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**THE ROLE OF UNUSUAL CONSCIOUS EXPERIENCES  
IN MENTAL ILLNESS:**

**AN EXPLORATION GUIDED BY PROCESS MODELS OF SYMPTOM FORMATION  
AND BY A HIERARCHICAL THEORY OF PERSONAL ILLNESS**

**A thesis presented in partial fulfilment  
of the requirements for the degree of Master  
of Arts in Psychology at Massey University**

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## ABSTRACT

The relationship between non-clinical unusual conscious experiences and mental illness was explored cross-sectionally in 104 users of community mental health services. Morris (1997) organised unusual conscious experiences and psychiatric symptoms according to the cognitive process errors believed to underlie them, and highlighted the role in the formation of symptoms of difficulties in determining the intentions of the self and others. Foulds's (1976) hierarchical theory of personal illness predicted that progressively more serious layers of symptoms would be experienced, in addition to those already present, as the ability to discern intentionality diminished. Participants completed the Delusions-Symptoms-States Inventory and the Conscious Experiences Questionnaire, and their primary clinicians provided Global Assessment of Functioning ratings. Foulds's hierarchical theory was found to be valid, and the frequency of unusual conscious experiences and deficits in determining intentionality increased the higher participants were placed on his hierarchy. Global functioning, although unrelated to position on the hierarchy or symptom related distress (findings attributed to the failure to assess negative symptoms) was weakly associated with the frequency of unusual conscious experiences. Cognitive process errors were positively correlated with each other, consistent with the errors occurring in the course of a single underlying process. Predicted associations were found between: delusions of persecution and difficulties in determining the intentions of others; hallucinations and the attribution of imagined percepts to external sources; grandiose delusions and the attribution of the actions of others to the self; conversion symptoms and the attribution of actions of the self to external sources; dissociative symptoms and the attribution of percepts with an external origin to the imagination; and delusions (of grandiosity, persecution, contrition, and passivity) and the attribution of events to an unseen power or force. Predicted associations were not found for passivity delusions or delusions of contrition. The implications for dimensional conceptions of mental illness are discussed, and research recommended to isolate the trait component of unusual conscious experiences. The utility of the cognitive process and intentionality findings are discussed in terms of generating hypotheses for future research, and guiding cognitive behaviour therapy and clinical management.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Overview

This thesis explores the relationship of non-clinical unusual conscious experiences to psychiatric illness, in participants using community mental health services. The exploration is guided by process theories of symptom formation and by a hierarchical theory of psychiatric illness.

Unusual conscious experiences include superstitions, magical ideation, perceptual disturbances, states of derealisation and depersonalisation, referential thinking, déjà vu experiences, paranoid ideation, control and passivity experiences, hallucinations, and delusions. Such experiences may be characterised as “psychosis” when there is gross impairment in reality testing, and the creation of a new reality (Noll, 1992).

Alternatively, such experiences may find expression in potentially rewarding psychological states, including profound spiritual experiences, out of the body experiences, and states of advanced creativity (Claridge & Beech, 1995). Non-clinical unusual conscious experiences have been found to indicate a predisposition to psychosis (Chapman, Chapman, Kwapil, Eckblad, & Zinser, 1994), and to comprise a component of “schizotypy”, an expression used to describe enduring “schizophrenia-like” but non-psychotic characteristics (Lenzenweger, 1999). More specifically, they constitute the “positive” component of schizotypy (“positive schizotypy”, an expression used interchangeably with unusual conscious experiences in the present thesis) since they involve the *presence* of experiences and beliefs not usually found. (Henceforth the expression “unusual conscious experiences” refers exclusively to non-clinical experiences, unless the context indicates otherwise).

Depending upon the researcher's theoretical orientation, schizotypy research may be oriented towards isolating a genetic defect held in common with participants exhibiting clinical symptoms (e.g. Lenzenweger, 1998), or towards establishing the relevance of general psychological process research to psychiatric illness (Claridge & Beech, 1995; Persons, 1986). The present study is oriented towards the latter, and explores the relevance to psychiatric illness of cognitive monitoring mechanisms suggested to

govern perception (Kunzendorf, 1987), actions of the self (Frith, 1992; Morris, 1997), actions of others (Frith, 1992), and the causation of events (Morris & Johnson, unpublished manuscript).

The ability to discern the intentions of the self and others is integral both to theories concerning the monitoring of actions (Frith, 1992; Morris, 1997), and to Foulds's (1976) hierarchical theory of personal illness. Foulds's theory purports to classify psychiatric symptoms by reference to the experiencer's degree of "state" impairment in discerning intentionality. Under his theory, the severity of psychiatric illness depends on the level of impairment in determining intentionality, rather than the level of distress suffered. Foulds suggested that psychiatric illnesses centrally involve an impaired ability to be conscious of one's intentions, and a consequent inability to maintain relationships with others. His theory is hierarchical in nature, and predicts that as the ability to discern intentionality deteriorates, progressively more serious layers ("classes") of symptoms will be experienced in addition to the symptoms already present.

The presence of psychiatric symptoms and signs alone does not mean that an "illness" exists, since some people function effectively despite them (Foulds, 1965). The absence of a one to one correspondence between symptoms and functioning is indicated by the existence of auditory hallucinations in the general population, and the frequent experience of those voices as beneficial (Romme & Escher, 1989). For this reason the present study assesses functioning as well as symptomatology.

The present study will use cross-sectional analysis to explore whether the structure of symptoms reported is consistent with Foulds's (1976) hierarchical theory. Assuming that the structure of symptoms reported is consistent with Foulds's theory, the frequency of unusual conscious experiences and deficits in determining intentionality will be examined to determine whether they similarly increase with each layer of symptoms. The cognitive monitoring theories mentioned above will then be applied to generate specific hypotheses regarding the relationship between particular unusual conscious experiences and symptoms. Finally, the relationship between the forgoing and functioning will be examined, since symptomatology alone is not sufficient for mental illness.

## CHAPTER 2

### UNUSUAL CONSCIOUS EXPERIENCES

#### 2.1 Schizotypy – What is it?

As noted above, unusual conscious experiences that fall short of being symptoms comprise part of a broader construct known as “schizotypy”. The recent conception and burgeoning interest in schizotypy is reflected by the exponential increase in the appearance of the word on the Psychological Abstracts Information Services on-line database (PsycINFO: American Psychological Association, 2000): three entries in the 1960’s, none in the 1970’s, 29 in the 1980’s, and, 188 in the 1990’s. Two books devoted to the schizotypy construct have recently been published (Claridge, 1997b; Raine, Lencz, & Mednick, 1995).

The expression “schizotypy” was coined initially by Rado (1953) to denote the schizophrenic phenotype (Lenzenweger, 1999), and Meehl’s (1962; 1990) explanatory model of schizotypy (discussed below) similarly focused on the hypothesised link with schizophrenia. The expression has broadened in usage, however, with Lenzenweger (1999) noting its general use to denote subtle non-psychotic “schizophrenia-like” phenomena that are stable and enduring, and Claridge (1997a; 1997c) noting its use to refer to the seemingly dimensional nature of psychosis.

Schizotypy has been defined in three ways: by clinical diagnostic criteria, by blood relationship to a person with schizophrenia, and by deviancy on special purpose psychometric tests (Lenzenweger, 1999). The extent to which each method samples the same construct is not certain. The process of seeking to define schizotypy has been likened to the gradual reduction in size of an open concept or “black box”, which is only comprehended in relation to other, better understood, constructs (Lencz & Raine, 1995).

The present study focuses on self-reported unusual conscious experiences, which comprise the positive component of psychometrically defined schizotypy. Attempts to define schizotypy by reference to clinical diagnostic criteria or blood relationship will

firstly be briefly reviewed. Are unusual conscious experiences a state or a trait? What is their relationship to schizophrenia?

## **2.2 Schizotypy: By clinical diagnostic criteria and blood relationship**

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), published by the American Psychiatric Association (APA, 2000), contains Schizotypal Personality Disorder (SPD) and Paranoid Personality Disorder (PPD), which reflect clinical diagnostic attempts to define schizotypy (Lenzenweger, 1999). SPD is said to involve "...a pervasive pattern of social and interpersonal deficits marked by acute discomfort with, and reduced capacity for, close relationships as well as by cognitive or perceptual distortions and eccentricities of behaviour... [which] begins by early adulthood and is present in a variety of contexts" (APA, 2000, p. 697); while PPD involves a "...pattern of pervasive distrust and suspiciousness of others such that the motives are interpreted as malevolent ...[which] begins by early adulthood and is present in a variety of contexts" (APA, 2000, p. 690). While DSM-IV merely describes signs and symptoms, and does not endorse any explanatory model, these disorders are frequently labelled the "schizophrenia-related personality disorders" (Lenzenweger, 1999).

Of these two disorders only SPD refers explicitly to unusual conscious experiences, although the interpersonal and behavioural phenomena that comprise the remaining criteria for SPD and PPD could conceivably flow from such experiences. Both disorders stipulate that criteria must be satisfied by early adulthood, and remain stable across situations. The specificity and stability of schizotypal features is, however, uncertain.

In this regard, psychotic-like symptoms are also experienced by persons diagnosed with Borderline Personality Disorder (BPD). Between 33% and 91% of persons diagnosed with SPD are also diagnosed with BPD (Siever, Bernstein, & Silverman, 1991). BPD involves "...a pervasive pattern of instability of interpersonal relationships, self-image, and affect, and marked hostility that begins by early adulthood and is present in a variety of contexts" (APA, 2000, p. 706). The psychotic-like experiences associated with BPD are arguably state-like in nature, and associated with affective symptomatology (Siever, Kalus, & Keefe, 1993). Having said that, some schizotypal

features – including perceptual aberrations and ideas of reference - although theoretically stable and enduring, tend to fluctuate over time with stress and other variables (Lencz & Raine, 1995).

Support for the stability of SPD is provided by a finding from longitudinal data that SPD signs and symptoms were relatively stable from childhood to middle age, although the additional finding that class membership changed 31% at each measurement point indicated a degree of instability (Tyrka, Haslam, & Cannon, 1995). The existence of multiple criteria in the SPD definition, however, limits the relevance of this finding to unusual conscious experiences specifically.

In considering the nature of SPD, a historical perspective is instructive. While schizotypy was conceived to denote a relationship to schizophrenia, SPD appears from the outset to have included positive features not specific to schizophrenia. When selecting the criteria for SPD, Spitzer, Endicott and Gibbon (1979) chose the eight criteria that best described participants diagnosed with latent or borderline schizophrenia in the Danish adoption study (Kety, Rosenthal, Wender, Schulsinger, & Jacobsen, 1975), without referring to whether subjects had relatives with schizophrenia (Lencz & Raine, 1995). Lencz and Raine suggested that this decision to ignore blood relationships with schizophrenia had led to an overemphasis of positive symptoms in the SPD criteria, and referred to a reanalysis of the Danish adoption study data in support (Gunderson, Siever, & Spaulding, 1983). Gunderson et al. concluded that psychotic-like experiences were integral to BPD, and that social and interpersonal deficits best identified the relatives of participants with schizophrenia. They accordingly argued for the removal from the SPD definition of the magical thinking and illusions / dissociative episodes criteria.

Historically, Bleuler observed a syndrome involving social withdrawal, but not psychosis, in relatives of patients with schizophrenia; while others noticed fleeting or non-clinical “schizophrenia-like” non-psychotic experiences in patients with and without family links to schizophrenia (Lencz & Raine, 1995). As noted by Lencz and Raine, these observations are consistent with the findings of Torgersen, Onstad, Skre, Edvardsen and Kringlen (1993), who compared the incidence of schizotypal personality disorder signs and symptoms in the co-twins and other first-degree relatives of

participants with schizophrenia and major depression. Torgersen and his colleagues found that the so-called “negative” symptoms (excessive social anxiety, odd speech, and inappropriate affect) were significantly more common in the first-degree relatives of probands with schizophrenia than in the first-degree relatives of probands with major depression. No significant associations were found for the remaining criteria, including the so-called “positive” symptoms (ideas of reference, suspiciousness, recurrent illusions and odd beliefs). Similarly, a study using self-report scales found that, whereas social anhedonia differentiated relatives of schizophrenia from relatives of controls, magical ideation did not, (Kendler, Thacker, & Walsh, 1996).

Taken together, these studies challenge the suggestion that non-clinical unusual cognitive beliefs (including magical thinking, recurrent illusions, ideas of reference, and suspiciousness) are necessarily stable over time. An alternative view is that fluctuations in such beliefs reflect a blurring of the “trait versus symptom” distinction, and result from schizotypal features lying on a continuum, with healthy individual variation at one end, and florid psychosis at the other (Peters, Day, McKenna, & Orbach, 1999). (Such dimensional explanations of schizotypy are discussed under a subsequent heading, together with their categorical counterparts). Also in doubt is the suggestion that non-clinical unusual cognitive beliefs are associated necessarily with schizophrenia, rather than other disorders. These findings regarding the stability and specificity of non-clinical signs and symptoms are paralleled by studies in the clinical realm, which have led to the suggestion that psychosis is the “fever” of serious mental illness, and not specific to any particular diagnosis (Tsuang, Stone, & Faraone, 2000).

The remainder of this chapter will consider the place of unusual conscious experiences within psychometrically defined schizotypy, and the nature and extent of their relationship with clinical and non-clinical phenomena.

### **2.3 Psychometric schizotypy - factor analyses of self-report schizotypy scales**

Factor analysis is a multivariate statistical method used to extract dimensions from a pattern of correlations. Factor analytic models assume that normality and pathology lie on continuous dimensions, and may be used in the absence of any underlying theory (Davis & Millon, 1999). In a study involving 1,095 university students, Claridge et al. (1996) administered and factor analysed a composite questionnaire comprising the

following self-report scales: the Psychoticism (P) scale of the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975); the Schizotypal Personality (STA) and Borderline Personality (STB) scales (Claridge & Broks, 1984); Chapman and Chapmans' Perceptual Aberration (PerAb) (Chapman, Chapman, & Raulin, 1978), Magical Ideation (MagicId) (Eckblad & Chapman, 1983), Hypomanic Personality (Eckblad & Chapman, 1986), Physical Anhedonia (PhyAnh) and Social Anhedonia (SocAnh) (Chapman, Chapman, & Raulin, 1976) scales; the Launay Slade Hallucination Scale (Launay & Slade, 1981); the Schizophrenism Scale (Nielson & Peterson, 1976), and the Schizoidia Scale (Golden & Meehl, 1990).

Four factors were identified, and were labelled: aberrant perceptions and beliefs (analogous to the positive symptoms of schizophrenia); introvertive anhedonia (capturing solitariness and lack of feeling, and analogous to the negative symptoms of schizophrenia); cognitive disorganisation (including distractibility, attentional difficulties, and social anxiety); and, antisocial behaviour (including impulsivity and disinhibition related to mood) (Claridge et al., 1996). Reviews of schizotypy questionnaire research have found general support for these factors (Mason, Claridge, & Williams, 1997; Vollema & Van den Bosch, 1995).

The Claridge et al. (1996) study found that scales designed to capture constructs other than schizotypy also loaded onto the main schizotypy factors. Notably, Hypomanic Personality, assessing a tendency toward cyclothymia, loaded .63 on factor 1 and .39 on factor 3; and Borderline Personality (STB) loaded .24 on factor 1, .48 on factor 2, and .48 on factor 3 (findings consistent with the identification of psychotic-like symptoms in BPD by Gunderson et al. 1983, discussed above). These scales measure traits intuitively closer to affective psychosis, leading to the suggestion that "schizotypy" might better be labelled "psychosis proneness" or "psychoticism", thus removing the implied link with schizophrenia (Claridge et al., 1996).

"Aberrant perceptions and beliefs" was by far the strongest factor identified, a finding consistent with other studies (Mason et al., 1997). Scales with a high loading on positive schizotypy included the Perceptual Aberration Scale (Chapman et al., 1978), the Magical Ideation Scale (Eckblad & Chapman, 1983), and the Launay-Slade Hallucination Scale (Launay & Slade, 1981).

The Magical Ideation Scale taps experiences of (rather than theoretical beliefs in) causation regarded as abnormal from a dominant culture perspective, including: superstitions; precognition; astrology; thought transmission; ideas of reference; the psychic transfer of energy; reincarnation; psycho-kinetic, extraterrestrial and spirit influences; and the power of good luck charms and rituals (Eckblad & Chapman, 1983). The Perceptual Aberration Scale (Chapman et al., 1978; Chapman, Edell, & Chapman, 1980) taps schizophrenia-like distortions regarding one's own body, including bodily deterioration; feelings of unreality and alienation; distortions regarding appearance, relative size, and spatial relationships; and, unclear boundaries (with seven further questions tapping other perceptual distortions). The Launay-Slade Hallucination Scale captures a continuum of hallucinatory and pre-hallucinatory experiences, including overt auditory and visual hallucinations, vivid and intrusive thoughts, and vivid daydreams. (Launay & Slade, 1981). Table 1 contains representative questions from these scales (together with the direction of a scoring response), along with the loading on the "Aberrant perceptions and beliefs" factor in the Claridge et al. (1996) study. Reference to Table 1 will give the reader a flavour of the unusual conscious experiences associated with the strongest factor identified by factor analyses of self-report schizotypy scales.

