added "We know roughly what is happening, but not why it is happening" (p.223).

By contrast few researchers have shown research interest in psychobiological evidence linking neuroticism, arousal, and performance. Gray (1981) has been one of the exceptions and his work in this area which pertains to OCD in particular is discussed below.

Finally the psychoticism dimension is less well developed than introversion and neuroticism at both the descriptive and the causal theoretical level. According to Eysenck "the evidence does not suggest that arousal can explain the major facts known about P" (Eysenck & Eysenck, 1976, p.ix). Rather "genetic factors are responsible for 81 percent of all the reliably measured differences in P between subjects" (p.x). However psychoticism provides a point of integration for Salkovskis' (1985, 1989a, 1989b) recent cognitive-behavioural research.

Thus for introversion the evidence is consistent with a biological arousal explanation. However, what evidence is there that a cortical arousal theory is relevant to the understanding of OCD?

**Cortical Arousal Theory and OCD.**

Some biological arousal (e.g., Rachman & Hodgson, 1980) and cognitive (e.g., Legg England & Dickerson, 1988) theories have proposed that the uncontrollability of obsessional thoughts is due to their arousing nature. Beech and Perigault (1974) advanced on this notion by highlighting characteristics not only of the thoughts, but of the individual experiencing them. Similarly to Eysenck and Gray, they considered that it was the combination of excessive arousal in the individual as well as the arousing nature of

the thoughts that was crucial. This led to learned associations between obsessions and anxiety which were resistant to extinction in OCD.

In fact as early as 1957 Eysenck predicted that neurotic introverts were the people most likely to suffer from dysthymia, a term which includes not only obsessive-compulsive behaviour, but anxiety states, phobias, and neurotic depression. He was thereby ambitiously proposing a link between genetically determined individual differences in arousal and psychological abnormality.

Subsequently Eysenck and Rachman (1965) attempted an explanation; they regarded all dysthymic neuroses as disorders of over-socialization. They hypothesized that in the introverted neurotic the establishment of the conscience (treated by Eysenck (1964) as a cluster of classically conditioned fear reactions) had proceeded so effectively that the individual concerned was disabled in adulthood by a variety of manifestations of his (or her) conditioned fears (in the form of obsessions and compulsions, phobias, anxiety states, reactive depression, or other dysthymic symptoms).

Gray (1970), arguing on the basis of cortical arousal theory, agreed with Eysenck (1957) that dysthymics would tend to be introverted neurotics. However he disagreed with Eysenck's explanation. Eysenck proposed that the dysthymic behaviour of introverts was due to their better general conditionability, in this instance to fears. Gray (1970, 1973) considered rather that this behaviour was due to the greater susceptibility of introverts to specifically negative reinforcement. In support of Gray's theory Nagpal and Gupta (1979) found that neurotic introverts showed the greatest amount of conditioning with negative reinforcement, whereas it was the neurotic extraverts (high impulsives) who conditioned best with positive reinforcement. As stated above, one prediction arising from this arousal-learning theory, is that the compulsive behaviour in OCD would be more readily conditioned in the introvert than the extravert. This could be because the reinforcement provided by the associated anxiety reduction is a negative not a positive reinforcer.

In 1981 Gray ventured an explanation of OCD specifically, where previously he had dealt with dysthymic disorders generally. He proposed that the checking rituals of OCD could be interpreted as reflecting an overactive behavioural inhibition system (especially the septo-hippocampal system) engaged in an unremitting scan for potential threats of disruption and/or an unremitting check that "important" predictions were indeed verified by environmental events. What Gray (1981) refers to as an "an overactive behavioural inhibition system" in fact describes the combined action of

highly aroused cortical and limbic systems (as described by Eysenck (1967, 1981, 1985). Given also that Gray (1981) is referring to OCD in highly introverted neurotics his explanation of OCD appears generally consistent with Eysenck's arousal theory. Further they both agree that those with obsessive-compulsive disorder will be more susceptible to reinforcement. They differ only on the type of reinforcement that is important.

However Gray's (1981) description was derived largely from observations of the behaviour of animals with either hippocampal or septal lesions, or both. It is as yet unconfirmed in humans. Clearly then a cortical arousal theory of OCD requires further research and development. The prime interest in this research - an exploration of measures of individual difference as they relate to obsessions and compulsions - can only provide an indirect test of the cortical arousal theory and OCD.

Nonetheless, as already mentioned, there have been a number of studies of Eysenck's (1967) personality dimensions and broad psychiatric groups including OCD. Griffiths (1975) reported high introversion, high neuroticism, and low psychoticism (below the standardization groups) for neurotic depressives compared with male and female clients diagnosed as personality disorders, paranoid schizophrenics, non-paranoid schizophrenics, and psychotic depressives. In a personal communication to Eysenck and Eysenck (1976, pp.177-178) Rachman reported low psychoticism for obsessionals and for neurotics generally, in 116 male and 188 females diagnosed as neurotic. All the groups (anxiety states, depressives, phobics, sex disorders, obsessionals) averaged mean scores between 2.3 and 2.6 (females) and between 3.1 and 4.2 (males) on the psychoticism dimension.

Also Eysenck and Eysenck (1976) found that heightened emotional instability (neuroticism) was most pronounced amongst neurotics, endogenous depressives, and personality disorders. Kelly (1980) reported that compared to normal controls his obsessional clients had high mean scores on the Taylor Scale of Manifest Anxiety, and the neuroticism and introversion scales of the Maudsley Personality Inventory (Hodgson & Rachman, 1977).

In 1981 Sanchez-Turet, Vallejo-Ruiloba, Porta, and Cuadras administered the EPI (1964) to 300 psychiatrically diagnosed outpatients in Barcelona. They found obsessives and depressives constituted the more introverted groups, and hysterics, dysthymics, and reactive depressives the most neurotic. Finally in a 1986 study Kirkcaldy found endogenous depressives had high introversion and neuroticism scores compared with normals and psychotics.

Taken together, these studies suggest high introversion and neuroticism and perhaps low psychoticism will be associated with dysthymic disorders in general and in a smaller number of studies, OCD in particular.

**Psychoticism.**

It is no accident that psychoticism is infrequently mentioned in the extensive research cited. Compared with introversion and neuroticism very little descriptive or theoretical work has been done on this personality dimension until very recently. What has been done then, and what status does H. J. Eysenck & S. B. G. Eysencks' (1976) psychoticism dimension have in the arousal theory?

In 1970 Eysenck wrote "A factor P has been found relatively independent of neuroticism and extraversion both with adults and with children" (p.458). The extreme positive end of the psychoticism dimension represents a personality that is "solitary, troublesome, cruel, lacking in feeling, lacking in empathy, hostile to others, sensation seeking, and liking odd and unusual things". Furthermore he stated that the psychoticism scale correlates with ratings of such traits as "immature, irresponsible, anti-authoritarian, difficult to handle, and independent" (Eysenck & Eysenck, 1976, p.202).

In 1985, however, H. J. Eysenck and M. W. Eysenck described the following as the traits of P: aggressive, cold, egocentric, impersonal, impulsive, antisocial, unempathic, creative, and tough-minded. The most notable development from his 1976 position was the treatment of impulsivity as a psychoticism trait, and the treatment of sensation-seeking as a trait of extraversion (Eysenck & Eysenck, 1978). On the basis of their study of 271 students, Zuckerman et al. (1988) agree with the shift of impulsivity from E to P. However, they claim the locus of sensation-seeking is also in the P factor rather than E.

Further Zuckerman et al. (1988) claimed their research supported the P scale as a good marker for this third and complex factor. They described the negative pole of the P factor as defined by "socialization, cognitive structure, responsibility, restraint, and social desirability" (p.99). However it is difficult to characterize the P factor in terms of a single normal dimensional name; there are numerous traits involved in the factor. Psychopathy may be an improvement on psychoticism (Hare & Schalling, 1978) but neither label incorporates such P traits as autonomy, nonconformity, or creativity (Zuckerman et al., 1988).

**Cortical Arousal Theory and Psychoticism.**

As already noted Eysenck claims there is no current evidence that arousal theory can explain the main facts known about psychoticism. This is clearly a flaw in the cortical arousal theory. However in the absence of a better one to date, the broad Eysenckian personality dimensions (including psychoticism) and Eysenck's explanatory arousal causal theory will be employed. In fact the recently reported studies of Salkovskis (1985, 1989a, 1989b) and colleagues, prompt the testing of an important refinement to earlier predictions linking OCD and psychoticism.

**Cognitive-behavioural Theory.**

Salkovskis' (1985) cognitive-behavioural account of OCD attributes a central role to the post-obsession cognitive appraisal that "if something is not done" to counteract the obsession, the person will be responsible for the obsession happening. This will result in harm to self or others. Salkovskis claims that those individuals with a heightened sense of responsibility will be more likely to appraise thoughts in such a way that they become obsessional. Such an account is consistent with the basic assumptions commonly adopted by the range of cognitive theorists such as Beck (1976), Rachman (1983), and Teasdale (1983). Briefly, these are (i) that emotions result from the appraisal of events (including thoughts); (ii) that pre-existing cognitive structures and processes (e.g., beliefs, attitudes) influence appraisal; (iii) that appraisal and emotional responses tend to have a reciprocal relationship. Thus Salkovskis (1989a) claims it is the particular type of thought appraisal, that of excessive responsibility, that distinguishes the obsessive-compulsive from those with anxiety or depression. Anxiety and depression he considers are associated simply with thought appraisals of harm and danger without any additional attribution of responsibility concerning them.

Of further importance is Salkosvkis (1989a) hypothesis that in OCD, such excessively responsible appraisals of intrusive thoughts are necessarily linked with both distress and the occurrence of neutralizing behaviour. Neutralizing he defines as "voluntarily initiated activity which is intended to have the effect of reducing the perceived responsibility and can be overt or covert (compulsive behaviour or thought rituals) (p.678). This neutralizing activity tends to increase the likelihood of further intrusive thoughts by operating as a negative reinforcer for the anxiety and discomfort produced.

However, according to Eysenck, "irresponsibility/responsibility" is one of the traits which make up the psychoticism dimension. Given Salkovskis (1989a) claims about the importance of responsibility, perhaps Eysenck's dimensions can better predict OCD when the psychoticism trait "responsibility" is also measured. There is clinical, theoretical, and experimental evidence which provides a strong basis for testing such an hypothesis in the present study.

**Clinical Evidence.**

Rachman and Hodgson (1980) stated "Our clinical impression is that [clients] whose main complaint consists of intrusive, unacceptable thoughts are correct, upright, moral citizens, who aspire to high standards of personal conduct .... The thresholds for personal acceptability (of the nonclinical sample) were significantly lower and wider than those of the [clients]" (p.16). Thus they described identifiable and consistent individual differences in something akin to the trait responsibility in the normal and the clinical experience of obsessions and compulsions. Similarly Rachman (1971) hypothesized "In addition to introversion which is related to general sensitivity, [clients] may be particularly sensitive to distasteful or shameful thoughts because they have been subjected to critical or strict moral [or] religious training" (pp.232-233).

**Theoretical Support.**

On the basis of extensive clinical experience with OCD, Insel (1990) proposed a model which predicted that those who had a "predilection to guilt due to a heightened sense of responsibility" were more likely to develop OCD (p.7). Gray (1970) noted that "obsessive compulsives are more susceptible to fear" (p.255). Thus one would expect them, unlike normals, to take their obsessions more seriously (and responsibly), and consequently develop the avoidance behaviour which results in failure to habituate to the obsession.

Thus it appears it is not the having of obsessions in itself that is problematic. Rather it is the (responsible) way in which they are appraised. Rachman (1971) hypothesized that such an appraisal will tend to be made by someone who is introverted or already generally sensitive. The present study explores the proposal that it is such combinations of factors which affect how the intrusive thoughts are experienced. However, what is the empirical evidence for the importance of the responsibility variable?

**Experimental Evidence.**

To date there is only one study (Salkovskis & Dent, 1989) which directly tests Salkovskis' cognitive-behavioural account in which responsible appraisals of thoughts are the key factor. Salkovskis (1989b) reported on the study which included 243 non-clinical subjects. Those who reported they "did something", either cognitively or behaviourally in response to their thoughts, scored significantly higher on the Maudsley Obsessive-Compulsive Inventory (Hodgson & Rachman, 1977). Those who neutralized (or did something in response to their thought) also had "significantly higher scores on belief ratings of attitudes concerning responsibility for harm" (p.207). Thus for a nonclinical sample a correlation between obsessions and compulsions and "responsibility for harm" was established.

Treatment studies provide additional, though necessarily indirect, support for this cognitive-behavioural hypothesis. Emmelkamp and colleagues have reported two controlled studies demonstrating that a cognitive intervention was as effective as exposure with response prevention (Emmelkamp, 1988; Emmelkamp, Visser & Hoekstra, 1988). Salkovskis (1989a) claims the emphasis appears to have been on modifying the way patients interpreted their obsessional thoughts (personal communication, Hoekstra to Salkovskis).

Thus something akin to the trait responsibility has been noted in the literature at least since Rachman's (1971) reported clinical findings. However it has been the more recent research by Salkovskis and colleagues that has given the trait such prominent theoretical importance in OCD (Salkovskis & Dent, 1986, 1989; Salkovskis & Warwick, 1988; Salkovskis & Westbrook, 1987, 1989).

Taken together, these studies suggest individual differences in appraised responsibility may account for some of the differences in self-reported distress attributed to obsessive and compulsive behaviour.

## RATIONALE FOR THE PRESENT STUDY.

In the present study a normal sample was chosen as the prime focus of an investigation into obsessions and compulsions. A small pilot clinical sample was also examined. This latter sample was included for two important reasons. First, to provide some test for the validity of the assumption that there is a continuum in the experience of obsessions and compulsions in the population. Secondly, to test the related assumption

that obsessions and compulsions can therefore legitimately be studied using the larger and more accessible normal samples. Both assumptions are based on findings from the past two decades of research that normals and clinicals only differ quantitatively in their experience of obsessions and compulsions. Typically the main difference was in the amount of disturbance or distress caused by the obsessions and compulsions. In the present study the Padua Inventory (Sanavio, 1988), a recently developed scale, was the criterion measure. This was because it encapsulates the findings from recent factor studies in its dimensional measure of disturbance attributed to obsessions and compulsions. It is also the only existing measure of obsessive-compulsive in normal and clinical samples.

In addition to this factorial descriptive research, recent treatment outcome studies have claimed success with cognitive behavioural and pharmacological (biological) approaches. Added to this are decades of research reporting a relationship between depression and obsessive-compulsive behaviour and between OCD and high introversion and neuroticism. The impetus for this research is to explore the ability of Eysenck's personality dimensions (with their underlying cortical arousal theory) to incorporate this range of findings. His replicable, dimensional, and biologically based measures of individual difference seem particularly apt for the present study of obsessions and compulsions.

However it is proposed that his model is enhanced in its predictive power when a measure of "exaggerated beliefs about responsibility for behaviour" is added. H. J. Eysenck and M. W. Eysenck (1985) support such an approach. They propose that studies of particular behaviours can isolate those traits that enhance prediction over and above what is afforded by E, N, and P. Responsibility is the central variable in Salkovskis' (1985, 1989a, 1989b) cognitive-behavioural account of obsessions and compulsions. Accordingly a scale was developed based entirely on Salkovskis' (1985, 1989a, 1989b) conceptualizations of this variable. It is proposed that this variable could be a reflection of an underlying personality trait of psychoticism: responsibility/irresponsibility.

Finally, though age and sex were not usually implicated in obsessions and compulsions, recent studies of the Padua Inventory suggest that they are. Also, though neither a necessary nor a causal link with obsessions and compulsions has been established, depression is frequently reported as an important correlate. Accordingly individual differences due to age, sex, and depression were controlled so that the individual difference measures of interest - the Eysenckian dimensions and responsibility - could be investigated.

Consideration of the research findings recorded in the literature suggest, therefore, the following hypotheses:

**HYPOTHESES.**

(1) Total scores on the Padua Inventory will be positively correlated with neuroticism, responsibility, depression, and the female sex, but negatively correlated with extraversion, psychoticism, and age.

(2) Differences in neuroticism and extraversion have added explanatory power in the prediction of obsessive-compulsive behaviour beyond that afforded by differences in age, sex, and depression.

(3) Differences in psychoticism have added explanatory power in the prediction of obsessive-compulsive behaviour, over that of neuroticism and extraversion, and beyond that afforded by differences in age, sex, and depression.

(4) Differences in responsibility have added explanatory power in the prediction of obsessive-compulsive behaviour over that of neuroticism, extraversion and psychoticism, and beyond that afforded by differences in age, sex, and depression.

(5) Zero order correlations of similar magnitude and the same direction will be found for the clinical sample.

# METHOD

## SUBJECTS.

### The Normal Sample.

Questionnaires were distributed to 250 first year Psychology students from the Australian National University. Students received course credit for returning the questionnaire within two weeks of distribution. The 155 returned yielded a return rate of 62%. Of the 151 retained for analysis, 65% (98) were female and 35% (53) were male. Subjects' ages ranged from 17 to 47 years with a mean age of 20.55 years ($SD$ = 5.37).