**Table 1: Scales loading onto the “Aberrant Perceptions and Beliefs” factor in the (Claridge et al., 1996) study**

Scale	Load- ing	Content
Magical Ideation Scale (Eckblad & Chapman, 1983)  (30 questions)	.91	Some people can make me aware of them just by thinking about me (true). I have sometimes been fearful of standing on sidewalk cracks (true). I think I could learn to read others minds if I wanted to (true). The government refuses to tell us the truth about flying saucers (true). I have noticed sounds on my records that are not there at other times (true). When introduced to strangers, I rarely wonder whether I have known them before (false). I have had the momentary feeling that someone’s place has been taken by a look alike (true).
Perceptual Aberration Scale (Chapman et al., 1978)  (35 questions)	.76	Sometimes I have had a passing thought that some part of my body was rotting away (true). At times I have wondered if my body was really my own (true). Sometimes I have had the feeling that a part of my body is larger than it usually is (true). Now and then, when I look in the mirror, my face seems quite different than usual (true). Sometimes I have felt that I could not distinguish my body from other objects around me (true). My hearing is sometimes so sensitive that ordinary sounds become uncomfortable (true).
Launay- Slade Hallucin- ation Scale (Launay & Slade, 1981)  (12 questions)	.78	I have never been troubled by hearing voices in my head (False). On occasions I have seen a person’s face in front of me when no-one was in fact there (True). The people in my daydreams seem so true to life that I sometimes think they are (True). No matter how much I try to concentrate on my work unrelated thoughts always creep into my mind (True) Sometimes a passing thought will seem so real that it frightens me (True).

As cautioned by Venables (1995) and Lencz and Raine (1995) in relation to schizotypy, and Frith (1992) in relation to schizophrenia, factor analyses are very sensitive to the scales chosen for inclusion, and do not necessarily confirm that items map onto a

specific construct. Outside support is accordingly necessary for construct validation. While unusual conscious experiences are undoubtedly the strongest component of schizotypy identified by factor analyses, further evidence is necessary to establish the positive schizotypy construct. The latter part of this chapter will consider research bearing upon the validity of positive schizotypy as a construct. As noted above, factor analyses are atheoretical. Attempts to explain the factor structure of psychometric schizotypy may be categorised by whether the construct or its components are presented as dimensional or categorical phenomena. Categorical and dimensional approaches to schizotypy will now be discussed.

#### **2.4 Categorical and dimensional perspectives**

While psychiatry has preferred a categorical approach to the classification of personality disorders, psychology has generally preferred a dimensional approach (Davis & Millon, 1999). Hence, psychiatry has drawn distinct boundaries between personality pathology and normality, and between the various personality disorders, while psychologists have preferred to view normality and personality pathology as opposite ends of continuous dimensions (Davis & Millon, 1999). The categorical approach is reflected in DSM-IV, which classifies personality disorders as clinically distinct syndromes. The indubitable overlap between the personality disorders is, however, reflected by text in DSM-IV that acknowledges dimensional models of personality.

Meehl (1962; 1990) placed schizotypy and schizophrenia on a dimension of mental illness, separate from normality, an approach that has been labelled “quasi-dimensional” (Claridge & Beech, 1995). Meehl postulated that a genetic defect (the “schizogene”) resulted in “cognitive slippage” (“schizotaxia”) throughout the brain; and that a schizotypal personality organisation almost always resulted, following the impact of social learning experiences during development (including trauma). Meehl stated that a subset of participants with this personality organisation would go on to develop schizophrenia, while the remainder would exhibit subtle thought disorder, mild depression, intra-personal aversiveness, and generalised anxiety. Whether or not schizophrenia resulted would depend upon the stressors encountered as an adult, and the interaction of genetically unrelated personality traits (e.g., introversion, anxiety, and reduced ability to experience pleasure).

Meehl (1990) extrapolated from the prevalence of schizophrenia that the base rate of schizotypy could be estimated at 10 percent in the general population. In an attempt to detect the latent schizotypy taxon, Meehl's (1973) MAXCOV-HITMAX procedure was applied in two studies which administered the Perceptual Aberration Scale to a general population sample (Lenzenweger & Korfine, 1995). Median base rates were derived of 9.8% and 5% respectively, considered by the authors to be consistent with Meehl's estimate, although others have noted the significant discrepancy between them (Lencz & Raine, 1995).

Eysenck (1960), on the other hand, argued that psychiatric illnesses and normality lay at opposite ends of continuously variable personality dimensions. For example, schizophrenia and the other psychoses were regarded as lying at one end of a personality dimension characterised by aggressiveness, labelled "psychoticism" (Eysenck & Eysenck, 1976). This view has been criticised for failing to recognise the critical disjuncture between symptoms of illness and adaptive personality traits, and their origins within two constitute different universes of discourse (Claridge, 1997c; Foulds, 1965).

Claridge and Beech (1995) recognised the essential discontinuity between normality and psychiatric illness, but suggested that participants predisposed to psychiatric illness lie on continuous dimensions of personality. They noted that both disordered and normal groups scored highly on their general schizotypy scale (the STA), which is weighted towards positive schizotypy. High scorers on the STA include: participants diagnosed with schizophrenia (including those in remission); participants diagnosed with obsessive compulsive disorder; participants with eating disorders; participants with adult dyslexia; healthy participants having out of the body experiences; and healthy participants having spiritual experiences. The notion that psychiatric illness lies on a continuum with normality is supported by studies finding similarly idiosyncratic cognitive functioning in high schizotypes as in persons with clinical disorders. For example, persons high on positive schizotypy and persons diagnosed with schizophrenia, obsessive compulsive disorder, and attention deficit disorder all exhibited superior speed in naming targets previously selected against in a priming stage (Claridge & Beech, 1995; Peters, Pickering, & Hemsley, 1994).

Claridge and Beech (1995) suggested that schizotypy is only pathological when experienced in conjunction with other factors. They endorsed the expression “the happy schizotype” coined by McCreery (1993, cited by Claridge & Beech, 1995) in relation to spiritual experience subjects, and suggested that insight into schizophrenia and SPD might be best achieved through the study of normal schizotypy. Claridge and Beech (1995) advocated research into the circumstances in which normal schizotypy is translated into psychiatric illness, suggesting that environmental circumstances may contribute to or protect against decompensation, and that other traits may play a role. For example, a high intellect may enable participants high in schizotypy to cope with the additional demands associated with access to preconscious information, and perhaps even to use it to their advantage in the form of enhanced creativity (Claridge & Beech, 1995).

## **2.5 Unusual conscious experiences as a predictor of psychosis**

A suggestion of the relationship between schizotypy and psychosis was provided by a factor analysis of schizotypy scales (Bentall, Claridge, & Slade, 1989), which included four symptom scales from the Delusions-Symptoms-States Inventory (DSSI) in the analysis (Delusions of Grandeur, Contrition, Persecution, and Disintegration; Bedford & Foulds, 1978). Bentall and his colleagues found that the four symptom scales loaded onto the positive schizotypy first factor, and considered that this supported the view that psychosis lies on a continuum with non-clinical unusual conscious experiences.

More convincing evidence of the relationship between positive schizotypy and psychosis is provided by a ten-year longitudinal study which evaluated the effectiveness of the Chapmans’ schizotypy scales in predicting psychoses (Chapman et al., 1994). Chapman et al. compared five groups: high scorers on either or both of Perceptual Aberration (PerAb) and Magical Ideation (MagicId); high scorers on Physical Anhedonia (PhyAnh); high scorers on the Impulsive Nonconformity Scale (NonCon) (Chapman, Eckblad, & Kwapil, 1984); participants with elevated scores on these scales taken together, but with scores insufficiently deviant to qualify for another group; and a control group. As predicted, the PerAb/MagicId group exceeded controls at follow-up on: psychoses, as defined by the revised third edition of the Diagnostic and Statistical Manual (DSM-III-R), published by the American Psychiatric Association

(APA, 1987); self-reported first or second-degree relatives with psychosis; and psychotic-like experiences. In contrast, neither PhyAnh nor NonCon effectively predicted psychosis proneness. Importantly, psychosis in general was predicted, rather than schizophrenia or any other DSM-III-R diagnosis, consistent with the Claridge et al. (1996) factor analysis. Only 55-60% of psychosis prone participants who were psychotic at follow-up would have been identified as psychosis prone from the existence of psychotic relatives alone (Chapman et al., 1994). This finding highlights the independent contribution made by psychometrically defined schizotypy.

Chapman et al. (1994) scrutinised the scores of the PerAb/MagicId subjects more closely, and concluded that of the two measures MagicId appeared to predict psychosis proneness best, although this could not be established statistically. Given that the PerAb is categorical in nature and highly skewed towards pathology, and the MagicId items are distributed continuously (Earleywine, Dawson, & Hazlett, 1994; cited in Lencz & Raine, 1995), the suggested pre-eminence of MagicId as a predictor of psychoses is consistent with a dimensional view of schizotypy. Although not hypothesised, Chapman et al. (1994) found that subjects deviant on Magical Ideation and above the mean on social anhedonia were especially psychosis prone. The authors noted that this raised the possibility that a syndrome of traits may have stronger predictive power than a single trait (a view consistent with that of Claridge & Beech, 1995, discussed above).

## **2.6 Relationship of unusual conscious experiences to other clinical phenomena**

The relationship of unusual conscious experiences to disorders within the schizophrenia spectrum is well established (Claridge & Beech, 1995; George & Neufeld, 1987). The relevance of unusual conscious experiences to disorders outside the schizophrenia spectrum is underlined by the high level of positive schizotypy found in individuals diagnosed with disorders as diverse as dyslexia (Richardson, 1997), obsessive compulsive disorder (Enright & Beech, 1997), and eating disorder (Claridge & Beech, 1995).

Moving from diagnostic entities to symptoms, the cognitive-perceptual, interpersonal, and disorganisation dimensions of schizotypy individually predicted dissociative experiences in a general population sample (Irwin, 1998). The measures used included

the Dissociative Experiences Scale (DES: Bernstein & Putnam, 1986) and the Schizotypal Personality Questionnaire-Brief (Raine & Benishay, 1995). Similarly, Startup (1999) observed moderately high correlations in a general population sample between the DES and schizotypy measures tapping unusual conscious experiences (the Unusual Experiences and Cognitive Disorganisation subscales of the O-Life; Mason, Claridge, & Jackson, 1995).

With respect to affective symptomatology, the high loading of Hypomanic Personality and Borderline Personality scales on the “aberrant perceptions and beliefs” schizotypy factor in the Claridge et al. (1996) factor analysis has already been noted. In the Chapman et al. study (1994) the PerAb/MagicId group exceeded the control group on depression and mania scores at 10 year follow-up, and the ratings of both increased between the initial and follow-up assessments. Positive schizotypy and affective phenomena were found to overlap in a university student sample, on a Manic-Depressiveness personality continuum hypothesised to capture manic depressive psychosis at its extreme (Thalbourne, Keogh, & Crawley, 1999). MagicId correlated with the Manic Experience ( $r = .42$ ), Depressive Experience ( $r = .40$ ), and the combined Manic-Depressiveness scales ( $R = .50$ ); while the STA, which is heavily weighted towards positive schizotypy items, correlated with Manic Experience ( $r = .46$ ), Depressive Experience ( $r = .53$ ), and Manic-Depressiveness ( $r = .62$ ) (Thalbourne et al., 1999). The correlation with the STA was so high that the authors noted a potential difficulty in discriminating between the schizotypal personality and manic-depressiveness personality constructs.

## 2.7 Synopsis

To conclude this chapter, schizotypy is a multidimensional construct, comprising dimensions which predict psychosis, and others which do not (Chapman et al., 1994). The investigation of individual psychosis proneness traits, rather than schizotypy as a whole, is useful, since such traits may operate independently or in interaction with others to produce different results, be they psychosis, personality disorders, non-psychotic aberrations, or outside the illness domain altogether (Claridge & Beech, 1995). The most salient component of schizotypy, identified by factor analyses of self-report scales and identified as a predictor of psychosis, is “positive schizotypy”, which comprises unusual conscious experiences. This component has features in common

with the so-called “positive symptoms” of schizophrenia, and with the symptomatology of other disorders. A necessarily brief review of the structure of psychiatric symptoms follows.

## CHAPTER 3

### THE SYMPTOMS OF PSYCHIATRIC ILLNESS

#### 3.1 The positive symptoms of schizophrenia

In terms of the DSM-IV diagnosis, the “positive symptoms” of schizophrenia include the *presence of* delusions, hallucinations, disorganised speech, and grossly disorganised or catatonic behaviour (APA, 2000). Of these, only hallucinations and delusions are capable of assessment via self-report measures, and the perceptions and beliefs associated with positive schizotypy arguably constitute the attenuated form of these phenomena. Table 2 describes the positive symptom experiences and beliefs most salient in schizophrenia (modified from Frith, 1992).

**Table 2: The positive symptoms of schizophrenia (modified from Frith, 1992)**

Symptom	Example
Thought insertion	“Thoughts have been inserted into my head by someone”.
Thought broadcast	“My thoughts leave my mind, and enter someone else’s”.
Hearing thoughts spoken aloud/thought echo	“A voice repeats my thoughts, sometimes immediately after I think them”
Thought withdrawal	“Sometimes my thoughts are stolen from my head”
Second person auditory hallucination	“Voices talk to me”
Third person auditory hallucination	“I hear two or more people having a conversation about me, sometimes commenting on my actions”
Delusions of control	“A power or force is controlling what I do”
Delusions of reference	“People I haven’t met before send me signals through their actions and gestures”
Paranoid delusions	“People are trying to cause me harm”

The positive symptoms emphasised by Frith (1992) overlap substantially with the “first rank symptoms” identified by Schneider as pragmatically useful when making a diagnosis of schizophrenia (Kaplan, Sadock, & Grebb, 1994). Many research studies have shown that first rank symptoms are not pathognomonic of schizophrenia, since they occur in other disorders (Noll, 1992). For example, auditory hallucinations occur in bipolar disorder, depression with psychotic features, and in post-traumatic stress disorder (Kaplan et al., 1994).

The “negative symptoms” of schizophrenia, on the other hand, include the *absence of* behaviour normally found, including alogia (inability to speak), affective flattening,

and avolition (inability to act) (DSM-IV). Studies involving normals and patients suggest a relationship between negative symptoms and schizotypic “introverted anhedonia” (Simons, 1981; Bernstein & Riedal, 1987; both cited in Mason et al., 1997).

The positive / negative dichotomy of schizophrenia symptomatology was revived when Crow (1980) divided schizophrenia into Type 1, characterised by positive symptoms (hypothesised to have a functional origin), and Type 2, characterised by negative symptoms (hypothesised to have a structural origin). Although Crow’s classification was not incorporated into DSM-IV, research has continued into the positive symptom / negative symptom dichotomy (Kaplan et al., 1994), and into whether additional dimensions are necessary to adequately describe the symptoms associated with schizophrenia. Factor analytic studies have played a key role in these endeavours. These studies are relevant to schizotypy research, since a strong similarity between the dimensions of schizophrenia in clinical patients and the dimensions of schizotypy in the general population would arguably indicate that schizophrenia and schizotypal traits lie on a continuum (Bergman et al., 1996).

### **3.2 The dimensions of schizophrenia**

Liddle (1987) was the first to delineate a third category of symptoms in patients with schizophrenia, labelled “disorganisation”, including inappropriate affect, poverty in the content of speech, and thought disturbances including derailment, tangentiality, pressure of speech, and distractibility. This “disorganisation” factor is analogous to the “cognitive disorganisation” factor found by Claridge et al. (1996) in relation to schizotypy, and has been consistently found in factor analyses involving schizophrenic patients (see Table 3), including the acutely unwell (Mellers, Sham, Jones, Toone, & Murray, 1996). An analogy to “asocial schizotypy” is found in the Harvey, Curson, Pantelis, Taylor, and Barnes (1996) “anti-social behaviour” factor and the Lancon, Aghababian, Llorca and Auquier (1998) “excited” factor (which incorporated impulsivity, hostility, and lack of cooperativeness) (see Table 3).

**Table 3: Factor analysis of schizotypy scales compared with factor analyses of symptom scales (participants with schizophrenia)**

	Sample	Measures (Symptoms covered)	Analysis (Number of Dimensions) (% variance accounted for)	Negative	Positive	Disorganisation	Affective
Claridge et al. (1996)	Normals (n = 1095)	Schizotypy scales	Factor analysis (4)	1 factor: Introvertive anhedonia	1 factor: Aberrant perceptions and beliefs	1 factor: Cognitive disorganisation	
Liddle (1987)	Chronic schizophrenia (n = 40)	Present State Examination	Factor analysis  (3)	1 factor: "Psychomotor poverty": Poverty of speech, lack of spontaneous movement, aspects of blunting of affect	1 factor: "Reality distortion": Particular types of delusions and hallucinations	1 factor "Disorganisation": Inappropriate affect, poverty of content of speech, disturbed form of thought	
Smith, Mar, and Turoff (1998)	28 independent samples, aggregated through meta-analysis	BPRS, SAPS, SANS, PANSS, TLC, SDS, SEB, QLS, SCL-90, PSE-9	Confirmatory Factor Analysis	1 factor:	1 factor:	1 factor:	
Harvey et al. (1996)	Schizophrenia (n = 404)  Community n=320 Acute n=49 Long-stay n = 35	Feighner Schizophrenia criteria MRC Social Br Schedule	Exploratory factor analysis (4)  (58.1%)			1 factor Thought disturbance	1 factor: Depressed behaviour
		Manchester Scale for psychopathology <b>Note 1</b>	Exploratory factor analysis (2) (64.9%)	1 factor: Psychomotor poverty	1 factor Reality distortion	<b>Note 2</b>	
Mellers et al. (1996)	Acutely unwell schizophrenia (n=114)	Present State Examination	Factor analysis (4) (58%)	1 factor: slowness, self neglect, flattened affect	2 factors Hallucinations Delusions	1 factor: distractibility, incoherent speech, poverty of content of speech, incongruous affect	
Lenzenweger and Dworkin (1996)	Schizophrenia (n = 192)	Case history ratings	Confirmatory factor analysis	1 factor	1 factor: Reality distortion	1 factor	
Peralta & Cuesta (1998)	Schizophrenia (n=253)	SAPS	Confirmatory factor analysis (5) (Not a good fit)	<b>Note 3</b>	3 factors: Hallucinations Schneiderian delusions Other delusions	2 factors: Bizarre behaviour Thought disorder	
(Lancon et al., 1998)	Schizophrenia (n = 205)	PANSS	Forced 5 dimensional factor analysis (5) (61.9%)	1 factor: blunted affect, emotional withdrawal, poor rapport, passive social withdrawal, lack spontaneity, motor retardation, & active social avoidance	1 factor: delusions, hallucinatory behaviour, unusual thought content, grandiosity, suspiciousness	1 Factor "Cognitive" Disorientation, and difficulty in abstract thinking	2 Factors "Emotional": Somatic, guilt, depression, and anxiety "Excited": tension, excitation, impulsivity, hostility, uncooperative

**Notes:** 1 Only poverty of speech, flattened affect, psychomotor retardation, coherently expressed delusions, and hallucinations were included.  
2 No disorganisation syndrome was found, due to the exclusion of incoherence of speech and incongruity of affect, on methodological grounds.  
3 Only positive symptoms were assessed by the scale analysed.

As can be seen from Table 3, the composition of the symptom dimensions of schizophrenia is far from settled, with as many as six factors postulated. A confirmatory factor analysis of data from 28 studies (collated via meta-analysis) found that Liddle's (1987) three dimensional model best fitted the data, but concluded that more factors and/or symptoms were necessary to account for the structure of schizophrenic symptoms (Smith et al., 1998). There are striking parallels between the dimensions of schizotypy and the dimensions of schizophrenia, with each having positive, negative, and disorganised dimensions (Lenzenweger, 1999). These similarities led Mason et al. (1997) to advocate further research to determine the extent to which schizotypic traits operate individually or in concert to generate or maintain schizophrenic symptoms.

### **3.3 The dimensions of psychiatric symptoms generally**

In contrast, the Claridge et al. (1996) and Chapman et al. (1994) studies both suggest a relationship between the positive symptom component of schizotypy and psychoses in general, rather than schizophrenia specifically. The possibility thus remains that the dimensions of schizotypy bear a resemblance to psychiatric symptoms generally, rather than schizophrenic symptoms in particular. Indeed, factor analyses involving other patient groups have similarly produced factors comparable to those found for schizotypy (see Table 4).

Of the studies reviewed, three found negative, positive and disorganisation factors (Klimidis, Stuart, Minas, Copolov, & Singh, 1993; Peralta, Cuesta, & Farre, 1997; Toomey et al., 1997), and three found positive and negative non-affective factors (McGorry, Bell, Dudgeon, & Jackson, 1998; Purnine, Carey, Maisto, & Carey, 2000; Van Os et al., 1999). Toomey et al. (1997) found the positive, negative, and disorganisation dimensions to be relevant to a large group ( $n = 1,179$ ) of patients characterised by mixed diagnosis (their currently active symptoms included either the psychotic symptoms associated with schizophrenia or mood symptoms associated with the major mood disorders). McGorry et al. (1998), on the other hand, found positive and negative non-affective factors in a study of patients with first episode psychosis. One factor comprised a blend of negative symptoms, catatonic/motor symptoms and disorganisation, while another comprised a combination of Schneiderian first rank

symptoms and other hallucinations and delusions. No separate disorganisation factor was found, leading to the authors' conclusion that disorganisation did not constitute a symptom dimension in first episode diagnosis. Positive and negative non-affective factors have similarly been found in patients with chronic psychoses (Van Os et al., 1999) and in a mixed sample of outpatients with schizophrenia and mood disorders (Purmine et al., 2000). Parallels between the factor structures of schizotypy and schizophrenia thus appear to exist with disorders outside the schizophrenia spectrum also, suggesting that schizotypy is relevant to a range of disorders apart from schizophrenia.

Such findings add credibility to the suggestion that the diagnosis of schizophrenia should be reformulated to remove the emphasis upon psychosis, on the grounds that the emphasis is unwarranted given research indicating that psychosis is a non-specific indicator of serious psychiatric illness (Tsuang et al., 2000). In the view of Tsuang and his colleagues, schizophrenia research should instead be focussed on negative symptoms and neuropsychological deficits. Such a view of psychosis is consistent with the dimensional perspective that positive schizotypy, which also lacks specificity to any disorder, is the attenuated form of psychotic phenomena.

**Table 4: Factor analyses of symptom scales (heterogeneous groups of psychiatric patients)**

	Sample	Measures (Symptoms covered)	Factor Analysis (Dimensions) (% variance)	Negative	Positive	Disorganisation	Other
Klimidis et al. (1993)	Mixed psychosis (n = 114) + Subjects from nine existing studies (n = 1065)	SANS/SAP	Principal Component analysis and reanalysis of global ratings from existing studies	1 Factor	1 Factor Hallucinations / Delusions	1 Factor Positive thought disorder	
Toomey et al. (1997)	Heterogeneous group of psychiatric patients with psychosis and Mood symptoms (n = 1,179)	SANS/SAPS	Principal Component analysis, subscale level	1 factor	1 factor	1 factor	
			Factor analysis, item level	2 factors Diminished expression + Disordered relating	2 factors Bizarre delusions + Auditory hallucinations	1 factor Derailment Tangentially Incoherence	
Peralta et al. (1997)	Schizophrenia n=80 Schizophreniform n=76 Schizoaffective or mood N=80 Delusional, brief reactive, atypical psychoses n=78	SANS/SAPS	Principal component analysis	1 factor	1 factor	1 factor	
McGorry et al. (1998)	1 <sup>st</sup> episode psychosis (n = 509)	Royal Park Multidiagnostic Instrument for Psychosis	Exploratory factor analysis  (4)  (?)	1 Factor Blend of negative symptoms, disorganisation, and catatonic/motor symptoms	1 factor Blend of Schneiderian 1 <sup>st</sup> rank symptoms, and other hallucinations & delusions		2 factors  Depression & Mania
Van Os et al. (1999)	Chronic psychosis N = 706	Comprehensive Psychopathological rating scale	Principal component factor analysis	1 factor	1 factor		2 factors  Depression & Mania
Purnine et al. (2000)	Outpatients with schizophrenia n=75 And mood disorders n=61	PANSS	Exploratory factor analysis	1 factor	1 factor		3 factors Dysphoric Interpersonal difficulty Prosocial

### 3.4 Why the focus on schizophrenia?

So, why has research over the past two decades focused on the relevance of positive and negative symptoms to schizophrenia alone? The answer may lie in the acceptance of Kraepelin's distinction between an affective manic depressive form of psychosis and dementia praecox (a distinction reflected in DSM-IV, Claridge, 1997c). In this regard, Crow (1991) noted that the *"assumption ... that affective disorder and schizophrenia have different underlying pathogeneses and aetiology ... has been paralytic to our thinking and stultifying to research"* (p. 31). The alternative notion of there being only a single form of insanity goes well back into psychiatric history, and has been expressed in several versions of an Einheitspsychose (or unitary psychosis) theory (Claridge, 1997c). Latterly there has been a revival of unitary psychosis theory, in response to the similarities between affective psychosis and schizophrenia, and the failure to distinguish among the schizophrenias genetically (Claridge, 1997c). Investigators increasingly report findings that are not specific to schizophrenia, lending credence to the general vulnerability model of psychosis (Lewine, 1998).

The debate continues. (Kendler, Karkowski, & Walsh, 1998) applied latent class analysis to symptom and outcome assessments of a sample comprising participants with schizophrenia and affective disorders, and identified six psychotic syndromes compared with Kraepelin's two (classic schizophrenia; major depression; schizophreniform disorder; bipolar-schizomania; schizodepression; and, hebephrenia). Crow (1998) retorted by condemning all such attempts for their failure to identify features pathognomonic to the alleged categories, clear boundaries between them, or distinct aetiological pathways.

This present study need not take a position regarding the competing Kraepelin and Einheitspsychose theories. From a purely pragmatic perspective, research focussed on symptoms and syndromes experienced across diagnoses will be of sustained relevance regardless of which theory proves correct (if either).

### 3.5 The benefits of a symptom approach

Many have advocated a focus on specific psychological symptoms (e.g., Bentall, 1990c; Chadwick, Birchwood, & Trower, 1996; Frith, 1992; Persons, 1986; Peters et al., 1994). Persons noted that it is easier to propose an underlying psychological

mechanism for a single symptom than for numerous symptoms, and noted that a study linking a syndrome of behaviour (as opposed to a specific symptom) with a biological mechanism does not explain why overt phenomena result. Bentall noted that symptom based research would remain relevant despite changes in diagnostic schemes, and that linking specific cognitive deficits with specific symptoms and their environmental context held the most promise. Frith noted that by comparing patients' specific symptoms the methodological impossibility of matching schizophrenic and control groups on variables such as medication and institutionalisation was avoided. Chadwick et al. observed that the Bentall, Jackson, and Pilgrim (1988) recommendation that particular symptoms be studied instead of diagnoses has heralded psychological research into the maintenance of symptoms and into the utility of cognitive therapy. Mojtabai and Rieder (1998) disputed the assertion that symptoms rather than syndromes are the appropriate unit of analysis when seeking to determine the etiology of psychiatric disorders. They, however, agreed that the search for the psychological and physiological mechanisms underlying symptoms or symptom clusters is best undertaken through an analysis of symptoms.

Van Praag (1996) raised the possibility that syndromes are infinitely variable idiosyncratic reactions to noxious stimuli, which are incapable of classification; and noted that if this was so the focus of biological psychiatry would necessarily shift from the study of "mental disorders", to the study of psychological functioning. If this situation eventuates, then the importance of symptom based psychological research will be increased still further. Be that as it may, there is ample support for research designs that sample a range of diagnostic groups, enabling the testing of hypotheses that common processes are involved in relation to particular symptoms across diagnoses.

### **3.6 The benefits of a hierarchical approach**

Attention to a range of symptomatology allows the relationships between symptoms to be explored. Hirsh (1991) argued that the overlap between neuroses, affective disorders, and schizophrenia ruled out the diagnostic approach as a useful research strategy; and instead advocated research into the commonalties between symptoms and syndromes experienced across conditions. The extent of the overlap between syndromes is disguised by the structure of DSM-IV, which makes assumptions regarding hierarchical relationships between different disorders. DSM-IV contains

exclusion rules which rule out diagnoses when symptoms occur “exclusively during”, or are “better accounted for”, “superimposed upon”, or “restricted to” other diagnoses. The level of comorbidity between syndromes is understated as a result. These exclusion rules reflect assumptions regarding hierarchical relationships between disorders, and serve to obscure the existence of coexisting or related psychiatric syndromes (Bermanzohn et al., 2000). Bermanzohn et al. (2000) explored the degree of this overlap by administering the Structured Clinical Interview for Diagnosis for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1994), with the exclusion rules removed, to 37 participants diagnosed with schizophrenia. Eighteen of the patients (49%) were diagnosed with additional disorders under the modified criteria (some with more than one): 10 with Major Depressive Disorder (27%); 11 with Obsessive Compulsive Disorder (30%); and 4 with panic Disorder (11%). A research approach based on the schizophrenia diagnosis thus risks overlooking a range of symptomatology.

Van Praag (1996) discussed the problem of comorbidity, and advocated research into the hierarchical order of syndromes, suggesting that biological research will be fettered until a greater understanding is achieved of the relationship between symptoms that flow directly from underlying pathophysiology or personality pathology, and symptoms that arise secondarily.

The present thesis explores the frequency of non-clinical unusual conscious experiences in psychiatric outpatients experiencing a range of symptomatology. If psychosis is the “fever” of serious psychiatric illness (as suggested by Tsuang et al., 2000) and if psychosis lies on a continuum with unusual conscious experiences in the general population (as suggested by Claridge & Beech, 1995), then a reasonable expectation would be that unusual conscious experiences will increase with the severity of symptomatology. This hypothesis will be explored in relation to a hierarchical model of psychiatric illness.

### **3.7 Foulds’s (1976) hierarchical model of psychiatric illness**

As noted by Claridge (1997a), Van Praag’s (1996) belief, that comorbidity may be explained through symptoms being linked in a hierarchical fashion, is reminiscent of the ideas of Foulds (1976), who suggested that there are four classes of “personal illness”, each of which contain between one and five syndromes. Class 1, “dysthymic

states”, include states of anxiety (sA), depression (sD), and elation (sE), and constitutes a state of “disturbance” in which people were stirred up emotionally, and altered in this respect from their normal selves. Class 2, “neurotic symptoms”, includes symptoms of conversion (CVs), dissociation (Ds), phobia (Ps), compulsion (CPs), and rumination (Rs), and constitutes a state of “dissonance”, in which people view a part of their behaviour and experience as alien to their normal selves. Class 3, “integrated delusions”, includes delusions of persecution (dP), grandeur (dG), and contrition (dC), and constitutes a state of “distortion”, in which the self-concept is warped or grossly exaggerated, leading to unconscious motives determining behaviour that forms an almost insurmountable barrier to satisfying personal relationships. Finally, class 4, “delusions of disintegration” (DD) involves considerable “disintegration” of the person, and the loss of the person’s self-concept as agent of his/her thoughts, feelings, and actions. According to Foulds, participants afflicted in this way no longer know who they are, and regarded their behaviour as fully determined by forces outside their control.

Figure 1 illustrates the four classes of Foulds’s (1976) hierarchy, and the five of 16 possible patterns that conform to Foulds’s hierarchical theory (labeled “A” to “E”: patterns 0000, 1000, 1100, 1110, 1111). “Class 0” is used to describe participants who conform to the hierarchy by virtue of the complete absence of symptoms (“0000” patterns). By way of example, person A (pattern 0000) does not satisfy any level of the hierarchy, is not personally ill, and would not be expected to have difficulty recognising his intentions. Person E (pattern 1111), on the other hand, has symptoms within all levels of the hierarchy, and would be expected to have the most difficulty in gauging his intentions.

Foulds’s (1976) classes show a progression of the impairment of the individual’s ability to differentiate behaviours determined internally from behaviours determined by outside forces. The theory is “non-reflexive”, in that it predicts that participants with symptoms within one class of the hierarchy will have symptoms in all lower classes (thus explaining comorbidity); but that only some with symptoms in a given class of the hierarchy will have symptoms in a higher class.

Participants					Class
A	B	C	D	E	
0	0	0	0	1	4: Disintegrated delusions
0	0	0	1	1	3: Integrated delusions
0	0	1	1	1	2: Neurotic symptoms
0	1	1	1	1	1: Dysthymic states

**Figure 1:** Patterns conforming with the Foulds hierarchical model (adapted from Bedford & Deary, 1999)

Foulds (1976) stressed the key role in psychiatric illness played by the inability to recognise one's own intentions, and divided illnesses into those also suffered by animals ("organic illness"); and those reflecting an impaired ability to relate to other participants ("personal illness"). Whereas "organic illness" was concerned with the "habitual aspect of personal activity in abstraction from the intentionality to which it is normally subordinate" (Macmurray, 1961, cited by Foulds, 1976, p. 7); the impaired ability to relate to other participants, implicit in "personal illness", resulted from an inability to modify one's intentions to arrive at an agreed intention. Foulds (1976) believed that multiple aetiologies existed for both kinds of illness, with treatments sometimes particular to syndromes, and at other times applicable to several syndromes. His view was that only through a hierarchical system of diagnosis could the relationships between symptoms be adequately understood.