### The Clinical Sample.

In addition, as a pilot study, the questionnaire was distributed to 20 subjects diagnosed as Obsessive Compulsive according to the Diagnostic and Statistical Manual 111 Revised (1987). These subjects were attending the St. Vincent's Anxiety Disorders Clinic in Darlinghurst, Sydney. As a routine part of clinical assessment and research procedures, all newly referred clients to the clinic are required to complete several questionnaires. Accordingly the administration of the questionnaire for this study would have extended not introduced this process thereby causing minimal disruption. Of the 20 subjects, 55% (11) were female and 45% (9) were male. Their ages ranged from 19 to 44 years with a mean age of 29.55 years ($SD$=7.29). Voluntary participation and confidentiality was assured to all subjects whether normal or clinical.

## DESIGN AND PROCEDURE.

The same questionnaire was administered to the normal and the pilot clinical samples (see Appendix A, pp.1-12). The data for the normal sample was collected over a two week period. By contrast data collection for the clinical sample extended over seven months as those diagnosed as OCD tended to present at the clinic at the rate of approximately one or two per fortnight.

## MEASURES.

The hypotheses required the measurement of demographic and individual difference variables. The two demographic variables were age (measured in years) and

sex (measured as a dichotomous variable). The six individual difference variables were "severity of obsessions and compulsions" (the criterion measure), and depression, neuroticism, extraversion, psychoticism, and responsibility (the predictors).

## The Criterion.

### Severity of Obsessions and Compulsions.

The Padua Inventory or PI (Sanavio, 1988) is a recently developed 60-item self-report scale which measures severity of obsessions and compulsions (see Appendix A, pp.5-7). The items describe obsessional thoughts, e.g., "I invent doubts and problems about most of the things I do," and compulsive behaviours, e.g., "I find it difficult to touch garbage or dirty things." Subjects are instructed to rate each item on a 5-point scale (0=not at all, 1=a little, 2=quite a lot, 3=a lot, 4=very much). This measures the degree of disturbance caused by the thoughts and behaviours.

The total score is the sum of the ratings on the 60 items and the score range is 0-240. The PI is considered to measure the extent to which the obsessions and compulsions interfere with routine daily functioning (Sternberger & Burns, 1990), with a high score representing greater interference from obsessions and compulsions. As already discussed the PI was the measure of choice because it is the only self-report measure of normal and clinical samples which includes obsessional as well as compulsive dimensions.

Sanavio (1988) labelled the first PI obsessive factor "Impaired Control Over Mental Activities". This factor was composed of items measuring an inability to stop unpleasant thoughts or ruminations (e.g., "Unpleasant thoughts come into my mind against my will and I cannot get rid of them"). The second obsessive factor, "Urges and Worries of Losing Control over Motor Behaviour," involved fears that impulsive thoughts of a violent or sexual nature would be manifest in action (e.g., "I sometimes feel the need to break or damage things for no reason"). The two compulsive factors, "Becoming Contaminated" and "Checking Behaviours," were the two traditional Washing and Checking dimensions which prior research identified in the CAC and the MOCL (Sternberger & Burns, 1990).

The Padua was first trialled by Sanavio in 1988 on normal and clinical Italian subjects. Both sexes were comparably represented and the ages ranged from 16 to 70 years (Sanavio, 1988). Then in 1990 Sternberger and Burns reported the psychometric properties of the Padua with an American College population of 19 year olds. In

Australia, Crino and colleagues have been using the Padua Inventory since 1988 to measure obsessions and compulsions in their OCD clinical populations. They also have unpublished data on the psychometric properties of the Padua for a normal Australian sample of 79 from Maroubra, Sydney (R. D. Crino, personal communication, April 25, 1991).

*Internal Consistency.*

For Sanavio's (1988) Italian sample the internal consistency of the Padua Inventory (coefficient Alpha) was 0.90 in male and 0.94 in female subjects (p.171). Test-retest correlations were 0.78 for males and 0.83 for the females who filled out the inventory twice at a 30 day interval. For the normal sample in the present study Cronbach's (1951) Alpha was 0.94 which was the same result reported by Sternberger and Burns (1990) for their American sample of 678 college students ($M = 18.85$, $SD = 1.52$). Hence the Padua Inventory can claim established internal consistency for normal samples in Italy, America, and Australia.

*Validity.*

The Padua Inventory also possesses demonstrated construct validity. For Sanavio's (1988) Italian sample, the PI correlation with the Maudsley Obsessional-Compulsive Questionnaire (Hodgson & Rachman, 1977) was .70; with the Leyton Obsessional-Compulsive Inventory (Cooper, 1970) it was .71 with symptom and .66 with trait scales; and with the Self-Rating Obsessional Scale (Sandler & Hazari, 1960) the PI correlation was .61. It also has "divergent validity with respect to other neurotic disorders" (Sanavio, 1988, p.169).

Also Sternberger and Burns (1990) reported that the PI demonstrated convergent and divergent validity with the Symptom Checklist-90 Revised (SCL-R) (Derogatis, 1983) and the Maudsley Obsessive Compulsive Inventory (MOCI) (Hodgson & Rachman, 1977). They found the PI total score correlated significantly with the SCL-R obsessional scale. Moreover this correlation was significantly different from the PI's correlation with any other SCL-R subscale. In addition the corresponding subscales of the PI and MOCI correlated with one another, and these correlations were significantly different from the correlations between noncorresponding subscales.

In conclusion, though a comparatively new measure of obsessive and compulsive behaviour, the Padua Inventory has several features superior to that of other

established scales. It has the advantages of being a self-report inventory, and of measuring severity of obsessive thoughts as well as compulsive behaviours in normal and clinical populations. Also, it possesses adequate internal consistency and validity for normal samples. To date, however, this writer is not cognizant of studies which demonstrate adequate psychometric properties for clinical samples. Future research needs to address this.

## Predictors.

### Responsibility Scale.

This research project was planned on the expectation that the responsibility questionnaire cited by Salkovskis and Dent (1986, 1989) and Salkovskis (1989b) would be supplied to this researcher. This did not eventuate, so a new scale was developed based on Salkovskis' (1985, 1989a, 1989b) theoretical outline of his concept of responsibility.

Fourteen items were initially devised, including three which were reverse scored (items 4, 7, 9). These 14 items are given in Appendix A, pp.8-9). Each item was intended to elicit a response that indicated the degree to which the respondent held dysfunctional assumptions about responsibility for, blame for, or control of their thoughts (Salkovkis, 1985). For example, "If I have an intrusive thought of doing harm to myself or others, I would feel somehow responsible if harm were to come to them or to me". Subjects were asked to indicate to what extent each statement applied to them, by choosing one response from a five-point scale: (0=not at all; 1=a little; 2=quite a lot; 3=a lot; 4=very much so), for each item. A higher score represented a greater degree of appraised responsibility.

*Item Development.*

Salkovskis (1985, 1989b) proposed a cognitive account of the development of obsessive-compulsive disorder. Central to this was his hypothesis: "Some individuals are vulnerable to interpreting intrusive thoughts as indicating that they may be responsible for harm to themselves or to other people" (Salkovskis, 1989b, p.201). Such individuals will hold a number of exaggerated assumptions about their thoughts. Items for this new scale were based on Salkovskis' (1985, 1989b) description of five such typical dysfunctional assumptions.

Thus, Item 2 and Item 7 (reverse scored) endeavoured to reflect Salkovskis' (1985) statement: "Such ideas of responsibility can extend to having had the thought itself" (p.574), or the concept of "responsibility for having a thought." Items 5, 10, 13, and 9 (reverse scored) were devised to tap his concept of control, or the dysfunctional belief: "One should (and can) exercise control over one's thoughts" (p.579).

Items 3, 6, and 14 were devised to tap the dysfunctional belief: "If you have any doubt at all that you may have caused harm, then you must act to ensure that you are clear of blame" (Salkovskis, 1989b, p.202). Items 1 and 11, and 4 (reverse scored), attempted to explore the extent of "exaggerated notions about the extent to which actual harm can result from thoughts themselves" (Salkovskis, 1989b, p.201). Finally, items 8 and 12 attempted to tap the extent of the belief: "Once you have thought about it, failing to prevent or try to prevent harm, is the same as having caused the harm" (Salkovkis, 1989b, p.202). Items 8 and 12 were positively worded after initial trialling. This was because of the difficulty in devising readily comprehensible statements reflecting the dysfunctional belief.

In summary, these five dysfunctional assumptions are the major identifying features of Salkovskis' (1985, 1989a, 1989b) cognitive account of the development of OCD. Taken together they form the basis of a coherent explanation of how those with obsessive thoughts and compulsive behaviours view the world. That is, having had an intrusive thought (a normal experience), their thought appraisal is such that they feel unduly responsible: for having the thought, for acting in response to it, and for controlling it.

*Reliability of the Responsibility Scale.*

*Initial trialling and analyses.*

After an initial trial and subsequent rewording of several items, the scale was administered to the normal sample. Reliability coefficients were calculated for the scale for each of the 14 items successively deleted. Reliability coefficients and corrected item-total correlations are given in Table 1. Individual deletion of Items 4, 7, 9, and 12 yielded the highest values of Cronbach's (1951) Alpha, though none of these represented a substantial increase in the overall average split-half reliability of the scale. However, Items 4, 7, and 9 were deleted despite this, and despite the fact that they constituted the

Table 1.

Cronbach's Alpha for the Responsibility Scale with each item deleted. $N = 152$ (Normals)

| ITEM | CORRECTED ITEM-TOTAL CORRELATION | ALPHA IF ITEM DELETED |
|---|---|---|
| Resp 1 | .42 | .75 |
| Resp 2 | .49 | .73 |
| Resp 3 | .43 | .74 |
| Resp 4 | .17 | .80 |
| Resp 5 | .59 | .72 |
| Resp 6 | .55 | .73 |
| Resp 7 | .22 | .76 |
| Resp 8 | .40 | .75 |
| Resp 9 | .06 | .78 |
| Resp 10 | .48 | .74 |
| Resp 11 | .56 | .73 |
| Resp 12 | .13 | .77 |
| Resp 13 | .67 | .72 |
| Resp 14 | .51 | .73 |

STANDARDIZED ITEM ALPHA = .76 (14 items)

*Note: Items deleted subsequently are underlined.*

only negatively worded items in the scale. This was because of their low corrected item-total and low inter-item correlations (mean inter-item correlation of .18). These poor correlations were not altogether surprising, as it was difficult to devise negatively worded items for the complex concepts involved. Item 12 was also deleted because it too had a low corrected item-total and low inter-item correlations. However when Items 4, 7, 9, and 12 were deleted the mean inter-item correlation increased to a satisfactory .35.

Thus 10 of the original 14 items were retained to form the final Responsibility Scale (see Appendix B). It was subsequently also administered in this final form to the clinical sample.

*Final Responsibility Scale.*

The final scale reliability was .84 for the 10 retained items. Thus the most important scale reliability criterion, internal consistency, was adequately met. Responsibility scores were obtained for each subject by adding each item score. Higher scores represented a greater degree of appraised responsibility in the respondent. The final mean scale score was 11.78 ($SD = 7.24$), and the score distribution was normal (skewness .66, kurtosis .15). The scores ranged from 0 to 35. The means and standard

deviations for each of the 10 retained items are given in Appendix C. However researchers employing this scale, need to be aware that test-retest reliability was not established due to time constraints.

*Factor Analyses.*

Factor analyses were conducted on the 10 retained items. These were performed to provide an empirical summary or description of the pattern of correlations in the scale. It was also of interest, though not the prime goal of the scale development, to examine whether the items clustered in a way that reflected the five a priori conceptual areas. These "conceptual areas" were highly similar, so empirically distinct subscales were not predicted.

The items produced a Kaiser-Meyer-Olkin measure of sampling adequacy of 0.79. Furthermore Bartlett's Test of Sphericity produced highly significant results. This indicates there were substantial correlations between the items. They were, therefore, suitable for factor analysis. Two methods of factor extraction were used: Principal Components Analysis and Principal Axis Factoring.

However as the results using these two methods were very similar, the PCA solution was retained. Indeed, according to Velicer and Jackson (1990), such a result is not at all surprising. From their extensive review of the area they claim: "For most data sets, there will be no practical differences between the methods" (factor and component analysis) (p.110). Moreover, PCA operates on the crude assumption that there are no measurement errors for the items (hence all variance in an item is attributed to common variance). This assumption was appropriate in the current instance where an initial exploratory method of descriptive analysis was required in a relatively unformulated domain (D. Terry, personal communication, May 16, 1989).

Accordingly the responses for the items comprising the Responsibility Scale were intercorrelated and subjected to Principal Components Analysis and Varimax Rotation with initial communalities of one. Three factors were extracted and rotated using Kaiser's criterion (factors with eigenvalues > 1 were rotated) and a significance level of 0.3 for the loadings on each factor was adopted (Childs, 1970). Final communalities, eigenvalues, and the percentage of variance accounted for by the rotated factors, are given in Table 2.

Table 2.

Communalities, Eigenvalues, and Variance accounted for by the Rotated (Varimax) Factors.

| ITEM | COMMUNALITY | * | FACTOR | EIGENVALUE | % VARIANCE |
|---|---|---|---|---|---|
| Resp 1 | .79 | * | 1 | 4.20 | 42.0 |
| Resp 2 | .73 | * | 2 | 1.22 | 12.0 |
| Resp 3 | .54 | * | 3 | 1.03 | 10.3 |
| Resp 4 | .64 | * | | | |
| Resp 5 | .65 | * | | | Total: 64.6 |
| Resp 6 | .79 | * | | | |
| Resp 7 | .46 | * | | | |
| Resp 8 | .68 | * | | | |
| Resp 9 | .70 | * | | | |
| Resp 10 | .48 | * | | | |

The factors were then rotated by the oblique procedure, in part because of the extent of the factor correlations evident in the factor correlation matrix (see Table 3). Also it was anticipated this may achieve a more simple structure, given the highly correlated nature of the a priori concepts. In fact the factor solution obtained after 16 iterations yielded a clustering of items that was highly similar to the varimax solution. Factor loadings of the items on the factors are given in Table 4. However scrutiny of the factor plots indicated a marginally improved solution over varimax, as there were fewer, though still four, remaining factorially complex items. Given the conceptual overlap in the a priori domains, this does not represent a difficulty.

Table 3.

Factor Correlation Matrix for the Responsibility Scale.

| | FACTOR 1 | FACTOR 2 | FACTOR 3 |
|---|---|---|---|
| FACTOR 1 | 1.00 | | |
| FACTOR 2 | .31 | 1.00 | |
| FACTOR 3 | .38 | .15 | 1.00 |

Table 4.

Pattern Matrix for the Items after Oblique Rotation

| ITEM | FACTOR 1 | FACTOR 2 | FACTOR 3 |
|---|---|---|---|
| Resp 4 | .76 | | |
| Resp 3 | .75 | | |
| Resp 9 | .74 | | |
| Resp 2 | .73 | -.40 | |
| Resp 6 | | .88 | |
| Resp 5 | .48 | .53 | |
| Resp 7 | .31 | .44 | |
| Resp 1 | | | .92 |
| Resp 8 | | .39 | .66 |
| Resp 10 | | | .45 |

*Note: Factor 1 is defined by items 4, 3, 9, 2.*
*Factor 2 is defined by items 6, 5, 7.*
*Factor 3 is defined by items 1, 8, 10.*

*Interpretation of the Three Factors.*

The three factors accounted for a significant 64.6% of the variance in the responses to the items. All three factors were interpretable, but highly similar as predicted. The first factor, onto which items 4, 3, 9, and 2 loaded significantly, seemed to be an overall measure of "Control": control over having had the thought (item 2), exercising control over the thought (items 4, 9), and the compulsion to act if in doubt (item 3). See Table 4 above.

Items 6, 5, and 7, loaded significantly onto the second factor. It pertained to a "Concern to Act to Prevent Harm". Thus Item 6 (failing to prevent is the same as causing harm), Item 5 (if in doubt, act to dispose of blame), and Item 7 (one can and should exercise control over thoughts) loaded onto this second factor.

The third factor seemed to encompass the belief of "Thought Leading to Action". Items 1 and 8 (the belief that harm results from thoughts), and Item 10 (if in doubt, act to clear of blame) loaded on the third factor. Hence the three interpreted factors were named "Control", "Concern to Act to Prevent Harm", and "Thought Leading to Action".

In conclusion, the 10 item Responsibility Scale possesses adequate internal consistency, though its test-retest reliability is yet to be established. It had a mean value of 11.78 ($SD$=7.24) and range of 0 to 35 for this normal sample. The scale also comprises items that can be grouped into three correlated factors. These three factors - Control, Concern to Act to Prevent Harm, and the Belief that Thoughts Lead to Action - encompass Salkovskis' (1989b) five dysfunctional beliefs. To this extent it has met the initial requirements for establishing construct validity.

**Predictors** (cont.)

**Extraversion, Neuroticism, and Psychoticism.**

For both samples in the present study, extraversion and neuroticism were measured using the Eysenck Personality Questionnaire (1975) (see Appendix A, pp.1-2); psychoticism was measured using the Eysenck Personality Questionnaire Revised (1985)(see Appendix A, pp.3-4).