Under Foulds's theory, the severity of personal illness (reflected by the highest class satisfied on his hierarchy) is determined by the degree of difficulty in determining one's intentions, rather than the magnitude of distress experienced. As an example of severe personal illness, Foulds cited the person suffering from schizophrenia who believes that his external and internal behaviours have fallen under the control of another. Such a person is unable to intend his actions (since he doesn't know whether

they are his own or somebody else's), and is unable thus to enter reciprocal personal relations.

Foulds (1976) suggested a tenable process by which difficulties in discerning intentions might lead to impaired interpersonal relationships. He explained his evolving model in terms of a continuum: the further along a person is, the more impaired the ability to intend behaviour, and the more diminished the willingness to share personal experience with others (Foulds, 1964; 1976). In comparison with the personally well individual, who could risk the self disclosure and the consequent vulnerability necessary for mutual personal relationships, the partly disintegrated individual's fear of rejection, further disintegration, and modification precluded self disclosure, leaving him unable to know others, and unable to know himself (Foulds, 1965).

Foulds and Bedford (1975) assessed Foulds's (1976) hierarchical model using a measure specifically designed for that purpose: the Delusions-Symptoms-States Inventory (DSSI; Bedford & Foulds, 1978). Of the 480 psychiatric patients assessed, 93.3% conformed to the model (the lowest agreement was 91.6% for 144 male inpatients; the highest agreement was 97.8% for 45 male day patients). The 174 normal subjects, as expected, generally fell outside the hierarchy. Of the 368 patients whose highest ranking lay within a class containing more than one category of symptoms (all classes except class 4), 58% fell into only one group within that class ("single syndromes"). When the hierarchical theory was not applied, only 13% of the sample were classified within only one syndrome, highlighting the incidence of comorbidity, and the advantages of recognising hierarchical relationships. For every level of the hierarchy single syndromes were significantly more common for participants who's highest rating lay within that class. These results supported Foulds's non-reflexive hierarchical theory.

When 68 inpatients were reexamined after one month, symptoms continued to conform to the hierarchical theory, despite 73% of patients having changed their position on the hierarchy (63% improved their position) (Foulds, Bedford, & Csapo, 1975). This led the authors to suggest that changes in treatment might be recommended by reference to a patient's changed position on the hierarchy.

Foulds's hierarchical classification system has been described as one of the first comprehensive attempts to establish a formal taxonomic system for classifying psychopathology, and further research into its utility has been urged (Morey, 1987). Bedford and Deary (1999) summarised 36 studies which assessed Foulds's (1976) hierarchical theory using the DSSI (see Table 5). On average 90% of the participants exhibited symptom patterns conforming to Foulds's hierarchy (92% of participants in 17 studies involving general psychiatric patients; 86% in 10 studies involving specific psychiatric groups; 87% in three studies involving other institutional groups; and, 94% in six studies involving non-patients). De Jong et al. (1984, cited in Bedford & Deary, 1999) assessed Foulds's hierarchical theory using the Present State Examination (PSE; Wing, Cooper, & Sartorius, 1974), and found that 86% of participants ( $n = 177$ ) had patterns that conformed to the hierarchy, and concluded that the model had been validated against the PSE. In studies using the DSSI, Foulds's hierarchical theory has been found to be valid in Turkish, Italian, American, and Canadian samples (see Table 5). No study has attempted to test the theory in a New Zealand population sample.

Rubino, Pezzarossa, Zanna, and Ciani (1997) observed that symptom free participants (conforming pattern "0000") tended to inflate the proportion of patterns conforming to Foulds's (1976) hierarchy. When they tested this idea, however, they found that the symptom patterns of 88.2% of their psychiatric patient participants nevertheless conformed when symptom free participants were excluded.

**Table 5**

DSSI studies reporting the percentages fitting the hierarchy of classes of personal illness model (from Bedford & Deary, 1999; used with permission)

Study	N	Subjects	% fit
<b>General psychiatric patients</b>			
Foulds and Bedford (1975)	111	Inpatients (male)	91.9
Foulds and Bedford (1975)	142	Inpatients (female)	91.6
Foulds and Bedford (1975)	45	Day patients (male)	97.8
Foulds and Bedford (1975)	64	Day patients (female)	96.9
Foulds and Bedford (1975)	59	Outpatients (male)	93.2
Foulds and Bedford (1975)	59	Outpatients (female)	93.2
Foulds et al. (1975)	68	Inpatients (mixed)	92.6
Foulds et al. (1975)	68	Patients as above, at retest	91.2
McPherson, Antram, Bagshaw, and Carmichael (1977)	100	Inpatients (mixed)	96.0
Bedford (1977)	40	Inpatients (mixed)	93.0
Bristow (1981)	97	Day patients (mixed)	89.7
Angelopoulos (1981)#	73	In-, out- and day-patients (mixed)	87.7
Angelopoulos (1981)#	73	Patients as above, at retest	91.8
Gilleard (1983)	100	In- and Outpatients (mixed)	93.0
Gilleard (1983)	97	Turkish in- and outpatients (mixed)	87.6
McIver (personal communication)#	50	Inpatients (mixed)	94.0
Rubino et al. (1997)	166	Italian in- and out-patients, (mixed)	88.2*
<b>Specific psychiatric groups</b>			
Bagshaw (1977)	78	Inpatients with depression (mixed)	92.3
Bagshaw and McPherson (1978)	30	Inpatients with mania and hypomania	73.3
Talcott (1980)#	23	American inpatients with schizophrenia (mixed)	85.0
Morey (1985)	52	American inpatients with schizophrenia and affective disorders (mixed)	90.4
Hargreaves (1985)#	98	In- and day-patients with psychoses (mixed)	78.6
Hargreaves (1985)#	41	Patients as above, at retest	90.2
Hargreaves (1985)#	100	In- and day-patients with neuroses (mixed)	95.5
Hargreaves (1985)#	51	Patients as above, at retest	96.1
Bedford and Presley (1978)	33	Inpatients with chronic, non-paranoid schizophrenia (mixed)	81.8
Palmer et al. (1981)#	103	Inpatients with chronic schizophrenia (mixed)	73.8
<b>Other institutional groups</b>			
O'Neill (1976)#	69	Canadian inpatients on alcohol and addiction ward (mixed)	85.5
Heather (1977)#	42	Prisoners with life sentences (males)	92.9
Rubino et al. (1997)	254	Italian dermatological out-patients	86.1*
<b>Non-patients</b>			
Foulds and Bedford (1975)	24	Males aged 21 and under	91.7
Foulds and Bedford (1975)	36	Males aged 22 and over	97.2
Foulds and Bedford (1975)	74	Females aged 21 and under	93.2
Foulds and Bedford (1975)	100	Females aged 22 and over	95.0
Hargreaves (1985)#	52	Mixed	94.2
Hargreaves (1985)#	21	As above, at retest	95.2

\* In the Rubino et al. (1997) study patients with a 0000 pattern, which fits the hierarchy model, were discarded.

# As cited in Bedford & Deary (1999).

Sturt (1981) suggested that the non-reflexive inclusive relationships between symptoms identified by Foulds (1976) most parsimoniously reflected a general tendency for higher classes to have symptoms of lower classes in any hierarchy based on prevalence. Morey (1985) tested this hypothesis by constructing a hierarchy with the least prevalent syndrome in the highest hierarchy (Class 5), and with remaining syndromes allocated to descending classes in the order of increasing prevalence. Consistent with Sturt's hypothesis, 94% of patterns within the hierarchy conformed to the non-reflexive inclusive principle. However, Morey then compared the ability of the Foulds hierarchy, Sturt's prevalence based hierarchy, and a hierarchy based on a continuum of symptom severity, to account for scores on the Brief Psychiatric Rating Scale (BPRS: Overall & Gorham, 1962). The BPRS was chosen as the validation measure because it also measured "state" psychiatric symptoms, and had the advantage of being clinician rated rather than purely self-report. For the symptom severity hierarchy, the percentage of patients falling into each Foulds class determined the proportion of patients allocated to each class, from the continuum based on total DSSI score. The Foulds model's ability to account for variance on the BPRS was highly significant ( $p < .0018$ ), while the severity and prevalence models did not reach significance ( $p < .06$ , and  $p < .63$  respectively). This provided strong evidence that symptoms increase in severity with each successive level of Foulds's hierarchy.

There is thus empirical evidence that patterns of psychiatric illness conform to Foulds's (1976) hierarchy, consistent with his theory regarding the integral role of difficulties in determining intentionality in determining the severity of mental illness. Foulds's hierarchy provides a method of classifying symptom severity, which will be useful in the present study as the relationship between unusual conscious experiences and symptomatology is explored. In addition, Foulds's ideas regarding the key role of intentionality foreshadow attempts by cognitive theorists to determine the mechanism by which unusual conscious experiences come into existence.

### **3.8 The present study**

Increasingly, schizophrenia is regarded as a label for a heterogeneous range of conditions (Bentall, 1990b; Boyle, 1990; Tsuang et al., 2000). Parallel with this has emerged a realisation among many that so called “schizotypic” characteristics are similarly not discrete unitary phenomena, and that they encompass a variety of dimensions related to disorders inside and outside the schizophrenia spectrum (Claridge, 1997a). The present study investigates the relationship of positive schizotypy to a range of symptoms, including those not typically associated with schizophrenia. Foulds’s (1976) hierarchical model provides a method for ordering symptoms according to severity, and suggests the contribution of deficits in the ability to determine intentionality. Cognitive process models of symptom formation, within which deficits in the ability to determine intentionality also play a part, will now be introduced. These models show promise in explaining the emergence of clinical and non-clinical unusual conscious experiences.

## CHAPTER 4

### PROCESS MODELS OF SYMPTOM FORMATION

#### 4.1 Process models of symptom formation

Foulds (1976) drew upon the psychodynamic constructs of repression, defence mechanisms, and unconscious motivation to explain the process leading to difficulties in discerning intentions, and consequent personal illness. These constructs are vague, and incapable of scientific measurement (Crews, 1996). However, Foulds's choice of explanation neither weakens the empirical support for his hierarchical theory nor precludes the exploration of other explanatory phenomena.

Indeed, Foulds's (1976) theory regarding the role of unconscious motivation could sensibly be explained through reference to Baar's (1988) Global Workspace Theory. Baar (1988) suggested that the contents of consciousness constitute a "global workspace" within which numerous unconscious processes (including effectors, action schemata, goal contexts or intentions, and the self-system) form alliances and compete to be part of the coalition of processors which eventually dominates consciousness. Baar hypothesised that abnormal experiences such as anxiety, depression, phobias, conversion symptoms, hallucinations, and delusions occur as a result of excessive control effort, leading to faulty goal images remaining in consciousness for too shorter period to allow appropriate editing, causing involuntary, unconsciously driven, behaviour. Alternatively, self-alien syndromes (depersonalisation, derealisation, psychogenic fugue, and so on) may occur through errors in monitoring actions and experiences, caused by deep violations of beliefs and values comprising the self-system (Baar, 1988).

Rather than perform a specific monitoring function, Baar's (1988) global workspace provided a forum within which coalitions of processors competed for access to consciousness. In contrast, other theorists have attributed specific roles to cognitive monitoring processes, and related dysfunctions in these processes to specific symptoms. Morris (unpublished manuscript) listed three self-monitoring roles argued to be fulfilled by self-consciousness. The first gave a "sense of reality", and helped distinguish percepts arising externally from those arising internally (such as memories, images, and

wishes), and was informed by Kunzendorf (1987). The second gave a “sense of agency”, and helped distinguish actions of the self (including volitional thoughts) from external events and the actions of others, and was informed by Frith (1992) and Morris (1997). The third gave a “sense of continuity and unity”, and the ability to gauge whether events occurred in a predictable fashion, and was informed by Gray (1995). The present thesis is concerned with the first two of these roles, together with the role of monitoring causal perception (referred to by Morris & Johnson, unpublished manuscript, and labelled the “sense of causation” in the present study). These three roles will now be outlined in more detail. Reference to Table 6 during this discussion will facilitate understanding. Table 6 summarises the kinds of monitoring error associated with each “sense”, together with the relevant subscale of a questionnaire designed to measure non-clinical instances of such errors (the Conscious Experiences Questionnaire, or CEQ: Morris & Johnson, unpublished manuscript).

Kunzendorf (1987) proposed that self-consciousness is a process, distinct phenomenologically and neurologically from the consciousness of sensations, which enables products of the imagination to be distinguished from the products of perception. According to Kunzendorf, unmonitored conscious sensations are experienced without any immediate sense that one is imagining or perceiving them. Examples given included dreams, hypnotic and psychotic hallucinations, subconscious percepts (whether unattended or “subliminal”), and repressed memory images. In support of his theory Kunzendorf referred to a study in which auditory evoked potentials exhibited a large negatively charged wave in the left hemisphere when participants were asked to imagine a tone, while “unmonitored” tones induced by hypnotism produced no such response (Kunzendorf & Hoyle, cited in Kunzendorf, 1987). The existence of such a self-monitoring deficit is consistent with research findings suggesting that hallucinators are biased towards attributing internal events to external sources (Baker & Morrison, 1998; Bentall, Baker, & Havers, 1991; Morrison & Haddock, 1997).

**Table 6: Kinds of monitoring error, the applicable domain, and applicable CEQ subscale**

Domain	Monitoring error	CEQ Subscale	Monitoring error	CEQ Subscale
Reality Sense <i>Perception</i> (“Source monitoring” or “reality monitoring”)	<b>Externalisation Error</b> An imagined percept is incorrectly regarded as having an external origin, rather than being a product of the imagination, giving rise to a hallucination (Kundzendorf, 1987).	Imagined seems real	<b>Internalisation Error</b> A percept with an external origin is incorrectly identified as originating internally; as with derealisation, when a woman believes she is imagining what she is seeing, causing objects and events to take on an unreal quality) (Morris & Johnson, unpublished manuscript). Alternatively, observable external behaviour is attributed to the individual’s inner world, giving rise to feelings of strangeness and unreality associated with depersonalisation (Morris, 1997) A remembered percept is regarded as having an external origin, rather than being a product of memory (Morris & Johnson, unpublished manuscript).	Feelings of unreality  Déjà vu
Agency sense <i>Actions of the self</i>	<b>Externalisation Error (Monitor says intended = unintended)</b> Actions of the self may be incorrectly attributed to an external source, leading to delusions of passivity. For example, a person may think “evil” thoughts, but be convinced that those thoughts have been inserted into his head by another person (“thought insertion”) (Frith & Done, 1989). Alternatively, muscle contractions outside awareness may lead to conversion and somatisation symptoms (Morris, 1997).	Passivity Phenomena  Somatic Control	<b>Internalisation Error (Monitor says unintended = intended)</b> Alternately, the actions of others may be incorrectly attributed to an internal source. For example, a man may be convinced that he has caused the misfortune of another, through his evil thoughts of them, giving rise to delusions of grandiosity or guilt (Morris, 1997).	Mind Control
<i>Actions of others</i>	A person may be inclined to experience the actions of others as intended when they are not, giving rise to delusions of reference and persecution (Frith, 1992).	Referential thinking	Alternatively, a person may have difficulty discerning when other people intend their actions, and dismiss their actions as having no meaning, as in mindblindness and Capgras syndrome (Morris, unpublished manuscript).	Mind-blindness
Causation sense	An event with an identifiable cause may be attributed to chance (Morris & Johnson, unpublished manuscript).	Chance Beliefs	Alternatively, a chance event (without a cause) may be attributed to a supernatural force. For example a friend rings just when a person is thinking of them and this is attributed to a supernatural force (Morris & Johnson, unpublished manuscript).	Powerful Forces

Frith (1992) proposed that defects in a central monitoring mechanism mean that participants with schizophrenia are impaired in their ability to monitor their own actions, leading to delusions of alien control, thought insertion, and thought blocking, and certain auditory hallucinations (e.g., hearing one's thoughts uttered out loud). While Frith's views were expressed in relation to schizophrenia, his opinion was that the same cognitive defects most likely underlay all psychotic symptoms, irrespective of diagnosis. According to Frith, there are two facets to the deficit in the central monitoring mechanism proposed by him. Firstly, there is impairment in the ability to distinguish whether events are caused by one's own actions or by external agencies. Secondly, there is impairment in the ability to monitor one's intentions to act, leading to difficulties in determining whether actions are intended "willed actions", or "stimulus-driven actions" in response to external events. In this respect, a non-medicated group of schizophrenia patients with experiences of passivity (experiences of alien control; including delusions of control, thought insertion, and thought blocking) was compared with groups without such experiences (non-medicated schizophrenia, affective psychosis, and control groups) on an action monitoring task (Frith & Done, 1989). More than any other group, in the absence of visual feedback, the alien control group failed to correct mistakes made impulsively in contravention of a rule known to them (i.e., they tended to forget the response just made). The authors concluded that a specific defect in central feedback caused them difficulty in monitoring their own actions, leading to attributions of alien control (Frith & Done, 1989). In a similar vein, deluded schizophrenia patients have been found to be more likely to mistake the hand movements of another as their own (Daprati et al., 1997).

Startup (1999) extended Frith's (1992) ideas into the dissociative realm, when he endeavoured to explain moderately high correlations between measures of dissociation and schizotypy. Startup suggested that while the causes of each might differ, both schizotypy and dissociation may reflect a final common pathway shared by schizophrenic passivity experiences and severe dissociative disorders, whereby monitoring processes failed to appropriately label actions as intentional.

The ideas of both Kunzendorf (1987) and Frith (1992) are consistent with a review of research into hallucinations, conducted by Bentall (1990a). Bentall noted agreement

amongst cognitive mechanism theorists that the process leading to hallucinations involves private internal events being mistaken for observable external ones. He concluded from the data that hallucinators are: impaired in their ability to discriminate real from imaginary events; prone to reaching speedy overconfident conclusions regarding the source of their perceptions; inappropriately biased towards attributing perceptions to an external source; and liable to place undue weight upon contextual cues. Bentall noted that a perceived stimulus will more likely be regarded as real if accompanied by the sensory experiences associated with real events, or if experienced without the sense of cognitive effort characteristic of intendedness. He noted that a range of traits, deficits, life experiences and influences likely contribute to the array of sensory cues associated with hallucinatory experiences. By way of illustration, there is compelling evidence that auditory hallucinations are often accompanied by subvocalisation (Bentall, 1990). Applying Bentall's analysis, self deprecating subvocalisation (the perceived stimulus) will more likely be regarded as an external voice if it is experienced in the presence of a hostile fellow employee (a contextual cue), and if no experience of intendedness is associated with the sub-vocalisation.

Frith (1992) also suggested a disorder of monitoring the intentions of others (a "theory of mind" deficit), giving rise to delusions of reference (a false inference that another is trying to communicate with them), paranoid delusions (a false inference that another intends to do them harm), and third party hallucinations (where inferences regarding the thoughts of a third person are perceived as having an external source, in the form of voices commenting on the patient). Frith and Corcoran (1996) allocated 55 schizophrenia patients to one of four groups (defined by their most serious symptoms or by the absence of symptoms) and compared their performance on theory of mind tasks with non-psychotic psychiatric outpatients and non-psychiatric controls. In order of decreasing severity, the groups were defined by positive or negative behavioural signs (poverty of speech, flat affect, incongruent speech or affect); paranoid symptoms (delusions of reference, misidentification, or persecution, third party hallucinations); passivity phenomena (including passivity delusions and second person auditory hallucinations); and the remission of symptoms (Frith & Corcoran, 1996). Only the paranoid symptom group made significantly more errors on 'theory of mind' tasks, in the absence of an associated memory deficit. (A theory of mind deficit was found in the behavioural signs group, but this was associated with impaired memory). Consistent

with the involvement of different processes in the monitoring of intentions of the self and the intentions of others, the passivity phenomena group did not differ from the control group on these tasks.

Frith (1992) hypothesised that these monitoring disorders, together with disorders of willed action (perseveration, poverty of action, inappropriate action), reflected a disordered general mechanism, implicated in schizophrenia, labeled “metarepresentation”, being the cognitive process by which we become aware of our goals, intentions, and the intentions of others. Frith suggested that participants with autism and schizophrenia are similarly impaired in the ability to represent mental states (metarepresentation). The difference is that autism sufferers have never experienced the ability to represent the mental state of others, and thus never attempt to use it; whereas schizophrenia sufferers enjoyed this ability until the onset of their disease, and continually endeavour to use an ability now lost (Foulds, 1976). Frith suggested that this explained the presence in schizophrenia but absence in autism of delusions regarding the state of mind of others.

In a review of the literature, Garety and Freeman (1999) found support for the existence of theory of mind deficits in participants experiencing delusions of persecution and delusions of reference, but noted that the involvement of a more general reasoning impairment had not been excluded. Only two of the studies reviewed found a theory of mind deficit present in the paranoid subgroup *and* absent in the passivity delusion subgroup (Corcoran, Frith, & Mercer, 1995; Frith & Corcoran, 1996). More robustly, patients with negative symptoms and incoherence of speech were consistently found to have theory of mind deficits, although a general reasoning deficit was also implicated. In contrast, in the studies reviewed, theory of mind deficits were not found in any of the following groups: psychotic depression (major affective disorder, depression, bipolar affective disorders) mixed clinical (anxiety or depression), mixed clinical (non-psychosis), or clinical depression (Garety & Freeman, 1999).

Mentalising deficits have also been identified non-clinically. Mentalising abilities were measured in a non-clinical population to test the suggestion that impaired mentalising in psychiatric patients is a secondary consequence of the social alienation that is endemic in chronic mental illness (Langdon & Coltheart, 1999). Selective mentalising

deficits were exhibited by participants high on schizotypy, a finding regarded as inconsistent with the deficits being secondary to social isolation, and as supporting the view that psychosis lies on a continuum with normal schizotypal traits (Langdon & Coltheart, 1999).

Morris (unpublished manuscript) considered whether single or multiple process accounts better explained the disruptions of self-consciousness involved in psychological disorders generally. He concluded that disorders of conscious experience were better explained by the dysfunction of three separate cognitive processes (underlying the senses of reality, agency, and continuity/unity, referred to above) than by the dysfunction of a single overarching monitoring process. Morris described the processes underlying the senses of reality and agency as “bipolar”, since different groups of symptoms were predicted in each domain depending upon the nature of the monitoring error. For the process underlying “reality sense”, externalisation errors were linked to hallucinations (supported by a finding that subjects with schizophrenia displayed an externalisation bias in source monitoring tasks; Vinogradov et al., 1997), while internalisation errors were linked to derealisation and the anxiety disorders. For the process underlying “agency sense”, difficulties in monitoring the intentions of the self were linked to control delusions and hallucinations (arising from unmonitored subvocal speech or visual imagery), while difficulties in monitoring the intentions of others were linked to Capgras syndrome and mindblindness. A converse style of misattribution was linked to delusions of grandeur, and to magical ideation, including belief in the ability to control others or to change inanimate objects from afar. (As noted by Morris, Georgieff & Jeannerod, 1998 similarly identified a converse style of attribution).

While Frith’s (1992) theory focused on the symptoms associated with schizophrenia, from a dimensional perspective Morris (1997) considered the role of the monitoring of actions in other disorders and in participants not psychiatrically ill (consistent with dimensional views of psychiatric illness). Morris argued that the ability to differentiate between intentional and non-intentional actions is critical for the proper regulation of behaviour, and that the conscious awareness of intention represents the output of cognitive monitoring processes designed to perform this task. Morris suggested that the labeling as *unintentional* of behaviour originating *internally* may generate unusual

conscious experiences such as conversion disorder, somatisation disorder, a “sense of providence”, delusions of control, depersonalisation, and passive ESP experiences. Alternatively, the labeling as *intentional* of passive behaviours, or behaviours originating *externally*, may lead to paranoid delusions or delusions of reference (with respect to the actions of others); or to grandiose delusions, delusional guilt, post-hypnotic suggestion, active ESP experiences, or telekinesis (with respect to one’s own actions) (Morris, 1997).

Morris, Moss, and Ley (unpublished manuscript) investigated unusual conscious experiences in a non-clinical sample, and compared students high and low in unusual conscious experiences on a range of cognitive tasks assessing source and action monitoring. The many correlations between results on source monitoring tasks, and the few correlations between action tasks and source monitoring tasks, were said to support the hypothesis that separate processes were involved in each. While the group high on unusual conscious experiences made significantly fewer errors on one source monitoring task, significantly more errors were made on the task that was longest, largest, and produced the most errors. This result was attributed to the relative arduousness of the task, and the greater demands placed on monitoring processes. A parallel was drawn with the Bentall et al. (1991) finding that only high cognitive effort words produced differences between hallucinators and controls. On this basis, the authors suggested that a patient group would have more impaired monitoring processes, and would make more errors on tasks involving less effort. The failure to find differences between the two action monitoring tasks was attributed to the screening questionnaire having assessed the attribution of actions both to the self and to others, thus confounding the two. Morris et al. accordingly advocated the use of a process-based questionnaire measuring internalisation and externalisation errors separately.

#### **4.2 A process based questionnaire**

Morris and Johnson (unpublished manuscript) developed a process based questionnaire (the CEQ) to assess subtle errors in monitoring sensory perception (reality sense), actions of the self and of others (agency sense), and causal perception (causation sense) (the tendency to attribute cause to either supernatural forces or chance, in the absence of an apparent physical cause). Monitoring theories regarding the domains of reality sense and agency sense have been discussed above. In formulating the domain of

causal perception, Morris and Johnson drew upon research indicating that high scorers on measures of psychosis proneness score highly on measures of belief in magical or supernatural causation (Thalbourne, 1994); and that participants with strong beliefs in supernatural causation score highly on measures of psychosis proneness (Peters et al., 1999).

Table 6 outlines the psychological symptoms associated with kind of monitoring error, the applicable domain within which the error occurs, and the CEQ subscale (or subscales) designed by Morris and Johnson (unpublished manuscript) to measure each such error. With the exception of Chance Beliefs, each error is readily associated with psychopathology. Consistent with hypotheses regarding the role of monitoring processes in conversion disorder and somatisation disorder (Morris, 1997) items were included in the CEQ to capture somatic sensations associated with muscle contractions occurring outside awareness. Furthermore, two questions relating to *déjà vu* were included, to assess feelings of unreality flowing from monitoring failures to identify the role of memory in such experiences (Morris & Johnson, unpublished manuscript). Under a factor analysis of the CEQ conducted by Morris and Johnson, nine of the ten posited monitoring errors emerged as factors; the exception being Passivity Phenomena, the items of which mapped particularly onto Feelings of Unreality, Referential Thinking, Imagined Seems Real, and Mindblindness. The idea was tested that the subscales represented the opposite poles of distinct processes, i.e.: Feelings of Unreality/*Déjà Vu* versus Imagined Seems Real; Referential Thinking versus Mindblindness; Mind Control versus Passivity Phenomena/Somatic Control; Powerful Forces versus Chance Beliefs). However, instead of the expected negative correlations, the associated subscales were positively correlated, with the single exception of Powerful Forces and Chance Beliefs ( $r = -.16$ ). The evidence did not thus support the view that unusual conscious experiences arose through biases within single processes.

### **4.3 The present study**

The present study explores the idea that non-clinical unusual conscious experiences reflect errors in cognitive monitoring processes, and that these will be elevated in participants experiencing psychological symptoms. Predictions will be tested regarding the types of symptoms that will be associated with the unusual conscious experiences

and posited monitoring processes assessed by the CEQ. The usefulness of this endeavour is supported by Frith (1992), who noted that by categorising positive symptoms according to the cognitive monitoring processes thought to underlie them predictions could be made of the abnormal behaviour to be manifested by participants exhibiting such symptoms. Frith noted further that physiological abnormalities might then be linked with the symptoms accompanying a suggested process, thus assisting in the search for a biological cause of schizophrenia.

## CHAPTER 5

### FUNCTIONING AND UNUSUAL CONSCIOUS EXPERIENCES

#### 5.1 Functioning and unusual conscious experiences

As noted in the overview, the existence of delusional symptomatology is not synonymous with impairment in functioning. In this regard, Peters et al. (1999) compared a group experiencing delusions with a group comprising Hare Krishnas and Druids, and found no significant differences either in the incidence of delusional ideas or in the level of conviction with which those ideas were held. While the deluded group was more distressed than the control group, the Hare Krishna / Druid group was not. Even more strikingly, chronically deluded participants scored highly on perceived purpose and meaning of life measures, and lowly on depression and suicidal ideation, despite an objectively inferior quality of life (Roberts, 1991).

Given that symptoms are not a sufficient condition for mental illness, how is illness to be defined? Foulds (1965) proposed that an illness only existed once there was impairment in functioning sufficiently distressing for the sufferer or close associates to seek intervention. Under this definition, the Hare Krishna / Druid group in the Peters et al. (1999) study would not be regarded as psychiatrically ill. (Foulds's [1976] later position, that the level of impairment in determining intentionality determines the severity of personal illness, presumably assumes that such impairment will be accompanied by distress to the participants afflicted, or to their close associates).

Dimensional assessments of symptomatology have been found to be more strongly associated with functioning than diagnostic classification (Van Os et al., 1999). Van Os et al. found that dimensional assessments of current psychopathology and lifetime psychopathology were more strongly associated with important measures of functioning than were conventional categorical diagnoses based on the same information. Clinical measures assessed included measures of quality of life, social disability, recent unemployment, and months lived independently. For most measures, the effect on clinical variables was greater the more symptom dimensions that were involved (the dimensions comprised “negative”, “positive”, “depressive”, and “manic” symptoms - see Table 4). So, a participant with symptoms on fewer dimensions was

generally less impaired on clinical variables than a person impaired on more dimensions.

A relationship between positive schizotypy and reduced functioning is suggested by the Chapman et al. (1994) longitudinal study, in which subjects scoring highly on the Perceptual Aberration or Magical Ideation scales scored more poorly at 10 year follow-up than a control group on measures of overall functioning (the Global Assessment Scale or GAS: Endicott, Spitzer, Fleiss & Cohen, 1976; and Hollinghead's two-factor index of social position: cited by Chapman et al., 1994). The mean scores and standard deviations for each measure at follow-up were as follows. GAS:  $M_{\text{PerAb/MagicId group}} = 68.8$   $SD = 12.2$ ;  $M_{\text{Control Group}} = 75.0$   $SD = 12.3$ . SES:  $M_{\text{PerAb/MagicId group}} = 28.2$   $SD = 10.8$ ;  $M_{\text{Control Group}} = 25.2$   $SD = 10.3$ . While the differences were of limited clinical relevance on average, clinical significance was presumably reached in individual cases. Importantly, functioning was not measured initially, meaning that the deficit in functioning could have been present at the outset of the study, or could have resulted from deterioration over time. (Endicott, Spitzer, Fleiss, & Cohen, 1976)

Positive schizotypy, although associated with a number of disorders inside and outside the schizophrenia spectrum (as discussed above), is also associated with phenomena experienced as rewarding by many, including out of body experiences (McCreery, 1997), spirituality (Jackson, 1997), and creativity (Brod, 1997). A comprehensive theory must explain why unusual conscious experiences are associated with enhanced functioning in some circumstances and a decrement in functioning in others. Jackson's (1997) ideas regarding the relationship between spirituality and psychosis are informative in this regard. Jackson examined a general population sample and a clinical sample, and found substantial correlations between schizotypy (STA) and spiritual experience in the general population sample (Jackson, 1997). These associations were largely restricted to "numinous experiences", defined as a "sense of the supernatural presence, prominent sensory phenomena, volitional passivity, and intense emotions" (Jackson, 1997; pp. 238-239). In the clinical sample, comprised of participants diagnosed with schizophrenia, significantly elevated numinous experience scores were found relative to the general population sample (Jackson, 1997). These findings were regarded as consistent with the existence of a common schizotypal trait and associated underlying process, capable of explaining both psychoses and benign spiritual and

creative experiences. In both pathological and benign experiences, Jackson believes that an existential crisis triggers an altered state of consciousness, within which non-veridical schizotypal thinking produces insight. This insight then generates either: a solution, often symbolic in nature, which resolves the crisis (in the case of spiritual experience); or an exacerbation of the crisis, leading eventually to psychosis.

Mediating factors, thought by Jackson to influence the ultimate result, included the level of schizotypy, the quality of the insight, and the person's assessment of the social response to their experience (Jackson, 1997). The coincidence of paranormal phenomena and schizotypy in the general population, illustrated by the relationship found between the Australian Sheep-Goat Scale, MagicId, PerAb, PerAb/MagicId, and the MMPI based Schizophrenia Scale (Thalbourne, 1994), may be explained within Jackson's theory as similarly indicating a susceptibility to psychosis.