The Eysenck Personality Questionnaire Revised (Eysenck, Eysenck & Barrett) (1985), like the EPQ (1975), measures the three main dimensions of personality: neuroticism, extraversion, and psychoticism. It is the most recent development of the earlier Eysenckian personality Questionnaires: The Maudsley Medical Questionnaire (Eysenck, 1952), The Maudsley Personality Inventory (Eysenck, 1959), The Eysenck Personality Inventory (Eysenck & Eysenck, 1964), and the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975).

The Eysenck Personality Questionnaire Revised (1985) is a self-report questionnaire comprised of 79 items: 23 extraversion items, 24 neuroticism items, and 32 psychoticism items. It was created to improve the psychometric properties of the Psychoticism scale of the EPQ (1975). This was achieved by deleting six psychoticism items from the EPQ (1975) and adding 13 new ones to make a new total of 32 items. These 13 new psychoticism items seem, upon examination, to measure aspects of social responsibility and social sensitivity. For example, "Do you enjoy cooperating with others?", "Is it better to follow society's rules than go your own way?"

Thus, for both samples in the present study, psychoticism was measured using the "P" scale of the EPQ-R (1985); the psychometric properties of which were clearly superior to the 1975 counterpart. However the EPQ (1975) was employed to measure extraversion and neuroticism. This was because this measure was already being

used by the St. Vincent's Anxiety Disorders Clinic in Sydney. Also Eysenck, Eysenck, and Barrett (1985) did not claim that the addition of the one neuroticism and two extraversion items to the revised scales altered their content validity. A further consideration was the potential inconvenience and confusion for clinical subjects if two similar versions of "E" and "N" were administered. Hence the EPQ (1975) was retained to measure extraversion and neuroticism.

**Extraversion - Introversion**

Extraversion-Introversion was measured using the 21 item "E" subscale of the EPQ (1975). According to Eysenck, Eysenck, and Barrett (1985) the 1985 and 1975 versions of the "E" scale comprise largely sociability and activity items only. For example, "Do you enjoy meeting new people?", "Can you usually let yourself go and enjoy yourself at a lively party?" Respondents answer by circling a "Yes" or a "No" following each question. An extraversion score is obtained for each subject by adding all the "Yes" responses; "No" responses are added for the three reverse scored items. Higher scores indicate an increasing degree of extraversion, sociability, or activity and lower scores, an increasing degree of introversion or introspection and non-sociability.

Eysenck and Eysenck (1975) reported an adequate test-retest reliability for extraversion of .90 for male and .87 for female adult (normal) samples. There was one month intervening between the testings. Adequate internal consistencies of .85 for male and .84 for females were also reported (pp.16-17). In the present study the internal consistency of the Extraversion scale for the normal sample of 151 was a comparable .89.

**Neuroticism - Stability.**

Neuroticism-Stability was measured using the 21 item "N" subscale of the EPQ (1975). As for the Extraversion subscale respondents answer by circling a "Yes" or "No" following each question. However no "neuroticism" items are reverse scored. Eysenck and Eysenck (1975) described the typical high N scorer as being an over-emotional person; one who is "anxious, a worrier, moody, and frequently depressed" (p.9). The low "N" scorer is emotionally stable or "calm, even-tempered, controlled, and unworried" (p.10). Typical items include, "Do you often worry about things you should not have done or said?", "Does your mood often go up and down?"

A test-retest reliability for neuroticism of .89 for male and .80 for female normal samples was reported by Eysenck and Eysenck (1975). They reported internal

consistency reliabilities of .84 for male and .85 for female normal samples (pp.16-17). In the present study a comparable internal consistency of .86 was found for the normal sample of 151 subjects.

*Validity of Extraversion and Neuroticism Scales.*

S. B. G. Eysenck and H. J. Eysenck (1963) claimed adequate validity for the Neuroticism and Extraversion scales. This was on the basis of repeated findings that independent judges classified subjects in a way comparable to how the subjects classified themselves by their responses to the "N" and "E" items in the EPI (Eysenck & Eysenck, 1964).

However some researchers have questioned the validity of the Neuroticism scale. For example Braithwaite (1987) claimed that "A considerable proportion of the items in the N scale refer not to emotionality per se, but to unpleasant experiences that are contingent upon being emotionally aroused" (p.218). However the Eysenck and Eysenck (1975) measure of neuroticism was used to enable comparison of results with those of previous studies. The Extraversion scale was employed for the same reason, despite a reportedly growing interest in developing measures of "impulsivity" or "sensation seeking" in its stead (Zuckermann et al., 1988). Moreover, these studies are still preliminary and lack adequate rigour.

**Psychoticism - Tender-mindedness.**

According to Eysenck, Eysenck, and Barrett (1985) the 32 item Psychoticism scale of the EPQ-R (1985) is a measure of "hostility, cruelty, lack of empathy, and non conformism; that is, it taps several different facets" (p.25). Typical items include, "Do you enjoy hurting people you love?", "Do you prefer to go your own way rather than act by the rules?" As for extraversion and neuroticism, respondents circle a "Yes" or a "No" to each item. Nineteen items are reverse scored. A psychoticism score is obtained using the same procedure as for "N" and "E" scores. Low scores measure responsibility, maturity, and social conformism; the opposite traits to those measured by high scores (Eysenck & Eysenck, 1976).

The psychoticism dimension is the most recently conceptualized and measured of the three Eysenckian personality constructs. It is also the most controversial. Although, the numerous criticisms of the psychometric properties of the original

Psychoticism scale (EPQ) (1975) by Bishop (1977), for example, have been substantially addressed by the revised scale (EPQ-R) (Eysenck, Eysenck & Barrett, 1985).

These defects included the low internal reliability of .74 for males and .68 for females. In the revised scale (EPQ-R) (1985) these were increased slightly for males (.78) and moderately for females (.76). In addition the original P scale had a low range of scoring, with means of 3.78 ($SD$=3.09) for males and 2.63 ($SD$=2.36) for females. These increased substantially to a mean of 7.19 ($SD$=4.6) for males and 5.73 ($SD$=3.85) for females. The original scores also had distributions displaying considerable skewness (1.35 for males and 1.55 for females), and kurtosis (2.65 for males and 4.16 for females). The revised scale had more acceptable, though mildly defective, skewness values of 1.02 for males and .90 for females. Similarly the kurtosis of the revised scale was 1.49 for males and 1.27 for females.

In the present study the internal consistency of the Psychoticism scale for the normal sample of 151 was .71. This was slightly lower than the values of .78 (males) and .76 (females) reported by Eysenck, Eysenck, and Barrett (1985).

*Validity of the Psychoticism Scale*

Eysenck and Eysenck (1975) cite evidence that psychotics, both male and female, have higher P scores than do normal or neurotic subjects. This satisfies one method of validation - the testing of criterion groups. They also cite studies which demonstrate a relation between P and anti-social behaviour (e.g., Eysenck, 1971; Eysenck, 1973). Further, standardization data indicate that men have higher P scores than women. Eysenck and Eysenck (1975) suggest this may be due to differing levels of aggression and hostility in the sexes.

Thus psychoticism, as measured in the 1975 version of the EPQ, seems to discriminate subjects who are psychotic and (or) antisocial and (or) aggressive and hostile (male) from those who are normal and (or) socially responsible and (or) calm and accepting (female).

Torrubia and Muntaner (1987) demonstrated that "The Revised Psychoticism scale ... does not differ greatly from its predecessor in its relationship to other personality variables." To this extent the validity of the 1985 revised P scale has been established (p.261).

**The Beck Depression Inventory.**

The Beck Depression Inventory (BDI) (Beck, Rush, Shaw & Emery, 1979) is a 21 item measure of intensity of self-reported depression pertaining to "the past week and including today" (p.398). (See Appendix A, pp.10-12). It was derived from clinical observations about the attitudes and symptoms displayed frequently by depressed, and infrequently by nondepressed, psychiatric patients (Beck, Ward, Mendelson, Mock & Erbaugh, 1961). These clinical observations were reduced to 21 categories (e.g., pessimism, self-doubt, appetite loss). Each of these contains a graduated series of four different statements which describe the severity of the particular depressive symptom or attitude. The respondent is asked to rate the intensity of each item on a scale from 0 to 3. It is scored by summing the ratings given to each of the 21 items. A high score on the BDI represents more severe depression - the range of possible scores is 0 to 63. Beck and Beamesderfer (1974) recommended the following guidelines for BDI cut-off scores with patients diagnosed as having an affective disorder: none or minimal depression if less than 10, mild to moderate depression if 10-18, moderate to severe depression if 19-29, and severe depression if 30-63.

*Reliability*

According to Beck, Steer, and Garbin (1988) the BDI has high internal consistency in both psychiatric and non-psychiatric samples. From their review of BDI studies over 25 years, they estimated a mean internal consistency coefficient of .86 for psychiatric patients and .81 for nonpsychiatric subjects. This was comparable to the coefficient alpha of .89 for the normal sample of 151 in this study. Beck et al. (1988) reported an estimated test-retest reliability of greater than .60 for both types of samples.

*Validity.*

Beck et al. (1988) claimed the BDI possesses high concurrent and criterion validity. They consider that its concurrent validity with respect to other measures of depression has been more than adequately demonstrated for clinical and non-clinical samples.

First, they claim the BDI is related to clinical assessments of depression (.72 and .60 for psychiatric patients and nonpsychiatric subjects respectively). Secondly the BDI has significant positive relationships with four well-researched measures of depression. These pertain to psychiatric and nonpsychiatric samples respectively: the

Hamilton Psychiatric Rating Scale for Depression (Hamilton, 1960), (.73 and .77); the Zung Self-reported Depression scale (Zung, 1965), (.76 and .71); the Minnesota Multiphasic Personality Inventory Depression Scale (Hathaway, & McKinley, 1943), (.76 and .60); and the Multiple Affect Adjective Checklist Depression Scale (Zuckermann & Lubin, 1965), (.63 and .63).

Beck et al. (1988) also claim there is evidence that the BDI differentiates psychiatric and nonpsychiatric patients; medical patients, nonmedical patients, and normals; as well as subtypes of depression.

Nonetheless Beck et al. (1988) caution that the correlations of the BDI with other symptom measures in nonclinical subjects are "sufficiently high to warrant caution in interpreting findings as indicative of depression in such populations" (p.78). However the mean BDI score for the normal sample in the present study was 8.61 ($SD$=7.87), indicative of either no depression or minimal depression. Tanaka-Matsumi and Kameoka (1986) and Lightfoot and Oliver (1985) reported similar mean BDI scores of 7.9 ($SD$=6.7) and 7.28 ($SD$=6.89) for their American samples of college and undergraduate University students respectively.

By contrast the mean BDI score for the clinical sample in this study was at the low end of the moderate to severe depression range of 19-29. According to Beck et al. (1988) such a finding for a clinical sample does not raise questions of interpretation.

In conclusion, the BDI possesses adequate psychometric properties for psychiatric and nonpsychiatric samples. A possible exception to this is that, when scores for nonpsychiatric samples are high, caution should be taken in interpretation. However this was not pertinent for the normal sample in this study.

# RESULTS

## THE NORMAL SAMPLE.

### Data Screening.

Prior to analysis all variables were examined through various SPSS programs for accuracy of data entry, missing values, and fit between their distributions and the assumptions of multivariate analysis. Three cases were deleted because each included at least five missing values on the neuroticism and extraversion scales. In addition exploratory checks for the effects of multivariate outliers revealed one outlier with a large standardized residual of 5. On inspection it was evident that this case had score combinations that were exceptions to the overall pattern of correlations for this sample. Accordingly it was deleted. Hence after the deletion of four cases, 151 were retained for analysis.

Also attempts were made to reduce the extreme skewness and kurtosis of the variable age. This was unsuccessful with both logarithmic and inverse transformations. (The nonnormality of the age variable was not surprising, given that the sample comprised first year Psychology students). In addition as the variables "severity of obsessions and compulsions" (Padua Inventory) and depression had mild skewness and kurtosis, a square root transformation was used. However the subsequent patterns of correlations were almost identical to those yielded for the untransformed variables. Therefore, in order to preserve clarity of interpretation, only results based on untransformed variables are reported.

## DESCRIPTIVE RESULTS.

### The Criterion: Severity of Self-reported Disturbance due to Obsessive Thoughts and Compulsive Behaviours (Obsessive-Compulsive Behaviour).

### Total Scale Scores on the Padua Inventory.

In the normal sample the mean Padua Inventory (PI) score was 31.53 ($SD$=21.54): a score lower than that reported by Sanavio (1988) and Sternberger and Burns (1990), but higher than that reported by Crino (R. D. Crino, personal communication, 25 April, 1991). See Table 5. This inconsistency in reported

Table 5.

Mean Severity of Self-Reported Disturbance due to Obsessive Thoughts and Compulsive Behaviours (Normal Samples, Mean Padua Scores).

| Study | *n* | *M* | *SD.* |
|---|---|---|---|
| Sanavio (1988) | 967 | 57.76 | 28.41 |
| | 489 | 53.13 (male) | 27.46 |
| | 478 | 62.38 (female) | 29.36 |
| Sternberger and Burns (1990) | 678 | 41.33 | 25.77 |
| Crino (1991) | 51 | 21.78 | 23.48 |
| The present study | 151 | 31.53 | 21.54 |

means could be due to age, sex, and cultural differences in the four studies cited. Sanavio (1988) studied a large Italian sample of 967 males and females, finding that females (on average) had higher PI scores than males. Furthermore females in his 16 to 20 age group had the highest mean for any of his age groups (range 16-70 years). By contrast Sternberger and Burns (1990) reported no sex effects for their sample of 19 year old American college students ($N$=678). Finally the only reported Australian PI norms are those of Crino for a sample of 79 middle-aged residents of Maroubra, Sydney (R. D. Crino, personal communication, April 25, 1991). Thus comparison of the mean PI score in the present study of young Australian University students is made difficult by the heterogeneous nature of the samples in the few reported studies of the Padua Inventory.

**Subscale Scores on the Padua Inventory.**

The four subscale scores of the PI were calculated for each subject according to the recommendations of Sanavio (1988). The means and standard deviations for each subscale in this and Sternberger and Burns (1990) study can be found in Table 6.

Table 6.

Mean Subscale Scores on the Padua Inventory (Normal Samples).

| Subscale | *n* | *M* | *SD* |
|---|---|---|---|
| Impaired Control of Mental Activities | 151 (678)* | 11.57 (13.35) | 8.99 (9.51) |
| Becoming Contaminated | 151 (678) | 5.31 (8.26) | 4.76 (5.66) |
| Checking | 151 (678) | 5.10 (6.59) | 4.87 (5.61) |
| Urges and Worries of Losing Control over Motor Behaviours | 151 (678) | 2.20 (3.00) | 3.23 (3.76) |

** Note: The Results of Sternberger and Burns (1990) are in brackets.*

Sanavio (1988) did not report his subscale means. The four Padua Inventory subscales comprised 17, 11, 8, and 7 items respectively. As inspection of Table 6 indicates, the four mean subscale scores for the normal sample in this study were consistently lower than those of Sternberger and Burns' (1990) American college students, though this was not to a significant extent.

**Age and Sex effects on the Padua**

As age and sex effects on the Padua were reported by Sanavio (1988) they were investigated for this sample. Such an analysis found no significant difference between the female ($M=32.03$, $SD=21.75$) and male ($M=30.60$, $SD=21.32$) mean scores on the Padua Inventory, $F(1,147)=0$, $p<.99$. However a significant effect was found for age when the sample was divided into two groups: those less than or equal to 20 years, and those older than 20. The younger age group yielded a significantly higher Padua score ($M=33.68$; $SD=21.89$) than the older group ($M=22.87$; $SD=17.89$), $F(1,147)=6.1$, $p<.02$. However, the Age X Sex interaction was nonsignificant ($F(1,147)=.71$, $p<.4$). Additional

age groupings were attempted but did not permit analyses due to insufficient numbers in the groups.

The age effect found in the present study was consistent with Sanavio's (1988) finding of higher PI scores for younger subjects. Hence the need to control for age. Further, the absence of a sex effect was consistent with Sternberger and Burns (1990) results, but contrary to Sanavio's (1988) findings of higher PI scores for females. Because their results were equivocal, sex was also controlled in the present study.

**Mean Values of the Predictor Variables.**

The means and standard deviations of the predictor variables of interest - neuroticism, extraversion, psychoticism, responsibility, and depression were calculated. They were comparable to those of previous studies for normal samples of similar age and both sexes (see Table 7). Clearly this normal sample is not atypical for the predictor variables measured.

Table 7.

Means and Standard Deviations of Predictor Variables ($N = 151$) (Normal Sample).

| Variable | Mean | *SD* | Range |
|---|---|---|---|
| Neuroticism | 10.84<br>(11.34)* | 5.52<br>(5.04) | 0-23 |
| Extraversion | 13.90<br>(13.31)* | 5.28<br>(4.75) | 0-21 |
| Psychoticism | 6.82<br>(7.43)** | 3.90<br>(4.21) | 0-17 |
| Responsibility | 11.65 | 7.09 | 0-35 |
| Depression | 8.61<br>(7.28)# | 7.87<br>(6.89) | 0-38 |

*Note: The means and standard deviations in brackets are normative values for the 20-29 age group and both sexes. Values are from the following sources:*
**(Eysenck & Eysenck, 1975). Normal sample.*
***(Eysenck, Eysenck & Barrett, 1985). Normal sample.*
*#(Lightfoot & Oliver, 1985). Undergraduate students.*

**Correlations between the Criterion and Predictor Variables.**

The predictors neuroticism, depression, and responsibility yielded significant positive zero-order correlations such that increases in these variables corresponded with increases in "obsessive-compulsive behaviour" (see Table 8). By contrast the variable age was significantly negatively correlated with the criterion: as age increased obsessive-compulsive behaviour decreased. These significant results were consistent with the first hypothesis, as were the directions of the respective correlations. Moreover the first three mentioned variables were also significantly positively correlated with each of the four Padua Inventory subscales. Age however had significant and negative correlations with only two of the PI subscales: F1 (Impaired Control of Mental Activities) and F3 (Checking).