## **5.2 The present study**

The present study will replicate Chapman et al. (1994) cross-sectionally in a psychiatric outpatient sample, assessing whether a relationship exists between unusual conscious experiences and functioning. The relationship between unusual conscious experiences and symptom related distress will also be assessed, given the apparent mediating role of distress in distinguishing delusional and religious groups (Peters et al., 1999). Finally, the strength of the relationship between Foulds's (1976) hierarchical theory of personal illness and functioning will be assessed, and a comparison made with the strength of the association between DSM-IV diagnosis and functioning.

## CHAPTER 6

### THE PRESENT RESEARCH

#### **6.1 The validity of Foulds's (1976) hierarchical theory**

As may be seen from Table 5, while Foulds's (1976) hierarchical theory of symptomatology has been found to be valid in United Kingdom, Turkish, Italian, American, and Canadian samples (in studies using the DSSI) its validity has never been tested in a New Zealand sample. Should Foulds's theory be found to be valid, then prima facie evidence would be provided that difficulties in determining intentionality are related to the severity of symptoms in this population.

*Hypothesis 1: That Foulds's hierarchical theory of symptom structure will be valid in a heterogeneous sample of New Zealand psychiatric outpatients (i.e. 90% or more of participants will have symptom patterns that conform to Foulds's hierarchy).*

#### **6.2 The relationship between the frequency of unusual conscious experiences and the severity of psychiatric symptoms**

Psychosis has been described as the "fever" of severe psychiatric illnesses, while its non-clinical counterpart, positive schizotypy, has been found to be elevated in a variety of disorders and related to non-clinical analogues of symptoms. A dimensional perspective would place both on a continuum, with normality at one end, and psychosis (or at least the predisposition leading to psychosis) at the other (Claridge & Beech, 1995; Eysenck & Eysenck, 1976). The extent to which unusual conscious experiences constitute a "trait" as opposed to a "state" requires elucidation (Peters et al., 1999), as does the nature of their relationship to psychiatric illness generally (Claridge & Beech, 1995). Relevant to both these issues, the following hypothesis assesses the relationship between the frequency of unusual conscious experiences and the severity of psychiatric symptoms generally.

*Hypothesis 2: That participants who are higher on Foulds's (1976) hierarchy of personal illness will experience more non-clinical unusual conscious experiences than participants who are lower on that hierarchy.*

### **6.3 The relationship between deficits in the ability to determine intentionality and the severity of psychiatric symptoms**

Foulds (1976) proposed a hierarchical method of classifying psychiatric illness, under which the severity of the disorder is determined by the degree of impairment in differentiating actions determined internally from those determined by outside forces. In explaining such impairment, Foulds assigned a key role to deficits in the awareness of one's own intentions. From a cognitive process perspective, Frith (1992) and Morris (1997) focused on the monitoring of actions, and assigned separate roles to the ability to recognise one's own intentions and the ability to recognise the intentions of others. The CEQ's Passivity Phenomena, Somatic Control, and Mind Control subscales were designed to assess difficulties in determining one's own intentions, and the Referential Thinking and Mindblindness subscales were designed to assess difficulties in determining the intentions of others.

*Hypothesis 3: That participants who are higher on Foulds's (1976) hierarchy of personal illness will more frequently exhibit non-clinical deficits in the ability to determine intentionality than participants who are lower on that hierarchy.*

### **6.4 Relationship to functioning**

According to Foulds (1976), the severity of psychiatric illness increases the higher a person is placed on his hierarchy, and is determined by the severity of the deficit in determining intentionality. The finding that the overall functioning of non-patients, who were high on Perceptual Aberration or Magic Ideation (or both), was impaired relative to controls at 10-year follow-up (Chapman et al., 1994) raised the possibility that unusual conscious experiences play a role in producing lower functioning. Consistent with this, Morris et al. (unpublished manuscript) suggested that monitoring errors would be more elevated in a patient population (whose functioning is presumably diminished, given their patient status). On the other hand, the existence of delusional symptomatology is not necessarily inconsistent with a sense of well being (Peters et al., 1999; Roberts, 1991). Likewise, Foulds's (1976) notion of a one-to-one correspondence between deficits in the ability to monitor intentionality and the severity of psychiatric illness likely assumes that distress (and presumably a decrement in functioning) accompanies impairment in determining intentionality (as suggested by Foulds, 1965). Against this background the following hypotheses were proposed:

Hypothesis 4: *That the higher the participant's position on Foulds's (1976) hierarchy, the more severe will be the decrement in global functioning.*

Hypothesis 5: *That the frequency of unusual conscious experiences influences global functioning.*

Hypothesis 6: *That symptom related distress will be associated with poor functioning.*

### **6.5 Interrelationships between unusual conscious experiences**

Frith (1992) and Morris (1997) focussed on the monitoring of actions and awareness of intentionality; Kunzendorf (1987) focussed on errors in the monitoring of perceptions; and, Morris and Johnson (unpublished manuscript) focussed on monitoring errors in the attribution of causation. Morris and Johnson drew on all these theories when they developed the CEQ, a measure that seeks to assess cognitive process errors believed to explain unusual conscious experiences. Morris and Johnson (unpublished manuscript) studied a university student population, and investigated the eight kinds of monitoring error assessed by the CEQ, comprising internalisation and externalisation errors in the following domains: perception; actions of the self; actions of others; and the causation of events (see Table 6). They investigated the suggestion that internalisation and externalisation errors within each domain would be negatively correlated, constituting mutually exclusive biases within distinct monitoring processes. Morris and Johnson however found that, with the exception of the causation of events domain, externalisation and internalisation errors were positively correlated, suggesting a deficit in a single process, rather than biases in individual processes.

Hypothesis 7: *That participants will be biased either towards attributing events to supernatural causes or to attributing events to chance (but not both), supporting the notion that each represent converse examples of errors in the same process.*

Hypothesis 8: *That the remaining subscales will be positively correlated (consistent with unusual conscious experiences arising through one process), rather than negatively correlated (in a manner consistent with individual CEQ subscales recording converse examples of errors in separate processes).*

## 6.6 Relationship between cognitive processes and symptoms

Morris and Johnson (unpublished manuscript) organised unusual conscious experiences according to the cognitive monitoring errors believed to explain them, and developed a questionnaire designed to assess such errors. Table 6 summarises this organisation, and lists a number of predictions regarding the kinds of clinical symptoms believed to be associated with each kind of monitoring error. Hypotheses 9 to 14 test a number of these predictions. In the domain of “causation sense”, an association was suggested between belief in supernatural forces and psychotic-spectrum disorders (Morris & Johnson, unpublished manuscript). Hypothesis 15 tests for an association between belief in supernatural forces and delusional symptomatology.

Hypothesis 9: *That participants experiencing delusions of persecution (with or without other delusions) will experience more frequent difficulties in determining the intentions of others than participants who do not experience delusions of persecution.*

Hypothesis 10: *That participants experiencing delusions of passivity will have more frequent difficulty determining their own intentions than participants who do not experience delusions of passivity.*

Hypothesis 11: *That participants experiencing hallucinations will attribute imagined percepts to external sources more frequently than participants who do not experience hallucinations.*

Hypothesis 12: *That participants experiencing grandiose delusions or delusions of contrition will attribute the actions of others to themselves more frequently than participants who do not.*

Hypothesis 13: *That participants experiencing conversion symptoms and delusions of passivity will attribute actions of the self to external sources more frequently than participants who do not.*

Hypothesis 14: *That participants with dissociative symptoms will attribute percepts with an external origin to the imagination or to memory more frequently than participants without dissociative symptoms.*

Hypothesis 15: *That participants with specific kinds of delusion (persecution, passivity, grandiosity, or contrition) will attribute events to an unseen power or force more frequently than participants without such delusions.*

## CHAPTER 7

### METHOD

#### 7.1 Design

A comparative cross-sectional study was designed to test the hypotheses outlined above. Consumers of community mental health services completed two self-report questionnaires: one assessing non-symptom unusual conscious experiences (the CEQ); and another assessing current symptoms (the Delusions Symptoms States Inventory; DSSI). In addition, each consumer's primary mental health worker ("key worker") assessed their current level of functioning (via the Global Assessment of Functioning), and noted their current DSM diagnosis from the file.

#### 7.2 Participants

One hundred and four community mental health clients of MidCentral Health Ltd participated in the study. Table 7 breaks the sample down demographically. All consumers capable of providing informed consent were eligible to participate, assuming they possessed sufficient English language skills to complete the questionnaires (with assistance if necessary). Participants received \$10 each, as compensation for their time.

Consent was first sought and received from MidCentral Health Ltd, the Human Ethics Committee at Massey University, and the Manawatu Whanganui Ethics Committee. Cultural safety and appropriateness from a Maori perspective was reviewed through consultation with Massey University School of Psychology's Maori consultant; the Maori Research Unit, Massey University; and a clinical psychologist at Oranga Hinengaro, Palmerston North.

**Table 7: Sample characteristics (n = 104)**

	n	% <sup>1</sup>
<b>Age (years)</b>		
18-19	2	2
20-29	23	22
30-39	41	39
40-49	23	22
50-59	11	11
60-62	4	4
<b>Gender</b>		
Male	47	45
Female	57	55
<b>Ethnicity<sup>2</sup></b>		
NZ European	91	88
NZ Maori	4	4
NZ European and Maori <sup>3</sup>	5	5
Other	4	4
<b>DSM-IV primary Axis I diagnosis</b>		
<i>Affective disorders</i>		
Major Depressive Disorder	16	15
Bipolar Disorder	18	17
Other (Depressive Disorder NOS, 2; Dysthymic Disorder, 1)	3	3
<i>Schizophrenia spectrum disorders</i>		
Schizophrenia, Paranoid type	15	14
Schizophrenia, Other	9	9
Schizoaffective Disorder	6	6
<i>Anxiety disorders</i>	13	13
(Obsessive Compulsive Disorder [OCD], 4; Anxiety disorder NOS, 4; Post Traumatic Stress Disorder [PTSD, 3; Panic Disorder with Agoraphobia, 1; Social Phobia, 1)		
<i>Other</i>	10	10
(Bulimia Nervosa, 3; Psychotic Disorder NOS, Substance Dependence, 2 of each; Brief Psychotic Disorder, Pain Disorder, Asperger's Disorder, 1 of each)		
<i>No diagnosis</i>	14	14
<b>DSM-IV comorbid Axis I diagnoses</b>		
Polysubstance Dependence	7	7
<i>Other</i>	11	11
(Post Traumatic Stress Disorder, 3; Major Depressive Disorder, Social Phobia, Obsessive Compulsive Disorder, Generalised Anxiety Disorder, Alcohol Dependence, Eating Disorder NOS, Panic Disorder with Agoraphobia, Dysomnia NOS, 1 of each)		
<i>No diagnosis</i>	86	83
<b>DSM-IV Axis II diagnosis</b>		
Borderline Personality Disorder	9	8
<i>Other</i>	4	4
(Paranoid Personality Disorder, Dependent Personality Disorder, Personality Disorder NOS, Mild Mental Retardation)		
<i>No diagnosis</i>	91	88

1 Percentages rounded to nearest whole number.

2 Categories derived from 1991 census. Participants were asked to select one only.

3 Participants who insisted on choosing more than one category.

### 7.3 Measures

#### 7.3.1 Unusual conscious experiences, cognitive processes, and awareness of intentionality: The Conscious Experiences Questionnaire

The Conscious Experiences Questionnaire (CEQ; Morris & Johnson, unpublished manuscript) is a 46 item scale designed to measure unusual conscious experiences believed to arise through cognitive monitoring process errors. See Appendix C for a copy of the CEQ. The theoretical underpinnings of the CEQ are outlined in Chapter 4. Respondents indicate the frequency with which each conscious experience occurs, by endorsing “Never”, “Rarely”, “Sometimes”, “Often”, or “Always”. These items score 0, 1, 2, 3, and 4 respectively. The minimum potential total scale score is zero, the maximum 184.

#### *Specific cognitive process errors*

The CEQ’s ten subscales were each designed to capture conscious experiences arising through a distinct error in a cognitive monitoring process (Morris & Johnson, unpublished manuscript). The title and item content of each subscale are as follows: Feelings of Unreality (items 3, 10, 21, 32, 42); Déjà Vu (items 11, 30); Imagined Seems Real (items 7, 17, 22, 33, 40); Passivity Phenomena (item 9, 26, 29, 39, 43); Somatic Control (item 8, 14, 27, 37, 46); Mind Control (items 5, 20, 23, 31, 41); Referential Thinking (items 15, 19, 24, 36, 45); Mindblindness (items 6, 12, 34, 44); Powerful Forces (items 2, 4, 16, 25, 38); and, Chance Beliefs (items 1, 13, 18, 28, 35).

#### *Variables constructed from combinations of CEQ subscales*

Non-clinical deficits in the ability to determine intentionality were assessed by the combined total of the Passivity Phenomena, Somatic Control, Mind Control, Referential Thinking, and Mindblindness subscales. Difficulties in determining the intentions of others were assessed by the combined total of Referential Thinking and Mindblindness. Non-clinical difficulties in determining the intentions of the self were assessed by the combined total of Passivity Phenomena, Somatic Control, and Mind Control. Non-clinical passivity phenomena were assessed by the combined total of Passivity Phenomena and Somatic Control. Internalisation errors within the perceptual domain were assessed by the combined total of Feelings of Unreality and Déjà vu.

### Reliability

Morris and Johnson (unpublished manuscript) administered the CEQ to 520 non-patient adults (361 university students from New Zealand and England and 159 participants recruited via the internet), and reported a Cronbach alpha coefficient of .93, suggesting good internal reliability in a non-patient sample. How (1999) reported full-scale test-retest reliability of .83, for a sample of 89 university students over a six week interval. Cronbach alpha coefficients (Morris & Johnson) and test-retest statistics (How) for the CEQ subscales are reported in Table 8.

**Table 8**

Descriptive statistics, Cronbach alpha coefficients (Morris & Johnson, unpublished manuscript) and test-retest statistics (How, 1999) for the CEQ and its subscales.

Scale	No. of items	M N = 530	SD N = 530	Alpha N = 530	Test-Retest N = 89
Full CEQ	46	53.30*	20.13*	.93	.83
Feelings of Unreality	5	4.29	3.61	.84	.79
Imagined Seems Real	5	6.90	3.88	.80	.67
Mind Control	5	2.72	3.10	.81	.77
Referential Thinking	5	2.75	2.94	.77	.72
Powerful Forces	5	3.73	3.90	.85	.81
Passivity Phenomena	5	6.40	3.41	.78	.80
Somatic Control	5	5.90	3.34	.76	.58
Mind- blindness	4	7.45	2.33	.56	.66
Chance Beliefs	5	10.92	3.53	.69	.65
Déjà vu	2	3.15	1.75	NA <sup>#</sup>	.76

\*N = 361 (data could not be deciphered for the internet sample)

<sup>#</sup>Reliability was not calculated for the two item Déjà Vu scale

### Validity

A factor analysis of the CEQ found nine of the ten factors predicted on the basis of the theory underlying the CEQ subscales, the exception being Passivity Phenomena, which had low to moderate loadings throughout the other factors (Morris & Johnson,

unpublished manuscript). The Chance Beliefs subscale, while factorially sound, had low or negative correlations with all the other subscales (Morris & Johnson, unpublished manuscript).

Morris and Johnson (unpublished manuscript) reported moderate relationships between responses on the CEQ and responses on existing schizotypy questionnaires, including: the Schizotypal Personality Questionnaire (Raine, 1991, SPQ)  $r = .65$ , accounting for 42% of the variance; the unusual conscious experiences scale of the Oxford-Liverpool Inventory of Feelings and Experiences (Mason et al., 1995, O-Life)  $r = .70$ , accounting for 50% of the variance; and, the Schizotypal Personality Scale (Claridge & Broks, 1984, STA)  $r = .74$ , accounting for 55% of variance. These relationships may be regarded as high, given that the O-Life and the SPQ, in particular, seek to capture a broad range of schizotypal features, while the CEQ focuses more exclusively on positive symptom schizotypy.

### 7.3.2 Psychological symptoms, Foulds's hierarchical theory, and symptom related distress: The Delusions-Symptoms-States Inventory

The Delusions-Symptoms-States Inventory (DSSI; Bedford & Foulds, 1978) is a self-report 84 item questionnaire, designed to identify present mental state and the change from normal functioning (Bedford & Foulds, 1978). See Appendix C for the DSSI. For each item of the DSSI participants are asked to indicate whether the statement is "True" or "False" for them. Items marked "False" receive a score of zero. For items marked "True", participants are asked to indicate the magnitude of the experience by choosing one of three descriptors, to which a score of 1, 2 or 3 is allocated, in order of increasing severity (e.g., "If true, this has upset me:- A bit A lot Unbearably").

Depending upon the nature of the symptom assessed, the participant is asked one of the following: the level of distress that resulted (e.g. for agoraphobia); the intensity of the experience (e.g., for feelings of hopelessness); the frequency of the experience (e.g., for elation); or, the level of conviction with which the belief was held (e.g., for delusions). Where an item is marked "True", but no magnitude descriptor is selected, a score of 1 is allocated (Bedford & Foulds, 1978). The DSSI has a minimum score of 0 and a maximum score of 252.