Table 8.

Correlation Matrix of the Criterion and Predictor Variables ($N$=151) (Normal Sample).

| Criterion | Predictors. | | | | | | |
|---|---|---|---|---|---|---|---|
| | Neur. | Ext. | Psy. | Resp. | Age | Sex | Dep. |
| Padua | .52** | -.10 | -.05 | .50** | -.24** | .03 | .51** |
| F1 | .59** | -.20 | -.03 | .49** | -.20** | .03 | .55** |
| F2 | .23** | .09 | -.17* | .31** | -.15 | .12 | .18* |
| F3 | .30** | .02 | -.12 | .39** | -.18* | -.02 | .30** |
| F4 | .23** | -.14 | .27** | .22** | -.15 | -.11 | .33** |

*$p<.05$;** $p<.01$ (significance of Beta coefficients tested using two-tailed tests).
*Neur.* = Neuroticism, *Ext.* = Extraversion, *Psy.* = Psychoticism,
*Resp.* = Responsibility, *Dep.* = Depression.
*F1.* = Impaired Control of Mental Activities.
*F2.* = Becoming Contaminated.
*F3.* = Checking.
*F4.* = Urges and Worries of Losing Control over Motor Behaviours

Contrary to the first hypothesis extraversion, psychoticism, and sex were not significantly correlated with the Padua Inventory. Extraversion only had a significant negative correlation with the first Padua subscale F1 such that more introverted subjects reported greater severity of "Impaired Control of Mental Activities" (see Table 8). However for this sample introversion was not related to the Padua Inventory measure of obsessive-compulsive behaviour.

Psychoticism was also not significantly correlated with obsessive-compulsive behaviour. Yet psychoticism had a significant negative correlation with the second Padua subscale, F2. Thus increases in responsibility, empathy, and social conformism were correlated with increases in severity of fears of "Becoming Contaminated". In addition psychoticism had a significant positive correlation with the fourth subscale F4, such that increases in hostility, cruelty, lack of empathy, and non conformism were correlated with "Urges and Worries of Losing Control over Motor Behaviours." These opposing correlations indicate that psychoticism does not have a clear relationship to obsessive-compulsive behaviour as measured by the Padua Inventory. Finally, a sex effect was not found suggesting the contrary finding in Sanavio's (1988) study could be attributed to age and cultural differences in the two samples.

Hence at the bivariate level there was some support for the first hypothesis, namely that

> *(H1). Scores on the Padua Inventory will be positively correlated with neuroticism, responsibility, depression, and the female sex, but negatively correlated with extraversion, psychoticism, and age.*

Thus far neuroticism and responsibility (variables of interest) and depression (control variable) have emerged as moderately significant variables in relation to obsessive-compulsive behaviour; age is a less significant control variable; while extraversion, psychoticism, and sex are not significant.

**Intercorrelations among the Predictor Variables.**

There was no evidence of multicollinearity among the predictors as revealed by inspection of Table 9. In all instances the scale intercorrelations were at least .20 below the mean scale reliability.

However there was evidence of significant overlap between these variables. Three of the four predictors with significant zero order correlations with the Padua Inventory were significantly inter-correlated - neuroticism, depression, and responsibility - such that increases in one variable corresponded with increases in the remaining two variables (see Table 9). In addition the three control variables were all significantly correlated with responsibility: depression to a moderate degree, and age and sex to a lesser degree.

Table 9.

Intercorrelations among Predictor Variables ($N$=151)(Normal Sample).

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. Age | | | | | | | |
| 2. Sex | -.02 | | | | | | |
| 3. Dep | -.12 | .11 | (.89) | | | | |
| 4. Neur | -.04 | .13 | .57** | (.86) | | | |
| 5. Ext | -.15 | .11 | -.26** | -.37** | (.89) | | |
| 6. Psy | -.10 | -.26** | .04 | -.17* | .18* | (.71) | |
| 7. Resp | -.17* | .17* | .32** | .22** | -.12 | -.26** | (.84) |

*Note: Reliabilities (Cronbach's, 1951, alpha coefficient) in parentheses along main diagonal.*
**p<.05 ; **p<.01 (significance of Beta coefficients tested using two-tailed tests).*
*Dep.= Depression, Neur.= Neuroticism, Ext.= Extraversion, Psy.= Psychoticism, Resp.= Responsibility.*

Of particular interest were the findings that even though responsibility was related to neuroticism and depression, it was not related to introversion (though neuroticism, depression, and introversion were related). Also, though psychoticism was not related to the criterion, it was inversely related to responsibility such that increases in responsibility were related to decreases in psychoticism.

Thus the new variable responsibility was correlated with all the other predictor variables (except introversion) as well as with the three control variables. Also though there was considerable overlap between the significant predictor variables this was not to the extent of producing multicollinearity.

In the following section hierarchical regression analyses will be used to investigate the unique contribution of the variables in predicting the criterion.

**Regression Analyses.**

Separate hierarchical regression analyses were conducted to test the second, third, and fourth hypotheses. In these analyses the demographic variables age and sex were controlled by entering them first into the regression equations. Depression, an "individual difference variable", was also controlled by entering it at the second step. This procedure permitted an investigation of the extent to which the variables of interest

accounted for additional variability in obsessive-compulsive behaviour, over and above that accounted for by age, sex, and depression.

The second hypothesis was that

*H(2) Differences in neuroticism and extraversion have added explanatory power in the prediction of obsessive-compulsive behaviour, beyond that afforded by differences in age, sex, and depression.*

Results obtained from testing the second hypothesis are reported in Table 10. Inspection of this table reveals that age and sex accounted for a small but significant 6% ($Adj.R^2$=4%) of the variance in obsessive-compulsive behaviour. At the second step depression added a significant 23% to the variance explained. Considered together, the three control variables accounted for 29% ($Adj.R^2$=28%) of criterion variance. At the third step, neuroticism and extraversion accounted for an additional 10% of the variability in obsessive-compulsive behaviour.

Table 10.

Hierarchical Multiple Regression of "Degree of disturbance due to Obsessions and Compulsions" on Age, Sex, Depression; Neuroticism and Extraversion (Hypothesis 2).

| Predictor | *R* | *Adj.R²* | *R² ch.* | *F* | Final Beta |
|---|---|---|---|---|---|
| Age | | | | | -.17** |
| Sex | .06 | .04 | .06 | 4.42** | -.07 |
| Depression | .29 | .28 | .23 | 20.29** | .30** |
| Neuroticism | | | | | .39** |
| Extraversion | .39 | .36 | .10 | 18.19** | .10 |

***p*<.01 *(significance of Beta coefficients tested using two-tailed tests).*

At the final step the important unique predictors were neuroticism, depression, and age. Neuroticism was the most important predictor (Beta=.39, $p$<.00), depression the second most important (Beta=.30, $p$<.00), and age the least important (Beta=-.17, $p$<.00) predictor of the criterion. However consistent with its nonsignificant zero-order correlation, extraversion did not make a significant contribution in its own right (Beta=.10, $p$<.17). Yet there was some evidence of a mild suppressor effect for extraversion. Further the Beta weight of neuroticism (.39) was considerably lower than its

zero-order correlation of .52, reflecting its significant correlation with depression. This analysis also identifies depression as an important control variable as it explains a significant 23% of the variance in severity of obsessive-compulsive behaviour.

Thus the second hypothesis was generally supported as age, sex, depression, neuroticism, and extraversion accounted for 39% ($Adj.R^2$=36%) of the variance in "degree of disturbance due to obsessions and compulsions". Moreover after age, sex, and depression were controlled neuroticism and extraversion accounted for a unique 10% of the variance with the contribution being predominantly from neuroticism.

The third hypothesis was that

*(H3) Differences in psychoticism have added explanatory power in the prediction of obsessive-compulsive behaviour over that of neuroticism and extraversion, and beyond that afforded by differences in age, sex, and depression.*

The third hypothesis was also tested using hierarchical multiple regression. The results obtained when psychoticism was added to the model are presented in Table 11. Thus the inclusion of extraversion, neuroticism, and

Table 11.

Hierarchical Multiple Regression of "Degree of disturbance due to Obsessions and Compulsions" on Age, Sex, Depression; Neuroticism, Extraversion, and Psychoticism (Hypothesis 3).

| Predictor | $R^2$ | $Adj.R^2$ | $R^2$ *ch.* | *F* | Final Beta |
|---|---|---|---|---|---|
| Age | | | | | -.18** |
| Sex | .06 | .04 | .06 | 4.42** | -.08 |
| Depression | .29 | .28 | .23 | 20.29** | .31** |
| Neuroticism | | | | | .38** |
| Extraversion | | | | | .11 |
| Psychoticism | .39 | .36 | .10 | 15.21** | -.05 |

***p<.01 (significance of Beta coefficients tested using two-tailed tests).*

psychoticism added significantly to the prediction of obsessive-compulsive behaviour. However psychoticism added nothing to the unique contribution of 10% made by extraversion and neuroticism in the second analysis. This was expected as psychoticism,

like extraversion, did not have a significant zero-order correlation with obsessive-compulsive behaviour. There was again some evidence of a mild suppressor effect for extraversion. Moreover, neuroticism emerged again as the most significant predictor (Beta = .38, $p < .00$), with depression second in importance (Beta = .31, $p < .00$), and age the least important significant predictor (Beta = -.18, $p < .00$). In the final equation the variables age, sex, depression, neuroticism, extraversion, and psychoticism accounted for 39% ($Adj.R^2 = 36\%$) of the variance, the same as for the variables in the second analysis.

The third hypothesis was therefore disconfirmed because neuroticism, extraversion, and psychoticism accounted for no additional unique variance over and above that accounted for by neuroticism and extraversion.

Finally, and very significantly, inspection of Table 12 reveals that the fourth and most important hypothesis in this study was supported. The fourth hypothesis was that

> *(H4) Differences in responsibility have added explanatory power in the prediction of obsessive-compulsive behaviour over that of neuroticism, extraversion, and psychoticism and beyond that afforded by differences in age, sex, and depression.*

When responsibility was added to neuroticism, extraversion, and psychoticism at the fourth step it added a significant 11% of unique variance over and above that contributed by the Eysenckian dimensions. In the final equation neuroticism persisted as the most significant predictor (Beta = .39, $p < .00$) with responsibility now second in importance (Beta = .37, $p < .00$), and depression third (Beta = .20, $p < .00$). Extraversion, age, and sex were not significant though there was some evidence of a mild suppressor effect for extraversion. Moreover in the final equation the variables age, sex, depression, neuroticism, extraversion, psychoticism, and responsibility accounted for a considerable 50% ($Adj.R^2 = 47\%$) of the variance in severity of obsessions and compulsions.

These results suggest that neuroticism and responsibility are measuring something over and above depression in the explanation of severity of obsessions and compulsions. They also indicate that the demographic variables age and sex are less important in the prediction of obsessions and compulsions.

Table 12.

Hierarchical Multiple Regression of "Degree of Disturbance due to Obsessions and Compulsions" on Age, Sex, Depression; Neuroticism, Extraversion Psychoticism and Responsibility (Hypothesis 4).

| Predictor | $R=2$ | $Adj.R^2$ | $R^2$ *ch.* | $F$ | Final Beta |
|---|---|---|---|---|---|
| Age | | | | | -.12 |
| Sex | .06 | .04 | .06 | 4.41** | -.11 |
| Depression | .29 | .28 | .23 | 20.29** | .20** |
| Neuroticism | | | | | .39** |
| Extraversion | | | | | .12 |
| Psychoticism | .39 | .36 | .10 | 15.21** | .04 |
| Responsibility | .50 | .47 | .11 | 20.32** | .37** |

**p<.05; **p<.01 (significance of Beta coefficients tested using two-tailed tests).*

In conclusion, for this normal sample the individual difference variables neuroticism and responsibility were significant predictors of "degree of disturbance due to obsessions and compulsions", as measured by the Padua Inventory. This persists even when their shared variance with depression is controlled, and when the demographic variables are also controlled. By contrast extraversion and psychoticism were not predictors of the criterion. However though psychoticism is not related to the criterion, decreases in psychoticism are significantly related to increases in responsibility. This is consistent with the fourth hypothesis which proposes that one particular aspect of psychoticism, responsibility, is the potent predictor of obsessive-compulsive behaviour.

## THE CLINICAL SAMPLE.

### The Criterion: Severity of Self-reported Disturbance due to Obsessive Thoughts and Compulsive Behaviours.

#### Total Scale Scores on the Padua Inventory

The mean Padua Inventory score was 82.95 ($SD=36.84$) for the sample of 20 subjects diagnosed as OCD according to DSM 111-R (1987) criteria. The range of PI scores was 14-156. The mean PI for males was 93.44 ($n=9$), and for females 74.36 ($n=11$). Though the male scores were higher than the female, there was no significant difference

between them for this small sample $F(1,16)=1.19$, $p<.29$. For his clinical sample of 35 male and 40 female obsessive-compulsives Sanavio (1988) reported the following mean Padua Inventory scores: 83.6 ($SD=34.8$) for males and 98.6 ($SD=32.3$) for females. Thus in Sanavio's samples females scored higher on the PI than males, though not to a significant degree. Accordingly it seems the mean Padua Inventory scores for this small pilot Australian sample are generally comparable to those reported by Sanavio (1988) for his Italian sample.

**Mean values of the Predictor Variables.**

The means and standard deviations of the predictor variables of interest - neuroticism, extraversion, psychoticism, depression, and responsibility - were calculated (see Table 13). As anticipated the clinical sample was more neurotic, introverted, depressed (moderate in contrast to minimal), and responsible but less psychotic than the normal sample.

Table 13.

Means and Standard Deviations of Predictor Variables ($N=20$) (Clinical Sample)

| Variable | Mean | *SD* | Range. |
|---|---|---|---|
| Neuroticism | 17.65 | 3.60 | 11-23 |
| Extraversion | 9.15 | 5.38 | 1-18 |
| Psychoticism | 4.95 | 3.75 | 0-12 |
| Responsibility | 23.00 | 12.17 | 4-37 |
| Depression | 20.45 | 8.74 | 6-37 |

**Correlations between the Criterion and Predictor Variables.**

As in the normal sample the predictors neuroticism, depression, and responsibility yielded significant positive zero-order correlations with the total Padua score such that increases in these variables corresponded with increases in PI scores (see Table 14). Neuroticism was also significantly positively correlated with two of the four Padua subscales, F1 and F4. That is increases in neuroticism were associated with increases in "Impaired Control of Mental Activities", and increases in "Urges and Worries of Losing Control over Motor Behaviours". Or increases in neuroticism seemed to be related to increased fear of, or actual loss of control over, both thoughts and behaviours.

Table 14.

Correlation Matrix of the Criterion and Predictor Variables ($N$=20) (Clinical Sample).

| Criterion | Predictors. | | | | | | |
|---|---|---|---|---|---|---|---|
| | Neur. | Ext. | Psy. | Resp. | Age | Sex | Dep. |
| Padua | .60** | -.07 | .27 | .48* | .06 | -.26 | .56** |
| F1 | .61** | .05 | .13 | .31 | -.10 | -.09 | .60** |
| F2 | -.02 | -.30 | .09 | .31 | .00 | -.23 | .22 |
| F3 | .30 | -.06 | .13 | .32 | .22 | -.40 | -.04 |
| F4 | .53** | .01 | .16 | .34 | .25 | .10 | .39 |

*$p<.05$;**$p<.01$ (significance of Beta coefficients tested using two-tailed tests).
*Neur.* = *Neuroticism*, *Ext.* = *Extraversion*, *Psy.* = *Psychoticism*, *Resp.* = *Responsibility*, *Dep.* = *Depression*.
*F1.* = *Impaired Control of Mental Activities.*
*F2.* = *Becoming Contaminated.*
*F3.* = *Checking.*
*F4.* = *Urges and Worries of Losing Control over Motor Behaviours.*

Depression was the only other predictor variable which had a significant correlation with a Padua subscale. Increases in depression were associated with increases in "Impaired Control of Mental Activities" (F1).

Thus, as for the normal sample, neuroticism, depression, and responsibility were the variables with significant zero-order correlations. In addition the rank ordering and moderate degree of the correlations was the same as that for the normal sample. It is, further, evident that the importance of responsibility in the normal sample is not unique to such a sample. Clearly responsibility is also important in the clinical sample.

**Intercorrelations among the Predictor Variables.**

There was no evidence of multicollinearity among the predictors as revealed by inspection of Table 15. In all instances the scale intercorrelations were at least .20 below the mean scale reliability. However there was evidence of significant overlap between the variables neuroticism, depression, and responsibility. Thus the three variables with significant zero-order correlations were significantly inter-correlated, such that increases in one variable corresponded with increases in the other two.

Table 15.

Intercorrelations among Predictor Variables ($N$=20)(Clinical Sample)

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. Age | | | | | | |
| 2. Sex | -.11 | | | | | |
| 3. Dep | -.15 | .02 | | | | |
| 4. Neur | .06 | -.03 | .67** | | | |
| 5. Ext | .20 | .20 | -.03 | .00 | | |
| 6. Psy | -.29 | -.23 | .06 | .00 | .13 | |
| 7. Resp | -.01 | -.06 | .10 | .55** | .01 | .10 |

*Note: Reliabilities (Cronbach's, 1951, alpha coefficient) in parentheses along main diagonal.*
**p<.05 ; **p<.01 (significance of Beta coefficients tested using two-tailed tests).*
*Dep. = Depression, Neur. = Neuroticism, Ext. = Extraversion, Psy. = Psychoticism, Resp. = Responsibility.*

## SUMMARY.

In summary, this small pilot clinical sample provides preliminary support for the assumption in this and the majority of OCD studies since 1970, that there is a continuum between normal and clinical OCD subjects. However this study proposes that the continuum is with respect to increases in the individual difference measures of neuroticism, depression, and responsibility and corresponding increases in severity of obsessions and compulsions. As expected the mean values of these four variables are higher in the clinical group. Their similar patterns of correlations suggest, however, that they work together in the same way, whether the sample is normal or clinical.

# DISCUSSION

The present study found that, for the normal sample, age and sex accounted for 6% ($AdjR^2$=4%) of the variance in obsessive-compulsive behaviour. Depression explained an additional 23% of variance increasing the variability explained by controls to 29% ($AdjR^2$=28%). However the Eysenckian dimensions neuroticism, extraversion, and psychoticism added a further 10% over and above that contributed by the control variables. The addition of responsibility contributed a further unique 11% to criterion prediction. Moreover, at the final step, all the variables accounted for 50% ($AdjR^2$=48%) of the variability in obsessive-compulsive behaviour. Neuroticism, responsibility, and depression were therefore the significant predictors with extraversion, psychoticism, age, and sex unimportant in obsessive-compulsive behaviour.

Taken together these results demonstrate the utility of H. J. and M. W. Eysencks' (1985) step-wise approach to building more powerful predictive behavioural equations; investigate the contribution of the Eysenckian factors, then attempt to explain more variance by entering those traits implicated by research into the particular behaviour of interest.

Moreover the same pattern of correlations persisted in the pilot clinical sample. Most importantly this suggests the variable proposed by Salkovskis (1985, 1989a, 1989b), "exaggerated beliefs about responsibility for behaviour", is relevant to both clinical and normal populations. It is also consistent with the assumption that obsessive-compulsive behaviour can legitimately be studied using large normal samples. Thus the present study has demonstrated for a normal sample of Australian University undergraduates that the more neurotic, responsible, and depressed a person is the more disturbing is their experience of obsessions and compulsions likely to be. Furthermore these same individual difference measures were central in the pilot clinical sample.

## THE PRESENT RESULTS: RELATION TO PREVIOUS RESEARCH.

### Neuroticism and Introversion.

Previous studies have typically implicated both neuroticism and introversion as important correlates of obsessions and compulsions. However the present study found that increases in neuroticism were associated with increases in obsessive-compulsive behaviour, whereas introversion was not an important predictor. This accords with Sanavio's (1988), but not the majority of previous research findings.

### Neuroticism, Introversion and the Cortical Arousal Theory.

If one applies cortical arousal theory to the present results, increases in limbic arousal or activation (neuroticism) will be associated with increases in obsessive-compulsive behaviour. Thus those with unstable emotional personalities will be more likely to experience obsessional thoughts and compulsive behaviours which they find disturbing. However increases in cortical arousal (introversion) will only be associated with some types of obsessions namely "Impaired Control of Mental Activities" and not with compulsions. Thus those with higher cortical arousal will be more likely to have "Impaired Control of Mental Activities". They will not necessarily have "Urges and Worries of Losing Control over Motor Behaviours", nor contamination or checking compulsions. An explanation of this result requires specific research into the cortical arousal theory and OCD. Nevertheless, the present results suggest emotional arousal rather than cortical arousal is critical in the experience of both obsessions and compulsions.

*Neuroticism.*

The importance of neuroticism in obsessions and compulsions can also be explained in terms of its various traits such as depression, anxiety, guilt feelings, low self esteem, tension, irrationality, shyness, moodiness, and emotionality. Of these depression has most consistently been found to be important in obsessions and compulsions. Nonetheless in the present study the variable neuroticism made the most significant contribution, even when the effects of depression were controlled. Anxiety and guilt have also been studied, but less frequently than depression.

There are few reported studies of anxiety, obsessions, and compulsions. Moreover anti-anxiety drugs have not had the reported success of certain anti-

depressants such as Clomipramine, Fluoxetine, and Fluvoxamine (Jenike, 1990). Most typically anxiety has been described as the conditioned response to obsessions which is then alleviated by compulsive behaviours. Salkovskis and colleagues however have recently proposed a more refined and specific role for anxiety as part of an explanatory model for the development of obsessions and compulsions.

Dent and Salkovskis (1986) employed the Beck Anxiety Checklist (Beck, Brown & Steer, 1986) and the Maudsley Obsessional Compulsive Inventory (Hodgson & Rachman, 1977). Also Reynolds and Salkovskis (1991) used the Beck Anxiety Inventory (Beck, Epstein, Brown et al., 1988) and an Intrusive Thoughts Questionnaire adapted from that used by Salkovskis and Harrison (1984). On the basis of these studies Salkovskis (1985, 1989a, 1989b) hypothesized that depression and anxiety affect the appraisal of a situation which may result in the individual over-assuming responsibility. This may, in turn, have an adverse effect on mood, with the negative mood increasing the likelihood of further negative intrusions (Teasdale, 1983). Significantly however, the present study found that responsibility, though moderately correlated with depression, made a considerable contribution even when depression was controlled. Contrary to Salkovskis' hypothesis neither neuroticism (anxiety) nor depression were necessary preconditions for the importance of responsibility. A testing of the proposed causal relationships in Salkovskis' model was not the purpose of the present research. Nonetheless future prospective studies are needed to further investigate the role of depression, anxiety, and responsibility in obsessions and compulsions.

Very recently Reynolds and Salkovskis (1991) investigated the possibility that guilt is the key underlying factor in exaggerated appraisals of responsibility for behaviour. However when using the Perceived Guilt Index (Otterbacher & Munz, 1973) they found that the PGI does not independently predict either pleasant or unpleasant intrusive thoughts. They concluded that over-perception of responsibility, hypothesized to play a role in problems with persistent intrusive thoughts, will not necessarily be associated with guilt feelings.

Thus the present study has again found that neuroticism is important in obsessions and compulsions. Moreover, though one of its traits depression was also significant, neuroticism retained its unique dimensional importance when depression was controlled. Recent studies of other neuroticism traits, such as anxiety and guilt, have proposed these traits are a necessary condition for the importance of responsibility in obsessions and compulsions. The evidence so far gathered in support of this hypothesis has been weak.

*Introversion.*

Introversion was not important in the present nor in Sanavio's (1988) study. This seems mainly attributable to the use of the Padua Inventory as the criterion measure. In addition the difference in results may also reflect changes in the composition of the extraversion-introversion dimension, as well as differences in the respective samples studied.

Criterion Measure.

In contrast then to the present study other previous research reports an association between both neuroticism and introversion and obsessive-compulsive behaviour. Generally either the Leyton Obsessional Inventory (LOI) (Cooper, 1970) or the Maudsley Obsessional Compulsive Questionnaire (MOCQ) (Hodgson & Rachman, 1977) was used as the criterion measure in such research. The LOI is a self-report measure, but only of certain types of obsessions and compulsions - domestic checking and cleaning behaviours. In fact according to Cooper (1970), the scale's designer, "Emphasis on the more alarming and unpleasant types of obsessional symptoms was avoided" (p.51) - violent and aggressive symptoms were not included. Kendell and DiScipio (1970), for instance, found that introversion and neuroticism were important in the obsessions and compulsions of depressed subjects when the LOI was the criterion measure. Thus for a depressed sample, introversion was important in domestic cleaning and checking obsessions and compulsions.

The MOCQ (Hodgson & Rachman, 1977) seems even more restrictive in its measure of obsessive-compulsive behaviour than the LOI. It is a measure of "only those obsessional problems associated with observable rituals", that is, compulsions (p.393). Kelly (1980), using the MOCL as the criterion measure, reported high introversion and neuroticism as measured by the Maudsley Personality Inventory (Eysenck, 1959) for his obsessional clients. Thus for an obsessional sample, introversion and neuroticism were both important when the criterion measure was loaded on compulsive behaviours.

However using the Eysenck Personality Inventory (1975), Sanchez-Turet et al. (1981) found that psychiatrically diagnosed obsessives and depressives were more introverted but less neurotic than hysterics, dysthymics, and reactive depressives. It could be argued that the psychiatric diagnoses were more strongly weighted towards the more easily identified and observable compulsive behaviours. Taken together these studies provide evidence of a relationship between neuroticism and introversion on the one hand and compulsions on the other. However other studies indicate that the relationship is with both compulsions and obsessions where the behaviours are of the domestic cleaning and checking kind. The studies that found introversion and neuroticism important in obsessive-compulsive behaviour only measured circumscribed aspects of that behaviour.

The finding in the present study (as in Sanavio's (1988)) that introversion was not a significant predictor of obsessions and compulsions was, nevertheless, unexpected. Though the previous studies implicating introversion did not use the Padua Inventory, it has well established convergent validity with both the MOCQ and the LOI (Sternberger & Burns, 1990). Accordingly a similar pattern of relationships with predictor variables was anticipated for the Padua Inventory as was found for the MOCL and the LOI. This did not occur.

The present study did, however, find a significant correlation (in the normal sample) between introversion and "Impaired Control of Mental Activities", one of the two obsessional factors of the Padua Inventory. Yet given the apparent loading of the LOI and to a greater extent the MOCQ on compulsive behaviour, one might have expected both neuroticism and introversion to correlate significantly with the two compulsive scales. Instead, introversion only correlated with one of the obsessive scales of the Padua Inventory. It therefore seems doubtful that the reason introversion and neuroticism were both important in earlier studies was because the criterion measure was tapping compulsions.

Close inspection of the 30 item MOCQ reveals that one third tap features of obsessions: for example, "I have a very strict conscience", "I don't worry unduly about contamination if I touch an animal". Thus the scale is weighted towards compulsions, but measures obsessions as well. In contrast the Padua Inventory is weighted towards obsessions; 30 items load onto the obsessional factors, but only 21 items load onto the compulsion factors. It appears, then, that there is an imbalance in both the Padua Inventory and in other previously used measures. If this is the case, neuroticism is an important factor in the development of obsessions and compulsions.

Introversion, however, only remains important for some measures of compulsions (the MOCQ and LOI, but not the PI); and some types of obsessions (domestic (LOI), general (MOCQ) and "Impaired Control of Mental Activities" (PI)). Future research needs to address this mild bias toward obsessions in the Padua Inventory in order that the role of introversion can be more accurately tested.

The Composition of the Extraversion-Introversion Dimension.

Another reason why introversion proved not to be important when the Padua Inventory measure was used could be that, during its development, the nature of the introversion-extraversion dimension altered. When the earlier studies reported a significant role for introversion in obsessions and compulsions, introversion included the trait impulsivity-restraint (Zuckermann et al., 1988). Perhaps in those studies decreases in impulsivity (or increases in restraint) played an important role in the overall contribution of introversion to increases in obsessions and compulsions. More recently when the Padua Inventory has been used as the criterion measure, impulsivity has been included as a trait of psychoticism rather than introversion and this may account for introversion's reduced association. However, even if restraint-impulsivity - like responsibility - is an important trait in obsessions and compulsions the multi-faceted nature of psychoticism works against it contributing an overall significant role in obsessions and compulsions.

Samples Studied.

Finally, the differences in the samples previously studied (depressed, obsessional, obsessive-compulsive), compared with a normal sample in the present study, could further explain differences in the operation of introversion. Future research needs to investigate larger clinical obsessive-compulsive groups than the present pilot sample of 20 used in this study. In future research, it would be useful to explore the contribution to obsessive-compulsive behaviour made by the individual components of personality dimensions such as introversion-extraversion. This would provide more information about the way introversion operates as a total dimension and which traits make the crucial contribution to obsessions and compulsions.

**Psychoticism.**

Contrary to predictions the third Eysenckian dimension, psychoticism, was not a significant predictor of obsessive-compulsive behaviour in the present study. Perhaps this was because psychoticism, rather than being an integrated personality

dimension contains various, sometimes apparently unrelated, components. This feature may also explain why it has been infrequently studied in relation to obsessions and compulsions. Moreover, despite its recent revision (EPQ-R, 1985), psychoticism persists as a multi-faceted construct, though many of its other psychometric properties have been greatly improved (Eysenck, Eysenck & Barrett, 1985). Nonetheless previous research has sometimes found that it is important (Rachman, 1976). There were, furthermore, no reported studies of obsessions and compulsions employing the more recently revised "P" scale which includes the trait impulsivity-restraint.

In the present study, however, psychoticism had a significant negative correlation with one of the compulsive factors of the Padua Inventory - "Becoming Contaminated" - but a significant positive correlation with one of the obsessive factors - "Urges and Worries of Losing Control over Motor Behaviours". These findings indicate that psychoticism has a complex relationship with obsessive-compulsive behaviour. Thus increases in P increase one aspect of criterion variance ("Urges and Worries of Losing Control over Motor Behaviours"), whereas decreases in P increase a different aspect of criterion variance ("Becoming Contaminated"). An overall insignificant result for P as a predictor of obsessions and compulsions is not, therefore, surprising.

While these important preliminary findings for psychoticism need to be replicated, they do raise important questions for future research. For instance, given the complex and multi-faceted nature of P, it would be of interest to explore which traits are associated with increases in "Urges and Worries of Losing Control over Motor Behaviours?" Increases in the P trait "impulsivity" could be important, as various research suggests. Foulds (1965) proposed that "impulsiveness" was another name for the consequences of being unable to intend one's own actions. And, as Forbes (1980) notes, this definition of impulsiveness is apt when thinking of the impulsivity of either psychotics or delinquents. However impulsivity also captures the lack of control and the "wanting not to want" reported by those with disturbing obsessions and compulsions (Rapoport, 1990). Accordingly an important focus for future research would be to understand the specific role of the psychoticism trait "impulsivity" in obsessions and compulsions.

All things considered psychoticism is not, therefore, important in obsessions and compulsions. Nonetheless, the present study has identified more precisely than any previous research the complex contribution that psychoticism makes to obsessions and compulsions. Moreover it is "responsibility" a more precise concept than P, which plays an important role in both obsessions and compulsive behaviour. The present study found a significant inverse relationship between psychoticism and

"responsibility", which can be regarded as measuring a P trait. Thus decreases in psychoticism were associated with increases in responsibility.

**Responsibility.**

Responsibility accounted for an additional 11% of unique variance in obsessions and compulsions as measured by the Padua Inventory over and above that explained by age, sex, depression, and the three Eysenckian factors. Thus, consistent with Salkovskis' (1985, 1989a, 1989b) findings, increases in responsibility were associated with increases in the criterion and with increases in each of its four subscales. Responsibility was also associated with increases in neuroticism, depression, and introversion, and with decreases in psychoticism. Of the three significant criterion predictors responsibility was second in importance to neuroticism, but more important than depression. This was the case even when the contribution of depression and age were accounted for. Moreover this same pattern of results for responsibility was found for the pilot clinical sample.

## Why is Responsibility Linked to the Padua Inventory?

The findings made in this study might suggest that responsibility and the Padua Inventory are measuring the same construct. Certainly a superficial inspection of items seems to indicate that there is a lot of overlap between what the Padua Inventory and the variable responsibility are measuring. There is, however empirical, conceptual, and clinical evidence to indicate that responsibility and the PI are distinct and that they are measuring different things.

**Empirical Evidence that Responsibility and the Padua Inventory are Distinct.**

In the present study the correlation between these two scales was .39 below their mean scale reliability. Thus the two scales were empirically distinct though obviously related ($r = .50, p < .01$). Moreover responsibility accounted for a significant but only moderate 11% of the variance in the Padua Inventory. In addition, Salkovskis (1989a) reported that in a study of 243 non-clinical subjects, he found a significant correlation between higher scores on "belief ratings of responsibility for harm" and higher scores on the Maudsley Obsessive-Compulsive Inventory (Hodgson & Rachman, 1977). Thus responsibility was significantly related with a criterion measure of obsessions and compulsions other than the Padua Inventory.

**Clinical Evidence.**

Crino has found from his extensive clinical experience in treating OCD that some clients state that their obsessions and compulsions are not necessarily linked with responsibility. When asked why they think or act as they do they reply, "Because I just have to" (R. D. Crino, personal communication, March, 1991). Nonetheless, though perhaps not important for all OCDs, responsibility was important for a significant number of normals and clinicals in the present study. If the Padua Inventory and responsibility were measuring the same construct, all clinical OCDs, rather than the majority, should have had high Padua Inventory as well as high responsibility scores. This was not the case.