### *Symptom categories*

The DSSI contains 12 sets of seven items each, divided into four classes (corresponding to the hierarchies in Foulds's hierarchical theory of personal illness). The sets pertaining to each class are as follows. Class 1 (Dysthymic States): state of anxiety (sA; items 1, 13, 25, 37, 49, 61, 73); state of depression (sD; items 7, 19, 31, 43, 55, 67, 79); state of elation (sE; items 4, 16, 28, 40, 52, 64, 76). Class 2 (Neurotic Symptoms): conversion symptoms (CVs; items 2, 14, 26, 38, 50, 62, 74); dissociative symptoms (Ds; items 12, 24, 36, 48, 60, 72, 84); phobic symptoms (Ps; items 8, 20, 32, 44, 56, 68, 80); compulsive symptoms (CPs; items 5, 17, 29, 41, 53, 65, 77); ruminative symptoms (Rs; items 10, 22, 34, 46, 58, 70, 82). Class 3 (Integrated Delusions): delusions of persecution (dP; items 3, 15, 27, 39, 51, 63, 75); delusions of grandeur (dG; items 9, 21, 33, 45, 57, 69, 81); delusions of contrition (dC; items 11, 23, 35, 47, 59, 71, 83). Class 4 (Delusions of Disintegration): delusions of disintegration (dD; items 6, 18, 30, 42, 54, 66, 78).

For the purposes of hypotheses investigating the relationship of unusual conscious experiences with specific symptoms, the delusions of disintegration subscale was divided into: items 18, 42, 54, and 78, indicating the presence of delusions of passivity; and, items 6 and 54 indicating the presence of hallucinations. "Specific Delusions" and "General Delusions" are discussed under the next heading.

### *Criteria for concluding that categories of symptoms were experienced*

A score of 4 or more on any symptom set was regarded as warranting the conclusion that symptoms within that set had been experienced (following Foulds & Bedford, 1975). This required a minimum of at least two "True" responses, and thus allowed for the possibility that a question had been misunderstood.

For the purposes of hypotheses 11 to 14, the presence of General Delusions was regarded as established if the combined score on delusions of persecution, grandeur, contrition, and passivity was 4 or more. For the purposes of hypothesis 15, a Specific Delusion was regarded as present if a participant scored 4 or more for one or more of the four categories of delusion (delusions of persecution, grandeur, contrition, and passivity).

### *Foulds's (1976) hierarchical theory*

The rules applied in determining whether each participant's symptom structure conformed with Foulds's (1976) hierarchical theory are presented in paragraph 3.7.

### *Symptom related distress*

The symptom related distress score comprised the total DSSI score, less scores on: the sE subscale (which assesses the frequency of related feelings); the dP, dG, dC, and dD subscales (which assess the frequency of conviction of beliefs); and items 48 and 60 on the Ds subscale (which similarly assess the frequency of conviction of beliefs).

### *Reliability*

Bedford and Deary (1999) published additional statistics for the six patient groups in the original Foulds and Bedford (1975) data collection. These included Guttman Scale analysis coefficients of reproducibility ranging from 0.93 and 0.98, and coefficients of scalability ranging from 0.73 to 0.90. (A coefficient of reproducibility exceeding 0.90 is regarded by convention as indicating a valid scale, while a coefficient of scalability should substantially exceed 0.60 if the scale is unidimensional and cumulative, Bedford & Deary, 1999). Bedford and Deary also conducted principal component analysis on correlation matrices for the 12 DSSI subscales, available from the original data collection, and concluded that all the subscales were highly coherent. (Initial unrotated principal components ranged from 32% to 54% of total item variance for the 12 subscales, and no second factor exceeded 16.3% [Mean = 14.1]).

### *Validity*

Bedford and Foulds (1977) demonstrated the validity of the DSSI through a series of categorisations by clinical psychologists and psychiatrists, under which 67 of the DSSI's items were allocated appropriately to clinical syndromes, and 15 of the remaining 17 items were allocated to the appropriate DSSI set. In the course of normal clinical practice raters were then asked to allocate 96 psychiatric inpatients to equivalent clinical syndromes. Significant relationships were found between ratings and nine of the 12 sets, while the considerably greater success of the senior psychiatrists on the remaining sets was cited as evidence that the same symptomatology was being measured. As noted in paragraph 3.7, a hierarchy based on the DSSI total score just failed to account for a significant proportion of the variance on the BPRS (p

< .06), while Foulds's hierarchy, constructed by reference to DSSI subscale scores, accounted for a highly significant proportion of the variance ( $p = .0018$ ) (Morey, 1985).

### 7.3.3 Global functioning: The Global Assessment of Functioning (GAF)

The Global Assessment of Functioning ("GAF"; APA, 1994) is a single rating scale under which clinicians rate patients' psychological, social, and occupational functioning on a mental health illness-wellness continuum, allocating a score from 1 to 100. Appendix B contains the GAF as provided to staff. The GAF was derived from the Global Assessment Scale (GAS; Endicott et al., 1976), which was in turn derived from the Health-Sickness Rating Scale (Luborsky, 1962). The GAF forms the basis of Axis V of DSM-IV, and is designed for use by health professionals generally (APA, 1994). The GAF was introduced into Axis V in DSM-III-R. The only changes in DSM-IV were an emphasis upon the use of the scale to assess current functioning, and the inclusion of the decade 91-100, which was previously omitted on the assumption that such ratings would rarely be made in clinical practice (Williams, 1998).

The GAF provides guidelines for ten brackets of functioning (1-10 being the lowest, and 91-100 the highest). Either psychological symptoms or functioning criteria may qualify a patient for a bracket. The GAF can be interpreted alternately as meaning that the lowest applicable bracket dictates the GAF score; or, as requiring an averaging of symptoms, social functioning, and occupational functioning (Skodal, Link, Shrout, & Horwath, 1988). Psychiatrists admitting adolescents in one study tended to apply the lowest bracket satisfied, while psychiatrists admitting adults tended to average symptoms, social functioning, and occupational functioning (Piersma & Boes, 1997). In contrast, the GAS is clear that the score given should lie within the lowest bracket that describes a patient's functioning (Endicott et al., 1976). This interpretation was adopted in the present study, and has been adopted elsewhere (e.g. Jones, Thornicroft, Coffey, & Dunn, 1995). The expanded instructions for the GAF, contained in the text revision to DSM-IV published mid-way through data collection (APA, 2000), accorded with this interpretation.

#### *Reliability and validity*

The test-retest reliability of the GAS was 0.69, when raters were trained separately, and 0.91, when raters were trained together and shared the same therapeutic orientation

(Clark & Friedman, 1983; Endicott et al., 1976). Thorough training produced intraclass coefficients of .80 to .92, indicating good interrater reliability (Dworkin et al., 1990). With respect to validity, GAS ratings were more sensitive to change over time than other global measures of illness severity (Endicott et al., 1976), and were inversely correlated with patient decompensation (Dworkin et al., 1990). The reliability and validity of the GAF is not so well researched. With only 30 minutes of training the GAF was found to be both reliable (data analysis used mixed effects analysis of variance models) and valid (scores were associated appropriately with the current support needs of patients) (Jones et al., 1995). In another study, although interrater reliability was comparable across disciplines, reliability was unsatisfactory in the absence of training (Loevdahl & Friis, 1996). After comprehensive training across centres, an intra-class correlation coefficient of 0.90 was obtained, indicating excellent interrater reliability (Tracy, Adler, Rotrosen, Edson, & Lavori, 1997). Goldman, Skodol, and Lave (1992) recommended retention of the GAF in DSM-IV, and regarded 30 other social functioning measures as overly complex for routine clinical use. Goldman et al., however, acknowledged that symptoms have been shown to influence GAF ratings unduly, at the expense of adaptive functioning (see also Skodol et al., 1988). Finally, Piersma and Boes (1997) reported that psychiatrists for adolescents regularly gave a GAF score of 20 at admission, due to a perception of “some danger of hurting self or others”, indicating that epidemiological risk factors sometimes inappropriately influence GAF scores.

#### **7.4 Procedure**

##### *Recruiting participants*

The researcher attended two multi-disciplinary community mental health team meetings, acquainting staff with the research (see Appendix B for the Clinician’s Information Sheet and the Explanation for Key Workers), and incorporating suggestions regarding execution. Data collection occurred between 31 May and 1 September 2000, following the first GAF training session (discussed below).

Community mental health staff approached consumers in the first instance, having first assessed their ability to give informed consent. Information sheets (Appendix A) were then provided, and the opportunity to be telephoned by the researcher or to meet him in

person. The researcher then discussed the research with consumers, prior to arranging a time for questionnaire completion (providing the consumer consented).

Questionnaire completion occurred on MidCentral Health Ltd premises in Palmerston North, Feilding, and Dannevirke. Early in the study four consumers completed the questionnaires in the same room. Otherwise, only one consumer was present at questionnaire completion, occasionally accompanied by a support person. On one occasion a MidCentral Mental Health Ltd staff member was present as a support person. This was generally discouraged, however, to remove the staff member's potential influence over responses, and the possibility that the consumer might feel less able in the staff member's presence to decline involvement. Ordinarily the researcher was available throughout to answer questions, although on four occasions consumers completed questionnaires in adjoining rooms, limiting the researcher's availability.

The consumer's key worker, or failing that the duty worker, was available to deal with urgent mental health issues should they arise during office hours. The Mental Health Crisis team was notified regarding the research, and was available in the normal course of their operations to deal with mental health emergencies. The researcher is only aware of one occasion during which a consumer experienced distress following questionnaire completion. This distress was ameliorated through subsequent contact with the key worker and the researcher.

Given the over-representation of Maori in mental health statistics (Durie, 1994), efforts were made to secure participants through Oranga Hinengaro (Palmerston North). Unfortunately, that body's involvement in other research precluded the referral of participants.

#### *GAF Training Sessions*

The researcher provided three training sessions on the use of the Global Assessment of Functioning: one prior to data collection commencing (90 minutes duration); one after two weeks (one hour duration), and one mid-way through data collection (one hour duration). Thirteen staff attended the first session (five psychiatric nurses, three social workers, two clinical psychologists, two clinical psychology interns, and one gestalt psychotherapist); seven staff the second session (six psychiatric nurses, and one

psychologist); and, five social workers the final session. All staff received materials explaining how the GAF should be applied, whether or not they attended training.

Training began with a discussion of the appropriate application of GAF criteria, and a discussion of the meaning of each decile. Staff then applied GAF criteria to a series of case vignettes (derived from Spitzer, Gibbon, Skodol, Williams, & First, 1994). Areas of agreement and difference were discussed in light of the answers provided by Spitzer et al., the emphasis being on arriving at consensus, to ensure consistent application of the GAF within the setting.

#### Structure of time with participants

Prior to questionnaire completion the aims and procedures of the study were discussed with consumers, as were their rights and the confidentiality of their responses (see Appendix A for the Information Sheet and Consent Form). Consumers were advised that all community mental health clients were eligible to be involved in the study (to avoid the impression that they had been selected due to their individual characteristics). Informed consent was then obtained.

Consumers were asked to choose between completing the questionnaires themselves, and being asked the questions verbally. Demographic details were then obtained, and the Conscious Experiences Questionnaire and Delusions Symptoms States Inventory completed, in the manner chosen. Participants were encouraged to ask if they were unclear of the meaning of any question, and were given the opportunity to ask questions and provide feedback following questionnaire completion.

With respect to the CEQ (See Appendix C), consumers were asked to only endorse experiences which occurred while they were physically well. When consumers observed that they were always physically unwell, they were asked to only endorse experiences that occurred during their typical state of physical health. Consumers were advised to exclude experiences that occurred while they were under the influence of alcohol or illicit drugs, but not those that they believed to be attributable to prescribed medication. When consumers asked whether God qualified as a “great power” or “an unseen power or force”, they were answered in the affirmative.

With respect to the Delusions Symptoms States Inventory, consumers were asked to answer questions without reference to whether the experiences had a physical or psychological cause. Consumers were advised that a question should only be marked “true” if correct “recently”, and the explanation “in the last month or so” was provided if clarification was sought.

All interviews were completed in one session. Session duration ranged between 20 minutes and one hour and twenty minutes.

#### GAF completion

Key workers assessed each participant’s overall current level of functioning by making a single rating on the Global Assessment of Functioning (“GAF”; APA, 1994).

Appendix B contains a copy of the GAF given to staff, together with accompanying instructions.

In order to encourage staff involvement in the study, the researcher made himself available to assist in applying the GAF criteria. Assistance was sought and given for 88 of the 104 participants. Only one of the remaining 16 participants had his/her GAF done by a staff member who did not attend training (a senior clinical psychologist). Staff ultimately chose the GAF score themselves; gave an indication of the domain or domains critical in arriving at that score (psychological symptoms, social functioning, occupational functioning, and suicidality/dangerousness); and, provided the current DSM diagnosis from each participant’s file. The median time interval between questionnaire completion and completion of the GAF was 3 days (the mean, 7 days). On seven occasions two clinicians familiar with a participant independently allocated a GAF score. These ratings were strongly correlated,  $r = .92$ ,  $p = .002$  (one tailed).

Given the potential distorting influence of safety considerations upon GAF ratings (identified by Piersma & Boes, 1997) clinicians were asked to indicate which factor or factors (psychological symptoms, social functioning, occupational functioning, or suicidality/dangerousness) determined the bracket applicable when allocating the GAF score (see Clinician’s Report Form, Appendix B). On only seven occasions did suicidality/dangerousness alone determine the bracket from which the GAF score was selected. This suggested that GAF scores in the present study were not distorted

through the undue weighting of epidemiological risk factors.

### **7.5 Missing data and data management**

Two participants' responses to the DSSI were omitted from the data analysis. The first tired noticeably during the administration of the DSSI, and failed to answer 14 questions. The second gave a range of responses on the CEQ, before answering "False" for every DSSI item. Following questionnaire completion he disclosed that:

"Obviously I could not tell you the truth. All the knowledge will come together soon, and your thesis will be part of that ... When I think negatively of others, they can harm me ...". His DSSI responses were thus considered unreliable, although his range of responses on the CEQ, and the CEQ's non-symptom focus, led to the CEQ items being retained. Apart from the forgoing, there were only three instances of missing data (one each for the following CEQ subscales: Referential Thinking, Imagined Seems Real, and Mind Control), for which the mean score for the applicable subscale was substituted.

### **7.6 Data Analysis**

Analysis of data was conducted using SPSS for Windows, Release 10.0.5 (1999). An alpha level of .05 was used for all statistical tests, and tests were one-tailed unless otherwise indicated. Group variances were equal under Levine's test for all analyses except where indicated otherwise. The following steps were taken in the data analysis:

1. Means and standard deviations were computed for the study variables.
2. Although not a focus of the present study, the influence of gender was assessed; given that the rates of specific disorders differ between men and women (Bromet & Dohrenwend, 1998), and non-clinically, women report more cognitive-perceptual aberrations and men more social-interpersonal deficits (Raine, 1992).
3. Frequency analyses were conducted to determine whether Foulds's (1976) hierarchical theory of symptomatology was conformed to (hypothesis 1).
4. One-way ANOVAs were used to determine the relationship between Foulds's hierarchical method of classifying symptoms, and unusual conscious experiences and deficits in the ability to determine intentionality (hypotheses 2 & 3).
5. Two-way ANOVAs and partial correlations using Pearson's  $r$  were used to assess the relationship of global functioning to: Foulds's hierarchical theory; unusual conscious experiences; and, to symptom related distress (hypotheses 4, 5, & 6).

6. Comparison analyses were conducted comparing Foulds's hierarchical theory with broad DSM-IV diagnostic groupings (hypotheses 2 & 4). For this purpose participants were allocated to the five primary diagnosis groupings listed in Table 7 (affective disorders, schizophrenia spectrum disorders, anxiety disorders, other disorders, and no diagnosis).
7. Correlations using Pearson's  $r$  were used to assess the nature of the relationship between the CEQ subscales (hypotheses 7 & 8).
8. A series of two-way ANOVAs and  $t$  tests were used to assess the relationship between the presence or absence of particular symptoms, and scores on specified CEQ subscales or combinations thereof (hypotheses 9 to 15). Comparison analyses were conducted to obtain an indication of whether the differences were specific to the symptom concerned. This was done through comparisons with the group experiencing General Delusions (for delusional symptoms), and through specific analyses of differences for symptoms for which differences were not hypothesised. For hallucinations a comparison analysis was undertaken (hypothesis 11) to assess whether a difference would be obtained for a CEQ subscale for which a difference was not hypothesised.