**Conceptual Evidence.**

Sanavio (1988) has called the four factors of the Padua Inventory "Impaired Control over Mental Activities", "Urges and Worries of Loss of Control over Motor Behaviour", "Becoming Contaminated", and "Checking Behaviours". In the present study the three responsibility factors were named "Control", "Concern to act to Prevent Harm", and "the Belief that Thoughts Lead to Actions". On inspection the first two mentioned Padua Inventory factors (the obsessive factors) do share with the first "responsibility" factor an emphasis on "control".

However the second and third factors of responsibility are explicit about the <u>why</u>, rather than the <u>what</u> (happens) that is described in the two Padua Inventory compulsive factors. This was no accident. The items of the responsibility scale were developed with the explicit intention of testing Salkovskis' (1985, 1989a, 1989b) theoretical formulation about why normals and clinicals experience obsessions and compulsions so differently. He theorized it was because of differences in beliefs about responsibility for behaviour. In contrast (with the exception of 9 items) the Padua Inventory items typically describe behaviour and not why the behaviour occurs. The Responsibility Scale asks the respondent to indicate to what extent "why" statements about obsessions and compulsions apply to them. Finally, inspection of the items from the two scales suggests some overlap, but predominantly distinctness.

Nonetheless it could be argued that because the Responsibility Scale attempts to understand the nature of the conscious appraisals made in relation to obsessions and compulsions, it necessarily loads onto thoughts or obsessions. The purpose for which the scale was developed makes this feature unavoidable. However, what the

results from the present study indicate are that thoughts of a particular kind - exaggerated assumptions about responsibility for behaviour - are what are important in obsessions and compulsions.

However Salkovskis' (1985, 1989a, 1989b) conceptualization of responsibility would benefit from refinement, as would the scale developed in the present study. Both could be improved by exploring the relationship between responsibility and several measures of obsessions and compulsions. Unfortunately practicalities intervened which made this impossible in the present study. Also the Padua Inventory is currently a mix of items pertaining to what behaviours the respondent finds disturbing (34 items) and those which also include a specific reason for why the respondent is disturbed by the particular behaviour (9 items). Its utility as a criterion measure would be improved by excluding those items that assume an explanatory status. Such a role is best left to predictor variables.

It could also be argued that the Responsibility Scale developed for the present study is a cognitive appraisal scale. Therefore reference to it as a trait is inappropriate. Such a criticism presupposes, however, an unnecessarily narrow conception of what a trait refers to. H. J. Eysenck (1976) described traits as invariant factors in human behaviour such as abilities, traits, and attitudes which give rise to individual differences. Also, according to Clark and Hemsley (1985), certain beliefs or schemata are considered fundamental aspects of personality structure by both Beck (1976) and Ellis (1977). To treat a cognitive appraisal scale as a trait, seems consistent with the conceptualizations of at least these three prominent researchers. Thus there is empirical, clinical, and conceptual evidence that responsibility is not measuring the same construct as the Padua Inventory.

**The Theoretical Basis for the Importance of Responsibility.**

The responsibility results are entirely consistent with Salkovskis' (1985, 1989a, 1989b) clinical and research findings that those individuals who hold exaggerated beliefs about responsibility for harm to themselves or others, are more vulnerable to the development of obsessive-compulsive behaviours. Such individuals, like the majority, have obsessions or intrusive thoughts. What sets them apart is their appraisal of such thoughts. These appraisals are characterized by exaggerated responsibility for the thoughts which takes the form of a concern to act to prevent harm, the belief that thoughts lead to action, and a general sense of lack of control over the thoughts and their consequences. Perhaps such exaggerated appraisals of responsibility are more likely in those with high levels of

neuroticism (emotional instability) and depression. Perhaps, also, such appraisals further increase neuroticism, depression, and responsibility. As stated above, however, causality and direction cannot be inferred from the present correlational data. Nonetheless the importance of neuroticism, responsibility, and depression in obsessions and compulsions has been established for the present samples.

Further, the ten-item scale developed in the present study to measure responsibility was designed specifically to tap Salkovskis' (1985, 1989a, 1989b) five dysfunctional assumptions. This scale possessed adequate internal consistency. Construct validity was also established to the extent that the scale closely mirrored Salkovskis' (1985, 1989a, 1989b) conceptualizations of the responsibility construct. However future refinements need to include the establishment of test-retest reliability and the addition of negatively worded items. Those devised for the present study were deleted as they had low inter-item correlations. Also, when it becomes available, an Australian replication of the Intrusive Thoughts Questionnaire (Salkovskis & Dent; 1986, 1989) upon which Salkovskis has based his empirical support for the responsibility concept, would further add to an understanding of how responsibility works in obsessions and compulsions.

## THE CONTROL VARIABLES - DEPRESSION, AGE, AND SEX.

### Depression.

Depression was included as a control variable in the present study so that the effects of the variables of interest - the Eysenckian dimensions and responsibility - could be studied. Given the substantial though inconclusive evidence of a relationship between depression and obsessions and compulsions, it was important to account for any contribution it might make. Though depression had shared variance with neuroticism, neuroticism emerged as the most important predictor of obsessions and compulsions, even when the effects of depression were accounted for. Furthermore, though, depression was significantly correlated with responsibility, responsibility emerged as the second most important predictor of the criterion when the effects of depression were accounted for. When all the variables had been entered, depression was the third of the significant criterion predictors. Depression showed the same pattern of correlations in the clinical sample.

However as with most previous studies of depression and obsessions and compulsions, a directional causal relationship cannot be imputed. Increases in depression may lead to increases in obsessive-compulsive behaviour, or increases in obsessive-

compulsive behaviour may produce increases in depression. Demonstration of directional causal relationships would require a longitudinal design.

**Age and Sex.**

The effects of age and sex were controlled in the present study. This was on the basis of Sanavio's (1988) finding for his Italian sample that both variables were significant. In the present study age was correlated with the criterion, and obsessions and compulsions were more prevalent in younger subjects, though not to a significant extent. Sex was not correlated with the criterion, and the Age X Sex interaction was not significant. However because sex was associated with psychoticism and responsibility its effects were controlled for.

Thus for the normal sample the contribution of age, sex, and depression were accounted for, but depression was the most important of these variables.

## LIMITATIONS OF THE PRESENT STUDY.

The three major limitations of the present study were the correlational status of the data, the small size of the pilot clinical sample, and the incomplete establishment of the psychometric properties of the newly developed Responsibility Scale. Future longitudinal studies of larger clinical samples are needed to replicate the present findings.

A further potential limitation is the nature of the convenience normal sample chosen. However Edwards and Dickerson (1987) found a similar distribution of characteristics of negative intrusions, frequency, form, and content for their University student sample to those reported elsewhere on normal populations (Rachman & DeSilva, 1978; Parkinson & Rachman, 1981; Salkovskis & Harrison, 1984). Nonetheless the generalizability of the present results would be strengthened by future studies of large normal and clinical samples.

Finally, though a significant 50% ($AdjR^2 = 47\%$) of variance in obsessions and compulsions was explained, a sizeable 50% remains unexplained. Future research needs to investigate the importance of genetic and biological factors and of traits other than responsibility, such as impulsivity-restraint and anxiety. This would permit a systematic theoretical development based on the important personality factors and

refined by taking into consideration the contribution of relevant traits. Moreover any important genetic and biological factors would need to be isolated.

## IMPLICATIONS OF THE PRESENT FINDINGS.

The findings for this normal sample, reflected in the small clinical sample, have several implications. These pertain specifically to the assessment and treatment of clinical obsessions and compulsions. First, despite its slight bias towards obsessions, the Padua Inventory could play a useful part in the process of clinical assessment of obsessions and compulsions. Not only does it elicit information about the nature of the obsessions and compulsions experienced, but also the associated degree of discomfort. In addition, being a self-report measure, it is time-efficient. Future studies however, need first to demonstrate its utility for such a specific purpose.

Secondly, the present study suggests that the only Eysenckian dimension associated with increases in obsessions and compulsions is neuroticism. Introversion was not a factor. This finding needs replication using a revised Padua Inventory - one which includes a more equitable balance of obsessive and compulsive items. If other support is found for the present finding for introversion, this has potentially important treatment implications. The large body of research into introversion, and its effects on learning and habituation (getting used to stimuli such as obsessions), may need to be redirected towards neuroticism. More needs to be known about what role neuroticism plays in an individual's appraisal of obsessions and their subsequent ability to habituate to them. Such research may necessitate a considerable revamping of the current cognitive and behavioural (exposure and response prevention) treatments for obsessions and compulsions.

Thirdly, the present study also demonstrates that specific traits such as responsibility, and possibly traits such as impulsivity or anxiety, may be important. Initially the treatment application of this finding for responsibility seems obvious.

Exposure and response prevention have established success in treating 75% of cases of obsessions and compulsions (Crino, 1990). Also there are a growing number of OCD treatment studies investigating the efficacy of cognitive techniques (e.g., Emmelkamp et al., 1988; Salkovskis & Warwick, 1988; Salkovskis & Westbrook 1987). However these researchers concluded that the relative contribution of explicit cognitive techniques have not yet been established. Nonetheless whether the treatment of choice is

exposure and response prevention or cognitive restructuring, the use of the Responsibility Scale as part of the assessment of obsessions and compulsions would more precisely identify the focus of treatment; the particular dysfunctional beliefs. Such information would be of particular value in cognitive restructuring where the exaggerated beliefs need to be closely identified, challenged, and altered. Should additional traits be identified as important, this knowledge would contribute further to current treatment strategies for OCD.

However more precise identification of the dysfunctional beliefs, does not necessarily guide the clinician to more effective treatment strategies. Such a step also requires testable theories of thought and behaviour change. The future awaits such developments.

## CONCLUSIONS.

The present study demonstrates that increases in neuroticism, responsibility, and depression are associated with increased severity of discomfort from obsessions and compulsions. Such findings can be generalized to the normal population though their clinical application awaits longitudinal studies of large clinical samples. Nonetheless support was found for the assumption that normals and clinicals only differ quantitatively in their experience of obsessions and compulsions. These differences are, moreover, attributable in part to the same variables displaying the same pattern of correlations. Accordingly the usefulness of personality measures of individual differences as predictors of obsessions and compulsions has been confirmed. This study also demonstrated the utility of establishing the important Eysenckian dimensions prior to adding traits implicated by research. Future research is required that builds on these findings by investigating the potential additional contribution of such traits as impulsivity, anxiety, and guilt.

# REFERENCES.

Ananth, J. (1985). Pharmacotherapy of obsessive compulsive disorder. In M. Mavissakalian, S. M. Turner, & L. Michelsen (Eds.), Obsessive compulsive disorder: Psychological and pharmacological treatment. New York: Plenum Press.

Beck, A. T. (1976). Cognitive therapy and the emotional disorders. New York: New American Library.

Beck, A. T., & Beamesderfer, A. (1974). Assessment of depression: The depression inventory. In P. Pichot (Ed.), Modern problems in pharmacopsychiatry (pp. 151-169). Basel, Switzerland: Karger.

Beck, A. T., Brown, G., & Steer, R. A. (1986). The Beck Anxiety Checklist. Unpublished Manuscript, University of Pennsylvania, Centre for Cognitive Therapy, Philadelphia, Pa.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. Journal of Consulting and Clinical Psychology, 56, 893-897.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). Cognitive therapy of depression. New York: Guilford Press.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review, 8, 77-100.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.

Beech, H. R., & Perigault, F. (1974). Toward a theory of obsessional disorder. In H. R. Beech (Ed.), Obsessional states. London: Methuen.

Beech, H. R., & Vaughan, M. (1978). Behavioural treatment of obsessional states. Brisbane: John Wiley.

Bishop, D. V. M. (1977). The P scale and psychosis. Journal of Abnormal Psychology, 86, 127-134.

Black, A. (1974). The natural history of obsessional neurosis. In H. R. Beech (Ed.), Obsessional states. London: Methuen.

Borkovek, T. (1979). Pseudo - (experimental) insomnia and idiopathic (objective) insomnia. Advances in Behaviour Research and Therapy, 2, 27-55.

Braithwaite, V. A. (1987). The scale of emotional arousability: Bridging the gap between the neuroticism construct and its measurement. Psychological Medicine, 17, 217-225.

Cameron, O. G., & Hill, E. M. (1989). Women and anxiety. Psychiatric Clinics of North America, 12 (1), 175-86.

Childs, D. (1970). The essentials of factor analysis. London: Holt, Rinehart, & Winston.

Clark, D. A., & Hemsley, D. R. (1985). Individual differences in the experience of depressive and anxious, intrusive thoughts. Behaviour Research and Therapy, 23 (6), 625-633.

Clark, D. A., & de Silva, P. (1985). The Nature of depressive and anxious, intrusive thoughts: Distinct or uniform phenomena? Behaviour Research and Therapy, 23 (4), 383-393.

Cooper, J. (1970). The Leyton Obsessional Inventory. Psychological Medicine, 1, 48-64.

Cottraux, J., Bouvard, M., Defayolle, M., & Messy, P. (1988). Validity and factorial structure of the compulsive activity checklist. Behaviour Therapy, 19, 45-53.

Crino, R. D. (1990). Serotonin and obsessive compulsive disorder. In N. McNaughton, & G. Andrews (Eds.), Anxiety. Dunedin: University of Otago Press.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. Psychomatrika, 16, 297-334.

D'Andrade, R. G. (1965). Trait psychology and componential analysis. American Anthropologist, 37, 215-228.

Dent, H. R., & Salkovskis, P. M. (1986). Clinical measures of depression, anxiety and obsessionality in non-clinical populations. Behaviour Research and Therapy, 24 (6), 689-691.

Derogatis, L. (1983). SCL-90-R administration, scoring and procedures manual-11 for the (R)evised version and other instruments of the psychopathology rating scale series. Towson, Md: Clinical Psychometric Research.

DeVeaugh-Geiss, J., Landau P., & Katz, R. (1989). Treatment of obsessive compulsive disorder with clomipramine. Psychiatric Annals, 19, 97-101.

Diagnostic and Statistical Manual of Mental Disorders. (1980) (Third Edition). DSM-111. Washington, D.C.: American Psychiatric Association.

Diagnostic and Statistical Manual of Mental Disorders. (1987). (Third Edition Revised). DSM-111-R. Washington, D.C.: American Psychiatric Association.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. Annual Reviews in Psychology, 41, 417-40.

Edwards, S., & Dickerson, M. (1987). On the similarity of positive and negative intrusions. Behaviour Research and Therapy, 25 (3), 207-211.

Ellis, A. (1977). The basic clinical theory of rational-emotive therapy. In A. Ellis, & R. Grieger (Eds.), Handbook of rational-emotive therapy. New York: Springer.

Emmelkamp, P. M. G. (1982). Phobic and Obsessive-Compulsive Disorders: Theory, research and practice. New York: Plenum.

Emmelkamp, P. M. G. (1988). Cognitive and relational factors in the treatment of anxiety disorders. Paper presented at the World Congress of Behaviour Therapy, Edinburgh.

Emmelkamp, P. M. G., Visser, S., & Hoekstra, R. J. (1988). Cognitive therapy vs exposure in vivo in the treatment of obsessive-compulsives. Cognitive Therapy and Research, 12, 103-114.

Esquirol (1837). In Berrios, G. E. Obsessional Disorders during the 19th Century: Terminology and classificatory issues. In W. F. Bynum, R. Porter, & M. Shepherd (Eds.), (1985). Anatomy of madness. London: Tavistock.

Eysenck, H. J. (1947). Dimensions of personality. London: Routledge & Kegan.

Eysenck, H. J. (1952). The Scientific Study of Personality. London: Routledge & Kegan.

Eysenck, H. J. (1957). The dynamics of anxiety and hysteria. New York: Praeger.

Eysenck, H. J. (1959). The Manual of the Maudsley Personality Inventory. London: University of London Press.

Eysenck, H. J. 1964). Crime and personality. Boston: Houghton Mifflin.

Eysenck, H. J. (1967). The biological basis of personality. Springfield, Il.: Charles C. Thomas.

Eysenck, H. J. (1970). The structure of human personality. London: Methuen.

Eysenck, H. J. (1971). Masculinity-femininity, personality and sexual attitudes. Journal of Sex Research, 7, 83-88.

Eysenck, H. J. (Ed.), (1973). Handbook of abnormal psychology. London: Pitman.

Eysenck, H. J. (1976). Forward. In H. Eysenck (Ed.), The measurement of personality. Lancaster, England: MTP

Eysenck, H. J. (Ed.), (1981). A model for personality. New York: Springer.

Eysenck, H. J. (1987). Arousal and personality. The origins of a theory. In J. Strelau, & H. J. Eysenck (Eds.), Personality dimensions and arousal (pp.1-13). New York, London: Plenum.

Eysenck, H. J., & Eysenck, M. W. (1985). Personality and individual differences. A natural science approach. Plenum Press. New York and London.

Eysenck, H. J., & Eysenck, S. B. G. (1964). Manual of the Eysenck Personality Inventory. University of London Press.

Eysenck, H. J., & Eysenck, S. B. G. (1975). Manual of the Eysenck Personality Questionnaire. (Junior and Adult). Hodder and Stoughton.

Eysenck, H. J., & Eysenck, S. B. G. (1976). Psychoticism as a dimension of personality. London: Hodder and Stoughton.

Eysenck, S. B. G., & Eysenck, H. J. (1963). The validity of questionnaires and rating assessments of extraversion and neuroticism and their factorial validity. British Journal of Psychology, 54, 51-62.

Eysenck, S. B. G., & Eysenck, H. J. (1978). Impulsiveness and venturesomeness: Their position in a dimensional system of personality description. Psychological Reports, 43, 1247-1255.

Eysenck, S. B. G., Eysenck, H. J., & Barrett, P. (1985). A revised version of the psychoticism scale. Personality and Individual Differences, 6 (1), 21-29.

Eysenck, H. J., & Rachman, S. (1965). Causes and cures of neurosis. London: Routledge and Kegan.

Flament, M., Whitaker, A., Rapoport, J. L., Davies, M., Berg, C. Z., Kalikow, K., Sceery, W., & Shaffer, D. (1988). Obsessive compulsive disorder in adolescence: An epidemiological study. Journal of the American Academy of Child and Adolescent Psychiatry, 27 (6), 764-771.

Foa, E. B., Steketee, G. S., Grayson, J. B., Turner, R. M., & Latimer, P. (1984). Deliberate exposure and blocking of obsessive-compulsive rituals: Immediate and long term effects. Behaviour Therapy, 15, 450-472.

Foa, E. B., Steketee, G. S., & Ozarow, B. J. (1985). Behaviour therapy with obsessive compulsives: From theory to treatment. In M. Mavissakalian, S. M. Turner, & L. Michelsen (Eds.), Obsessive Compulsive Disorder: Psychological and pharmacological treatments. New York: Plenum Press.

Foulds, G. A. (1965). Personality and personal illness. London: Tavistock.

Forbes, A. R. (1980). In search of psychoticism: Some conclusions revised. Personality and Individual Differences, 1, 335-340.

Fransella, F. (1974). Thinking and the obsessional. In H. R. Beech (Ed.), Obsessional states. London: Methuen.

Freund, B., Steketee, G. S., & Foa, E. B. (1987). Compulsive Activity Checklist (CAC): Psychometric analysis with obsessive-compulsive disorder, Behavioural Assessment, 9, 67-79.

Gittleson, N. L. (1966). The effect of obsessions on depressive psychosis. British Journal of Psychiatry, 112, 253-59.

Goodman, W. K., Price, L. H., Rasmussen, S. A., Mazure, C., Fleischmann, R. L., Hill, C. L., Heninger, G. R., & Charney, D. S. (1989). The Yale-Brown Obsessive Compulsive Scale. 1. Development, use and reliability. Archives of General Psychiatry, 46, 1006-1011.

Gordon, P. K. (1985). Allocation of attention in obsessional disorder. British Journal of Clinical Psychology, 24, 101-107.

Gray, J. A. (1970). The psychophysiological basis of introversion-extraversion. Behaviour Research and Therapy, 8, 249-266.

Gray, J. A. (1973). Causal theories of personality and how to test them. In J. R. Royce (Ed.), Multivariate analysis and psychological theory (pp.182-205). London: Academic Press.

Gray, J. A. (1981). The psychophysiology of anxiety. In R. Lynn (Ed.), Dimensions of personality. Papers in honour of H. J. Eysenck (pp.233-252). Oxford: Pergamon.

Griffiths, J. (1975). Personality and symptomatology in psychiatric patients. Unpublished doctoral dissertation, London. Cited in H. J. Eysenck, & S. B. G. Eysenck (1976). Psychoticism as a dimension of personality. London: Hodder and Stoughton.

Gross, O. (1902). In H. J. Eysenck (1987). Arousal and personality. The origins of a theory. In J. Strelau, & H. J. Eysenck (Eds.), Personality dimensions and arousal (pp.1-13). New York, London: Plenum.

Hafner, R.J., & Miller, R.J. (1990, Dec.). Obsessive-Compulsive Disorder: An exploration of some unresolved clinical issues. Australian and New Zealand Journal of Psychiatry, 24 (4), 480-485.

Hamilton, M. (1960). A rating scale for depression. Journal of Neurology, Neurosurgery, and Psychiatry, 23, 56-62.

Hare, R. D., & Schalling, D. (Eds.). (1978). Psychopathic behaviour: Approaches to research. London: Wiley.

Hathaway, S. R., & McKinley, C. (1943). Booklet for the Minnesota Multiphasic Personality Inventory. New York: The Psychological Corporation.

Hodgson, R. J., & Rachman, S. J. (1977). Obsessional-compulsive complaints. Behaviour Research and Therapy, 15, 389-395.

Hull, C. L. (1943). Principles of behaviour. New York: Appleton-Century.

Hunter, R., & MacAlpine, I. (1963). Three hundred years of psychiatry. London: Oxford University Press.

Insel, T. R. (1990). Phenomenology of obsessive compulsive disorder. Journal of Clinical Psychiatry, 51 (2) (Suppl.), 4-8.

Janet, P. (1903). Les obsessions et la psychasthenie. Paris: Bailliere.

Jenike, M.A. (1990, Feb.). Approaches to the patient with treatment-refactory obsessive compulsive disorder. Journal of Clinical Psychiatry, 51:2 (Suppl.), 15-21.

Jenike, M. A., Armentano, M. E., & Baer, L. (1987, Feb.) Disabling obsessive thoughts responsive to antidepressants. Journal of Clinical Psychopharmacology, 7 (1), 33-35.

John, O. P. (1989). Towards a taxonomy of personality descriptors. In D. M. Buss, & N. Cantor (Eds.), Personality psychology. Recent trends and emerging directions (pp.261-271). New York: Springer-Verlag.

Johnson, S. (1759). Tale of Rasselas. In Bate, W. J. (1975). Samuel Johnson. New York: Harcourt, Brace, Jovanovich.

Karno, M., Golding, J. M., Sorenson, S. B., & Burnam, M. A. (1988). The epidemiology of obsessive compulsive disorder in five US communities. Archives of General Psychiatry, 45, 1094-1099.

Kendell, R. E., & DiScipio, W. J. (1970). Obsessional symptoms and obsessional personality traits in patients with depressive illnesses. Psychological Medicine, 1, 65-72.

Kelly, D. (1980). Anxiety and Emotions. Physiological Basis and Treatment. Springfield, U.S.A.: Charles C. Thomas.

Kirkcaldy, B. D. (1986). Personality profiles of psychiatric groups. Personality and Individual Differences, 7 (1), 125-126.

Kringlen, E. (1965). Obsessional neurotics: A long term follow-up. British Journal of Psychiatry, 111, 709-722.

Legg England, S. K. (1986). Determinants of the uncontrollability of intrusive thoughts: Investigation of the unpleasantness hypothesis and development of an alternative approach. Unpublished Honours Thesis. A.N.U., Canberra, A.C.T.

Legg England, S., & Dickerson, M. (1988). Intrusive thoughts: Unpleasantness not the major cause of uncontrollability. Behaviour Research and Therapy, 26, 277-279.

Lightfoot, S. L., & Oliver, J. M. (1985). The Beck Inventory: Psychometric properties in university students. Journal of Personality Assessment, 49, 434-436.

Mather, M. D. (1970). Obsessions and compulsions. In C. Costello (Ed.), Symptoms of psychopathology. A Handbook. Sydney: John Wiley.

Marks, I. M. (1987). Fears, phobias and rituals. Panic, anxiety and their disorders. New York, Oxford: Oxford University Press.

Maudsley, H. (1895). The pathology of the mind. London: Macmillan.

McKenzie, J. (1988). An item-factor analysis of the Eysenck Personality Questionnaire (E.P.Q.): Will the real personality factors stand up? Journal of Personality and Individual Difference, 9 (4), 801-810.

McRae, R. R. (1989). Why I advocate the five-factor model: Joint factor analyses of the NEO-PI with other instruments. In D. J. Buss, & N. Cantor (Eds.), Personality psychology - Recent trends and emerging directions (pp.237-245). New York: Springer-Verlag.

Meyer, V. (1966). Modification of expectations in cases with obsessional rituals. Behaviour Research and Therapy, 4, 237-80.

Mischel, W. (1969). Continuity and change in personality. American Psychologist, 24, 112-1018.

Mothersill, K. J., & Neufeld, R. W. J. (1985). Probability learning and coping in dysphoria and obsessive-compulsive tendencies. Journal of Research and Personality, 19, 152-169.

Nagpal, M., & Gupta, B. S. (1979). Personality, reinforcement and verbal operant conditioning. British Journal of Psychology, 70, 471-176.

Otterbacher, J. R., & Munz, D. C. (1973). State-trait measure of experiential guilt. Journal of Consulting and Clinical Psychology, 40, (1), 115-121.

Parker, N. (1964). Close identification in twins discordant for obsessional neurosis. British Journal of Psychiatry, 110, 496-504.

Parkinson, L., & Rachman, S. (1981). The nature of intrusive thoughts. Advances in Behaviour Research and Therapy, 3, 101-110.

Pavlov, I. P. (1927). Conditioned reflexes. London: Oxford University Press.

Persons, J. B., & Foa, E. B. (1984). Processing of fearful and neutral information by obsessive-compulsives. Behaviour, Research and Therapy, 22, 259-265.

Pollack, J. (1979). Obsessive-Compulsive Personality: A review. Psychological Bulletin, 68, 225-41.

Pollack, J. (1987). Relationship of Obsessive-Compulsive Personality to Obsessive-Compulsive Disorder: A review of the literature. Journal of Psychology, 121 (2), 137-48.

Rachman, S. J. (1971). Obsessional ruminations. Behaviour Research and Therapy, 9, 229-235.

Rachman, S. J. (1978). An anatomy of obsessions. Behaviour Analysis and Modification, 2 (4), 253-278.

Rachman, S. J. (1983). Irrational thinking, with special reference to cognitive therapy. Advances in Behaviour Research and Therapy, 5, 63-88.

Rachman, S. J., & de Silva, P. (1978) Abnormal and normal obsessions. Behaviour Research and Therapy, 16, 233-248.

Rachman, S. J., & Hodgson, R. J. (1980). Obsessions and compulsions. Englewood Cliffs, New Jersey: Prentice-Hall.

Rapoport, J. L. (1989, March). The biology of obsessions and compulsions. Scientific American, 62-69.

Rapoport, J. (1990). The boy who couldn't stop washing. The experience and treatment of Obsessive-Compulsive Disorder. London: Collins.

Rapoport, J., Elkins, R., & Mikhelsen, E. (1980). Clinical controlled trial of clomipramine in adolescents with Obsessive-Compulsive Disorder. Psychopharmacological Bulletin, 16, 61-63.

Rasmussen, S. A., & Tsuang, M. T. (1986). Clinical characteristics and family history in DSM-111 Obsessive-Compulsive Disorder. American Journal of Psychiatry, 143, 317-322.

Reynolds, M., & Salkovskis, P. M. (1991). The relationship among guilt, dysphoria, anxiety and obsessions in a normal population - An attempted replication. Behaviour Research and Therapy, 29 (3), 259-265.

Salkovskis, P. M. (1985). Obsessional-compulsive problems: A cognitive-behavioural analysis. Behaviour Research and Therapy, 25, 571-583.

Salkovskis, P. M. (1989a). Cognitive-behavioural factors and the persistence of intrusive thoughts in obsessional problems. Behaviour Research and Therapy, 27 (6), 677-682.

Salkovskis, P. M. (1989b). Obsessive and intrusive thoughts: Clinical and non-clinical aspects. In P. M. G. Emmelkamp, W. T. A. M. Everaerd, F. Kraimoat, & M. J. M. Van San (Eds.), Fresh perspectives on anxiety disorders. Swets Zeitberger.

Salkovskis, P. M., & Dent, H. R. (1986, 1989). Intrusive thoughts, impulses and imagery: Cognitive and behavioural aspects. Manuscript submitted for publication.

Salkovskis, P. M., & Harrison, J. (1984). Abnormal and normal obsessions: A replication. Behaviour Research and Therapy, 22, 549-552.

Salkovskis, P. M., & Kirk, J. (1989). Obsessional disorders. In K. Hawton, P. M. Salkovskis, J. Kirk, & D. M. Clark, (Eds.) Cognitive behaviour therapy for psychiatric problems. A practical guide. Oxford: Oxford University Press.

Salkovskis, P.M., & Warwick, H.M.C. (1988). Cognitive Therapy of Obsessive-Compulsive Disorder. In C. Perris, I. M. Blackburn, & H. Perris (Eds.), The theory and practice of cognitive therapy, pp.376-95. Heidelburg: Springer-Verlag.

Salkovskis, P. M., & Westbrook, D. (1987). Obsessive-compulsive disorder: Clinical strategies for improving behavioural treatments. In H. R. Dent (Ed.), Clinical psychology: Research and development, pp.200-213. London: Croom Helm.

Salkovskis, P. M., & Westbrook, D. (1989). Behaviour therapy and obsessional ruminations: Can failure be turned into success? Behaviour Research and Therapy, 27 (2), 149-160.

Sanavio, E., & Vidotto, G. (1985). The components of the Maudsley Obsessional-Compulsive Questionnaire. Behaviour Research and Therapy, 23, 659-662.

Sanavio, E., Bertolotti, G., Michielin, P., Vidotto, G., & Zotti, A. M. (1986). CBA - 2.0 Scale Primarie: Una batteria a vasto spettro per i'assessment psicologico. Firenze: Organizzazioni Speciali.

Sanavio, E. (1988). Obsessions and compulsions: The Padua Inventory. Behaviour Research and Therapy, 26 (2), 169-177.

Sanchez-Turet, M., Vallejo-Ruiloba, J., Porta, A., & Cuadras, C. (1981). Personality differences between different neurotic diagnostic groups. Journal of Personality and Individual Differences, 2, 169-170.

Sandler, J., & Hazari, A. (1960). The obsessional: On the psychological classification of obsessional character traits and symptoms. British Journal of Medical Psychology, 33, 113-122.

Shweder, R. A. (1975). How relevant is an individual difference theory of personality? Journal of Personality, 43, 455-489.

Sternberger, L. G., & Burns, G. L. (1990). Obsessions and compulsions: Psychometric properties of the Padua Inventory with an American college population. Behaviour Research and Therapy, 28 (4), 341-345.

Sutherland, G., Newman, B., & Rachman, S. (1982). Experimental investigations of the relations between mood and intrusive unwanted cognitions. British Journal of Medical Psychology, 55, 127-138.

Tanaka-Matsumi, J., & Kameoka, V. A. (1986). Reliabilities and concurrent validities of popular self-report measures of depression, anxiety, and social desirability. Journal of Consulting and Clinical Psychology, 54, 328-333.

Taylor (1660). In Hunter, R., & MacAlpine, I. (1963). Three hundred years of psychiatry. London: Oxford University Press.

Teasdale, J. D. (1983). Negative thinking in depression: Cause, effect or reciprocal relationship? Advances in Behaviour Research and Therapy, 5, 3-25.

Torrubia, R., & Muntaner, C. (1987). Relationships between psychoticism and a number of personality measures: A comparison between the original and revised versions of the psychoticism scale. Personality and Individual Differences, 8 (2), 261-263.

Vaughan, M. (1976). The relationship between obsessional personality, obsessions in depression, and symptoms of depression. British Journal of Psychiatry, 129, 36-39.

Velicer, W. F., & Jackson, D. N. (1990). Component analysis versus common factor analysis: Some further observations. Multivariate Behavioural Research, 25 (1), 97-114.

Videbech, T. (1975). The psychopathology of anancastic endogenous depression. A.C.T.A. Psychiatrica Scandinavica, 52, 336-373.

Welner, A., Reich, T., Robins, E., Fishman, R., & van Doren, T. (1976). Obsessive compulsive neurosis. Comprehensive Psychiatry, 17, 527-539.

Westphal, K. (1878). Ueber Zwangsvorstellungen. Archiv fur Psychiatrie und Nervenkrankheiten, 8, 734-750.

Zohar, J. & Insel, T. R. (1987). Obsessive-Compulsive Disorder: Psychobiological approaches to diagnosis, treatment and pathophysiology. Biological Psychiatry, 22, 667-687.

Zuckermann, M., Kuhlman, D. M., & Camac, C. (1988). What lies beyond E and N? Factor analyses of scales believed to measure basic dimensions of personality. Journal of Personality and Social Psychology, 54 (1), 96-107.

Zuckermann, M., & Lubin, B. (1965). Manual for the Multiple Affect Adjective Checklist. San Diego, CA: Educational and Industrial Testing Service.

Zung, W. W. K. (1965). A self-rating Depression Scale. Archives of General Psychiatry, 12, 63-70.

# Appendix A

# PERSONALITY, THOUGHTS AND BEHAVIOURS QUESTIONNAIRE

This questionnaire is part of a clinical masters research project on the nature of the relationship between personality and thoughts and behaviours.

The questionnaire asks for information about your thoughts, feelings and behaviours and will be treated as strictly confidential. It is comprised of five questionnaires covering twelve pages and should take about one hour to complete. Please answer all questions as accurately and completely as you can.

AGE: _____ (Please write in years)

GENDER: Male Female (Circle one)

DATE:

**Many thanks**

PLEASE TURN THE PAGE.

PART ONE

INSTRUCTIONS: Please answer each question by putting a circle around the "YES" or the "NO" following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions.

1. Do you have many different hobbies? YES NO
2. Does your mood often go up and down? YES NO
3. Are you a talkative person? YES NO
4. Do you ever feel "just miserable" for no reason? YES NO
5. Are you rather lively? YES NO
6. Do you often worry about things you should not have done or said? YES NO
7. Can you usually let yourself go and enjoy yourself at a lively party? YES NO
8. Are you an irritable person? YES NO
9. Do you enjoy meeting new people? YES NO
10. Are your feelings easily hurt? YES NO
11. Do you tend to keep in the background on social occasions? YES NO
12. Do you often feel "fed-up"? YES NO
13. Do you like going out a lot? YES NO
14. Are you often troubled about feelings of guilt? YES NO
15. Do you prefer reading to meeting people? YES NO
16. Would you call yourself a nervous person? YES NO
17. Do you have many friends? YES NO
18. Are you a worrier? YES NO
19. Would you call yourself happy-go-lucky? YES NO
20. Do you worry about awful things that might happen? YES NO
21. Do you usually take the initiative in making new friends? YES NO
22. Would you call yourself tense or "highly strung"? YES NO
23. Are you mostly quiet when you are with other people? YES NO
24. Can you easily get some life into a rather dull party? YES NO
25. Do you worry about your health? YES NO
26. Do you like telling jokes and funny stories to your friends? YES NO
27. Do you like mixing with people? YES NO
28. Do you suffer from sleeplessness? YES NO
29. Do you nearly always have a "ready answer" when people talk to you? YES NO
30. Have you often felt listless and tired for no reason? YES NO
31. Do you like doing things in which you have to act quickly? YES NO
32. Do you often feel life is very dull? YES NO
33. Do you often take on more activities than you have time for? YES NO

34. Do you worry a lot about your looks?..... YES NO
35. Have you ever wished that you were dead?..... YES NO
36. Can you get a party going?..... YES NO
37. Do you worry too long after an embarrassing experience?..... YES NO
38. Do you suffer from "nerves"?..... YES NO
39. Do you often feel lonely?..... YES NO
40. Are you easily hurt when people find fault with you or the work you do?..... YES NO
41. Do you like plenty of bustle and excitement around you?..... YES NO
42. Are you sometimes bubbling over with energy and sometimes very sluggish?..... YES NO
43. Do other people think of you as being very lively?..... YES NO
44. Are you touchy about some things?..... YES NO

PLEASE CHECK THAT YOU HAVE ANSWERED ALL THE QUESTIONS

PART TWO

INSTRUCTIONS: Please answer each question by putting a circle around the "YES" or the "NO" following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions

1. Do you stop to think things over before doing anything? YES NO
2. Do you take much notice of what people think? YES NO
3. Would being in debt worry you? YES NO
4. Do you give money to charities? YES NO
5. Would it upset you a lot to see a child or animal suffer? YES NO
6. Do you dislike people who do not know how to behave themselves? YES NO
7. Should people always respect the law? YES NO
8. Are good manners very important? YES NO
9. Would you take drugs that may have strange or dangerous effects? YES NO
10. Do you prefer to go your own way rather than act by the rules? YES NO
11. Do you enjoy hurting people you love? YES NO
12. Do you have enemies who want to harm you? YES NO
13. Do you enjoy practical jokes? YES NO
14. Do good manners and cleanliness matter much to you? YES NO
15. Have you often gone against your parents wishes? YES NO
16. Do you think marriage is old-fashioned and should be done away with? YES NO
17. Are you more easy going about right and wrong than most people? YES NO
18. Do you enjoy cooperating with others? YES NO
19. Do most things taste the same to you? YES NO
20. Does it worry you if you know there are mistakes in your work? YES NO
21. Do you arrive at appointments in plenty of time? YES NO
22. Is (or was) your mother a good woman? YES NO
23. Are there several people who keep trying to avoid you? YES NO
24. Do you think people spend too much time safeguarding their future with savings and insurances? YES NO
25. Do you try not to be rude to people? YES NO
26. Do you generally "look before you leap"? YES NO
27. Can you on the whole trust people to tell the truth? YES NO
28. Is it better to follow society's rules than go your own way? YES NO

29. Would you like other people to be afraid of you?..... YES NO
30. Do people tell you a lot of lies?..... YES NO
31. Do you believe one has special duties to ones family?..... YES NO
32 Would you feel very sorry for an animal caught in a trap?..... YES NO

PLEASE CHECK THAT YOU HAVE ANSWERED ALL THE QUESTIONS

PART THREE

F1: ☐ F2: ☐ SCORE ☐

F3: ☐ F4: ☐

INSTRUCTIONS: The following statements refer to thoughts and behaviours which may occur to everyone in everyday life. For each statement, choose the reply which best seems to fit you and the degree of disturbance which such thoughts or behaviours may create. Rate your replies as follows:

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

1. I feel my hands are dirty when I touch money. ..... (.....)
2. I think even slight contact with bodily secretions (perspiration, saliva, urine etc) may contaminate my clothes or somehow harm me. ..... (.....)
3. I find it difficult to touch an object when I know it has been touched by strangers or by certain people. ..... (.....)
4. I find it difficult to touch garbage or dirty things. ..... (.....)
5. I avoid using public toilets because I am afraid of disease and contamination. ..... (.....)
6. I avoid using public telephones because I am afraid of contagion and disease. ..... (.....)
7. I wash my hands more often and longer than necessary. ..... (.....)
8. I sometimes have to wash or clean myself simply because I think I may be dirty or "contaminated". ..... (.....)
9. If I touch something I think is "contaminated" I immediately have to wash or clean myself. ..... (.....)
10. If an animal touched me I feel dirty and immediately have to wash myself or change my clothing. ..... (.....)
11. When doubts and worries come to my mind I cannot rest until I have talked them over with a reassuring person. ..... (.....)
12. When I talk I tend to repeat the same things and the same sentences several times. ..... (.....)
13. I tend to ask people to repeat the same things to me several times consecutively, even though I did understand what they said the first time. ..... (.....)
14. I feel obliged to follow a particular order in dressing, undressing and washing myself. ... (.....)
15. Before going to sleep I have to do certain things in a certain order. ..... (.....)

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

16. Before going to bed I have to hang up or fold my clothes in a special way. ..... (.....)

17. I feel I have to repeat certain numbers for no reason. ..... (.....)

18. I have to do things several times before I think they are properly done. ..... (.....)

19. I tend to keep on checking things more often than necessary. ..... (.....)

20. I check and recheck gas and water taps and light switches after turning them off. ..... (.....)

21. I return home to check doors, windows, drawers etc. to make sure they are properly shut. (.....)

22. I keep on checking forms, documents, cheques in detail to make sure I have filled them in correctly. ..... (.....)

23. I keep on going back to see that matches, cigarettes etc. are properly extinguished. ..... (.....)

24. When I handle money I count and recount it several times. ..... (.....)

25. I check letters carefully many times before posting them. ..... (.....)

26. I find it difficult to make decisions, even about unimportant matters. ..... (.....)

27. Sometimes I am not sure I have done things which in fact I know I have done. ..... (.....)

28. I have the impression that I will never be able to explain things clearly, especially when talking about important matters which involve me. ..... (.....)

29. After doing something carefuly, I still have the impression I have either done it badly or not finished it. ..... (.....)

30. I am sometimes late because I keep on doing certain things more often than necessary. ..... (.....)

31. I invent doubts and problems about most of the things I do. ..... (.....)

32. When I start thinking of certain things, I become obsessed with them. ..... (.....)

33. Unpleasant thoughts come into my mind against my will and I cannot get rid of them. .... (.....)

34. Obscene or dirty words come into my mind and I cannot get rid of them. ..... (.....)

35. My brain constantly goes its own way and I find it difficult to attend to what is happening around me. ..... (.....)

36. I imagine catastrophic consequences as a result of absent-mindedness or minor errors which I make. ..... (.....)

37. I think or worry at length about having hurt someone without knowing it. ..... (.....)

38. When I hear about a disaster I think it is somehow my fault. ..... (.....)

39. I sometimes worry at length for no reason that I have hurt myself or have some disease. (.....)

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

40. I sometimes start counting objects for no reason. ..... (.....)

41. I feel I have to remember completely unimportant numbers. ..... (.....)

42. When I read I have the impression I have missed something important and must go back and reread the passage at least two or three times. ..... (.....)

43. I worry about remembering completely unimportant things and make an effort not to forget them. ..... (.....)

44. When a thought or doubt comes into my mind I have to examine it from all points of view and cannot stop until I have done so. ..... (.....)

45. In certain situations I am afraid of losing my self-control and doing embarrassing things. (.....)

46. When I look down from a bridge or a very high window I feel an impulse to throw myself into space. ..... (.....)

47. When I see a train approaching I sometimes think I could throw myself under its wheels. (.....)

48. At certain moments I am tempted to tear off my clothes in public. ..... (.....)

49. While driving I sometimes feel an impulse to drive the car into someone or something. .. (.....)

50. Seeing weapons excites me and makes me think violent thoughts. ..... (.....)

51. I get upset and worried at the sight of knives, daggers, and other pointed objects. ..... (.....)

52. I sometimes feel something inside me which makes me do things which are really senseless and which I do not want to do. ..... (.....)

53. I sometimes feel the need to break or damage things for no reason. ..... (.....)

54. I sometimes have an impulse to steal other people's belongings even if they are of no use to me. ..... (.....)

55. I am sometimes almost irresistably tempted to steal something from the supermarket. ... (.....)

56. I sometimes have an impulse to hurt defenseless children or animals. ..... (.....)

57. I feel I have to make special gestures or walk in a certain way. ..... (.....)

58. In certain situations I feel an impulse to eat too much, even if I am then ill. ..... (.....)

59. When I hear about a suicide or a crime I am upset for a long time and find it difficult to stop thinking about it..... (.....)

60. I invent useless worries about germs and disease. ..... (.....)

PLEASE CHECK THAT YOU HAVE ANSWERED ALL THE QUESTIONS

PART FOUR

INSTRUCTIONS: At times we ALL have intrusive thoughts and engage to some extent in repetitive behaviours.

An intrusive thought is one which seems to be INVOLUNTARY and which you have REPEATEDLY. The content of intrusive thoughts may be pleasant (eg. entertaining sexual fantasies), or unpleasant (eg. imagining failure at some task, or doing harm to others).

A repetative behaviour is an action you perform even though you suspect it is unnecessary, (eg. checking that you have switched off the stove numerous times before going out).

For each of the items below, indicate to what extent the statement applies to you. Please choose ONE response only.

1. When I have an intrusive thought about doing something (eg. failing at a task), I consider that having the thought means that I will do it.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

2. When I have a repetitive intrusive thought, I feel responsible for having that thought.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

3. If I have an intrusive thought about doing harm to myself or to others, (eg. crashing my car into a tree), I feel responsible for stopping that harm.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

4. When I have an intrusive thought (eg. a sexual fantasy), I consider that having the thought does NOT mean that I will act it out.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

5. When I have intrusive thoughts about causing harm to myself or to others, I feel responsible for having failed to control such thoughts.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

6. If I have an intrusive thought about having done something harmful (eg. by leaving on the stove), I have to check it out to clear myself of any blame.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

7. If I have a repetitive intrusive thought (eg. of being unprepared for something), I do NOT feel responsible for having the thought

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

8. I make numerous checks that I have done things properly (eg. turning off the gas), to prevent harm coming to myself or to others.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

9. It is not my fault if I have repetitive intrusive thoughts.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

10. I find it hard to control thoughts like: "I may have harmed others because of inaction on my part".

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

11. If I have an intrusive thought of doing harm to myself or to others, I would feel somehow responsible if harm were to come to them or to me.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

12. I keep washing things when I know they are clean, so I am not responsible for contaminating myself or others.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

13. When I have repetitive intrusive thoughts, I feel responsible for NOT being able to control them.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

14. If I have the thought that I might have harmed someone, I need to fix things up so I am completely free of responsibility.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

PLEASE CHECK YOU HAVE ANSWERED ALL THE QUESTIONS

PART FIVE

INSTRUCTIONS: On this questionnaire are groups of statements. Please read each goup of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the PAST WEEK , INCLUDING TODAY. Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

1. 0 I do not feel sad.
   1 I feel sad.
   2 I am sad all the time and I can't stand it.
   3 I am so sad or unhappy that I can't stand it.

2. 0 I am not particularly discouraged about the future.
   1 I feel discouraged about the future.
   2 I feel I have nothing to look forward to.
   3 I feel that the future is hopeless and that things cannot improve.

3. 0 I do not feel like a failure.
   1 I feel I have failed more than the average person.
   2 As I look back on my life, all I can see is a lot of failures.
   3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
   1 I don't enjoy things the way I used to.
   2 I don't get real satisfaction out of anything anymore.
   3 I am dissatisfied or bored with everything.

5. 0 I don't feel particularly guilty.
   1 I feel guilty a good part of the time.
   2 I feel quite guilty most of the time.
   3 I feel guilty all of the time.

6. 0 I don't feel I am being punished
   1 I feel I may be punished.
   2. I expect to be punished.
   3. I feel I am being punished.

7. 0 I don't feel disappointed in myself.
   1 I am disappointed in myself.
   2 I am disgusted with myself.
   3 I hate myself.

8. 0 I don't feel I am any worse than anybody else.
   1 I am critical of myself for my weaknesses or mistakes.
   2 I blame myself all the time for my faults.
   3 I blame myself for everything bad that happens.

9. 0 I don't have any thoughts of killing myself.
   1 I have thoughts of killing myself, but I would not carry them out.
   2 I would like to kill myself.
   3 I would kill myself if I had the chance.

10.
0 I don't cry anymore than usual.
1 I cry more now than I used to.
2 I cry all the time now.
3 I used to be able to cry, but now I can't cry even though I want to.

11.
0 I am no more irritated now than I ever am.
1 I get annoyed or irritated more easily than I used to.
2 I feel irritated all the time now.
3 I don't get irritated at all by the things that used to irritate me.

12.
0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2. I have lost most of my interest in other people.
3 I have lost all of my interest in other people.

13.
0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions than before.
3 I can't make decisions at all anymore.

14.
0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel that there are permanent changes in my appearance that make me look unattractive.
3 I believe that I look ugly.

15.
0 I can work about as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

16.
0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to an cannot get back to sleep.

17.
0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3. I am too tired to do anything.

18.
0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.

19.
0 I haven't lost much weight, if any lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.

I am purposely trying to lose weight by eating less YES NO

20.
0 I am no more worried about my health than usual.
1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
2 I am very worried about physical problems and it's hard to think of much else.
3 I am so worried about my physical problems, that I cannot think about anything else.

21.
0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

PLEASE CHECK THAT YOU HAVE ANSWERED THE QUESTIONS ON ALL TEN PAGES

THANK YOU FOR YOUR ASSISTANCE

# APPENDIX B

# RESPONSIBILITY QUESTIONNAIRE

INSTRUCTIONS: At times we ALL have intrusive thoughts and engage to some extent in repetitive behaviours.

An intrusive thought is one which seems to be INVOLUNTARY and which you have REPEATEDLY. The content of intrusive thoughts may be pleasant (eg. entertaining sexual fantasies), or unpleasant (eg. imagining failure at some task, or doing harm to others).

A repetative behaviour is an action you perform even though you suspect it is unnecessary, (eg. checking that you have switched off the stove numerous times before going out).

For each of the following items, indicate to what extent the statement applies to you. Please choose ONE response only.

1. When I have an intrusive thought about doing something (eg. failing at a task), I consider that having the thought means that I will do it.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

2. When I have a repetitive intrusive thought, I feel responsible for having that thought.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

3. If I have an intrusive thought about doing harm to myself or to others, (eg. crashing my car into a tree), I feel responsible for stopping that harm.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

4. When I have intrusive thoughts about causing harm to myself or to others, I feel responsible for having failed to control such thoughts.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

5. If I have an intrusive thought about having done something harmful (eg. by leaving on the stove), I have to check it out to clear myself of any blame.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

6. I make numerous checks that I have done things properly (eg. turning off the gas), to prevent harm coming to myself or to others.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

7. I find it hard to control thoughts like: "I may have harmed others because of inaction on my part".

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

8. If I have an intrusive thought of doing harm to myself or to others, I would feel somehow responsible if harm were to come to them or to me.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

9. When I have repetitive intrusive thoughts, I feel responsible for NOT being able to control them.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

10. If I have the thought that I might have harmed someone, I need to fix things up so I am completely free of responsibility.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| not at all | a little | quite a lot | a lot | very much |

# APPENDIX C

Means and Standard Deviations of the 10 Responsibility Items retained ($N$ = 152) (Normals)

| ITEM | MEAN | *SD* |
|---|---|---|
| Resp 1 | .91 | .76 |
| Resp 2 | 1.22 | .98 |
| Resp 3 | 2.01 | 1.54 |
| Resp 4 | 1.16 | 1.28 |
| Resp 5 | 1.53 | 1.14 |
| Resp 6 | .95 | 1.04 |
| Resp 7 | .68 | .90 |
| Resp 8 | 1.09 | 1.09 |
| Resp 9 | .95 | 1.12 |
| Resp 10 | 1.28 | 1.26 |
| Scale | 11.78 | 7.24 |

STANDARDIZED ITEM ALPHA = .84 (10 items)