## CHAPTER 8

### RESULTS

The descriptive statistics for the study variables and preliminary analyses regarding the role of gender will first be outlined. The analyses undertaken for each hypothesis will then follow.

#### **8.1 Descriptive statistics**

Descriptive statistics for the GAF, CEQ, and for variables derived from the CEQ and DSSI, are contained in Table 9.

The frequencies with which participants scored four or more for DSSI symptom sets were as follows: state of anxiety, 66%; state of depression, 62%; state of elation, 37%; symptoms of conversion, 24%; symptoms of dissociation, 21%; symptoms of phobia, 35%; symptoms of compulsion, 30%; symptoms of rumination, 52%; delusions of persecution, 17%; delusions of grandeur, 20%; delusions of contrition, 28%; delusions of disintegration, 19%. Applying the same criteria, 14% of participants experienced passivity delusions, and 13% experienced auditory or visual hallucinations. Fourteen percent of participants did not satisfy the criteria for any symptom set, and fourteen percent of participants satisfied the criteria for only one symptom set. The remaining participants satisfied the criteria for between three and eleven symptom sets. The comparability of the symptom structure to other clinical populations will be considered under the first hypothesis.

The following symptom sets were positively skewed: delusions of grandeur, delusions of persecution, delusions of contrition, conversion symptoms, dissociative symptoms, delusions of passivity, and hallucinations. None of these variables were used as continuous variables in the analyses.

**Table 9**

Descriptive statistics for the study variables

Variable	N	Mean	SD
Global Assessment of Functioning (GAF)	104	54.39	13.55
Unusual conscious experiences (Conscious Experiences Questionnaire [CEQ])	104	69.28	24.33
CEQ subscales, and combinations thereof:			
Feelings of unreality	104	7.06	4.50
Imagined seems real (IR)	104	8.94	4.09
Déjà vu	104	2.98	1.88
Mind control	104	3.97	3.72
Passivity phenomena	104	7.89	3.94
Somatic control	104	8.22	3.43
Referential thinking	104	5.43	3.99
Mindblindness	104	7.42	2.69
Powerful forces	104	7.38	5.03
Chance beliefs	104	10.02	3.74
Deficits in determining intentionality generally	104	32.90	12.89
Deficits in determining own intentions	104	20.05	8.76
Deficits in determining the intentions of others	104	12.86	5.59
Non-intentionality deficits	104	36.38	12.70
Externalisation errors in relation to actions of the self	104	16.12	6.60
Perceptual internalisation errors	104	10.04	5.65
Delusions-Symptoms-States Inventory subscales and derived variables:			
Delusions of persecution	102	1.68	3.00
Delusions of grandeur	102	2.09	3.73
Delusions of contrition	102	2.50	3.38
Conversion symptoms	102	2.00	2.53
Dissociative symptoms	102	1.76	2.49
Delusions of passivity (from Delusions of Disintegration subscale)	102	1.20	1.99
Hallucinations (from Delusions of Disintegration subscale)	102	1.01	1.85
Symptom related distress	102	25.24	17.36

## 8.2 The role of gender: preliminary analyses

Gender differences were identified for the following continuous variables (without adjustment for multiple comparisons): Global Functioning,  $t(102)=2.43$ ,  $p=.02$ ; Delusions of Persecution,  $t(56.35)=2.56$ ,  $p=.01$ ; Feelings of Unreality,  $t(102)=2.45$ ,  $p=.02$ ; Passivity Phenomena,  $t(102)=2.52$ ,  $p=.01$ ; Passivity Phenomena and Somatic Control,  $t(102)=2.08$ ,  $p=.04$  (all tests were two-tailed). Appendix D contains the means and standard deviations for the study variables for each gender, and the  $t$  values for gender differences (without adjustment for multiple comparisons; all tests were two-

tailed). Gender differences were found between the DSM-IV diagnostic groupings ( $\chi^2$  [4,  $n$  = 104] = 16.88;  $p$  = .002). Gender differences were assessed or controlled for in all analyses involving the above variables. No gender differences were found between the classes on Foulds's hierarchy ( $\chi^2$  [4,  $n$  = 92] = 2.45;  $p$  = .654).

### 8.3 Hypothesis 1: The validity of Foulds's (1976) hierarchical theory

Hypothesis 1: *That Foulds's (1976) hierarchical theory of symptom structure will be valid in a heterogeneous New Zealand sample of psychiatric outpatients (i.e. 90% or more of participants will have symptom patterns that conform to Foulds's hierarchy).*

Symptom patterns conformed to Foulds's (1976) hierarchical theory for 90.2% of the participants. The percentage of participants within each class of his hierarchy were as follows (with the percentages found by Foulds & Bedford [1975] among outpatients in parentheses): Class 4, 16.7% (c.f. 3.4%); Class 3, 19.6% (c.f. 14.4%); Class 2, 25.5% (c.f. 38.1%); Class 1, 14.7% (c.f. 22.9%); Class 0, 13.7% (c.f. 14.4%). When the symptom free "0000" patterns were excluded, 89% of participants' symptom patterns conformed. Foulds's hierarchical theory of symptomatology was thus found to be valid in a heterogeneous New Zealand sample of psychiatric outpatients.

### 8.4 Hypothesis 2: The relationship between the frequency of unusual conscious experiences and the severity of psychiatric symptoms

Hypothesis 2: *That participants who are higher on Foulds's (1976) hierarchy of personal illness will experience more non-clinical unusual conscious experiences than participants who are lower on that hierarchy.*

A one-way ANOVA with the highest class satisfied on Foulds's hierarchy (conforming patterns only) entered as the independent variable, and total unusual conscious experience scores entered as the dependent variable, revealed significant differences between groups,  $F(4, 87) = 19.22$ ;  $p < .0005$ . There was a significant linear increase in total unusual conscious experience scores across the five ordered means ( $F = 76.11$  (1, 87),  $p < .0005$ ), and no significant quadratic component to that change ( $F = .46$  (1, 87),  $p = .50$ ). Table 10 shows the means, standard deviations, and Bonferroni adjusted  $p$  values. All significant differences between groups involved groups higher on Foulds's hierarchy experiencing more unusual conscious experiences than those lower on his

hierarchy. Class 4 experienced significantly more unusual conscious experiences than Classes 0, 1, or 2; Class 3 significantly more than classes 0 or 1; Class 2 significantly more than class 0 or 1; and, Class 1 significantly more than Class 0 ( $p < .05$ , Bonferroni adjusted). Participants who were higher on Foulds's hierarchy of personal illness experienced more unusual conscious experiences than participants lower on that hierarchy.

**Table 10**

Means and standard deviations of Foulds's classes by total unusual conscious experiences, together with the significance of group differences (Bonferroni adjusted)

Group	N	Mean	S.D.	Significance of difference			
				1	2	3	4
0	14	40.79	16.40	.751	<.0005	<.0005	<.0005
1	15	53.07	16.18		.049	<.0005	<.0005
2	26	70.23	19.85			.560	.005
3	20	80.80	17.25				1.000
4	17	90.82	20.34				

Given the relationship shown to exist between unusual conscious experiences and Foulds's (1976) hierarchical method of classifying psychiatric illness, an analysis was undertaken to determine whether unusual conscious experiences would be similarly related to DSM-IV diagnostic groupings. A one-way ANOVA with membership of DSM-IV Axis I groupings (affective disorders, schizophrenia spectrum disorders, anxiety disorders, other disorders, and no diagnosis) entered as the independent variable, and total unusual conscious experience scores entered as the dependent variable, showed no significant differences between groups ( $F(4, 99) = .55$ ;  $p = .70$ ),  $M_{\text{schizophrenia spectrum}}=68.33$   $SD=24.46$  ( $n=30$ ),  $M_{\text{affective}}=65.60$   $SD=24.84$  ( $n=37$ ),  $M_{\text{anxiety}}=75.46$   $SD=23.49$  ( $n=13$ ),  $M_{\text{other}}=72.56$   $SD=31.15$  ( $n=9$ ),  $M_{\text{no diagnosis}}=72.93$   $SD=20.20$  ( $n=15$ ). Unusual conscious experiences did not thus differ across broad DSM-IV diagnostic groupings.

### 8.5 Hypothesis 3: The relationship between deficits in the ability to determine intentionality and the severity of psychiatric symptoms

*Hypothesis 3: That participants who are higher on Foulds's (1976) hierarchy of personal illness will more frequently exhibit non-clinical deficits in the ability to determine intentionality than participants lower on that hierarchy.*

Having established a relationship between position on Foulds's (1976) hierarchy and unusual conscious experiences, the focus turned to whether the subset of unusual conscious experiences that involves a deficit in the ability to determine intentionality was similarly related. A one-way ANOVA, with the highest class satisfied on Foulds's hierarchy (conforming patterns only) entered as the independent variable and difficulty in determining intentionality scores entered as the dependent variable, revealed significant differences between groups ( $F [4, 87] = 16.6; p < .0005$ ). There was a significant linear increase in deficits in determining intentionality generally across the five ordered means ( $F [1, 87] = 64.24, p < .0005$ ), and no significant quadratic component to the change across the groups ( $F [1, 87] = .081, p = .78$ ). Significant differences were similarly found when difficulty in determining the intentions of others (Referential Thinking and Mindblindness) was entered as the dependent variable ( $F [4, 87] = 7.81, p < .0005$ ), again with a significant linear increase across the five ordered means ( $F [1, 87] = 24.95, p < .0005$ ), and no significant quadratic component to the change across the groups ( $F [1, 87] = .54, p = .47$ ). Significant differences were again found when difficulty in determining the intentions of the self (Mind Control, Passivity Phenomena, and Somatic control) was entered as the dependent variable ( $F [4, 87] = 17.32, p < .0005$ ), again with a significant linear increase across the five ordered means ( $F [1, 87] = 66.96, p < .0005$ ), and no significant quadratic component to the change across the groups ( $F [1, 87] = .01, p = .92$ ). Participants who were higher on Foulds's hierarchy of personal illness thus exhibited more frequent non-clinical deficits in the ability to determine intentionality than participants lower on that hierarchy.

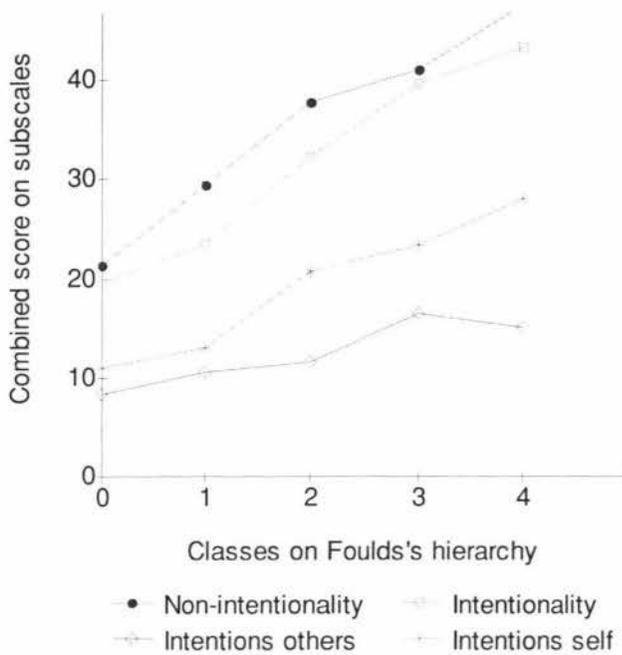
The possibility remained that the relationship of the intentionality subscales to the position on Foulds's (1976) hierarchy might be no stronger than the relationship of scales not involving intentionality. A one-way ANOVA with the same independent variable, but with the total score of CEQ subscales not involving intentionality deficits (Imagined Seems Real, Feelings of Unreality, Déjà vu, Chance Beliefs, and Powerful

Forces) entered as the dependent variable, also revealed significant differences between groups ( $F(4, 87) = 16.36; p < .0005$ ). There was a significant linear increase in non-intentionality deficits across the five ordered means ( $F = 64.67(1, 87), p < .0005$ ), and no significant quadratic component to the change across the groups ( $F = .93(1, 87), p = .347$ ). Table 11 shows the means, standard deviations, and Bonferroni adjusted  $p$  values for differences on the intentionality and non-intentionality subscales. Figure 2 shows the relationship between the intentionality and non-intentionality subscale means. As can be seen, participants who were higher on Foulds's hierarchy of personal illness exhibited more non-clinical deficits in the ability to determine intentionality than persons lower on that hierarchy. However, such participants similarly exhibited more unusual conscious experiences of kinds not involving deficits in the ability to determine intentionality.

**Table 11**

Means and standard deviations for Foulds's classes of scores on subscales measuring and not measuring intentionality, together with the significance of  $p$  values (Bonferroni adjusted).

Group	N	Mean	S.D.	Significance of difference			
				1	2	3	4
<b>Intentionality subscales</b>							
0	14	19.50	9.57	1.00	.002	<.0005	<.0005
1	15	23.60	8.12		.080	<.0005	<.0005
2	26	32.35	10.54			.147	.007
3	20	39.70	9.31				1.000
4	17	43.24	11.31				
<b>Intentionality of others subscales</b>							
0	14	8.43	4.43	1.00	.468	<.0005	.002
1	15	10.53	4.17		1.00	.006	.088
2	26	11.65	4.29			.014	.238
3	20	16.40	5.78				1.00
4	17	15.12	5.20				
<b>Intentionality of the self subscales</b>							
0	14	11.07	5.93	1.00	<.0005	<.0005	<.0005
1	15	13.07	6.01		.008	<.0005	<.0005
2	26	20.69	7.21			1.0	.007
3	20	23.30	6.74				.341
4	17	28.12	7.42				
<b>Non-intentionality subscales</b>							
0	14	21.29	8.73	.304	<.0005	<.0005	<.0005
1	15	29.47	9.46		.111	.01	<.0005
2	26	37.88	11.24			1.000	.025
3	20	41.10	9.30				.525
4	17	47.59					



**Figure 2.** Combined mean scores of intentionality, intentions of others, intentions of self, and non-intentionality subscales, by the highest class of symptoms experienced in Foulds's (1976) hierarchy.

## 8.6 Hypotheses 4 to 6: Relationship to functioning

Hypothesis 4: *That the higher the participant's position on Foulds's hierarchy, the more severe will be the decrement in functioning.*

Having assessed the relationship between the position on Foulds's (1976) hierarchy and unconscious experiences, the relationship of that hierarchy to global functioning was also assessed, to more fully capture its relationship to mental illness. Mean differences in Global Functioning scores were assessed using a two-way ANOVA (gender x position on Foulds's hierarchy [conforming patterns only: Classes 0, 1, 2, 3, & 4]).

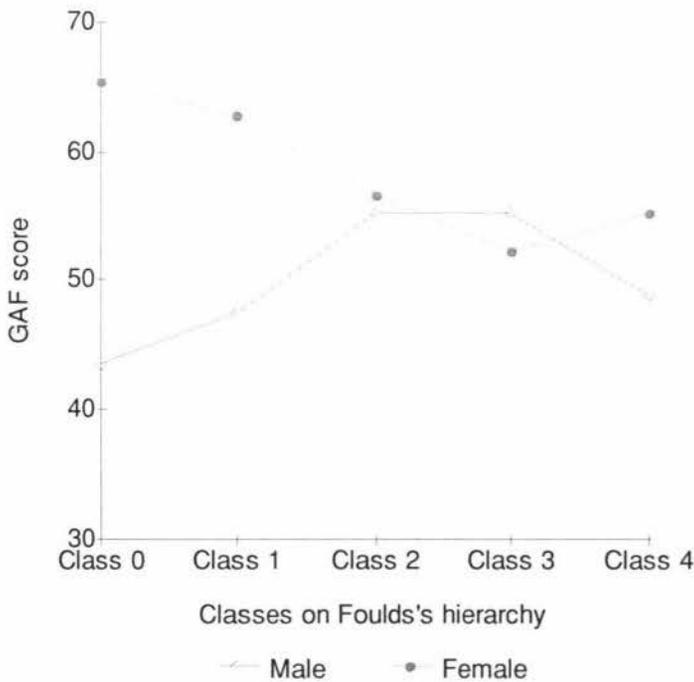
Gender and position on Foulds's hierarchy produced a significant interaction effect,  $F(9, 82) = 2.48, p = .05$ . There was a main effect for gender,  $F(1, 82) = 8.78, p = .004$ , but no main effect for position on Foulds's hierarchy,  $F(4, 82) = .24, p = .917$ . As can be seen from Table 12 and Figure 3, females at Class 0 on the hierarchy (without symptoms, and thus not personally ill) were rated as mildly impaired in functioning ( $M = 65.29$ ). Their functioning level then decreasing linearly (in a direction consistent with the hypothesis) to moderately impaired at Class 2 (neurotic symptoms;  $M = 56.56$ ). This was in stark contrast to the situation of males, who exhibited serious impairment on the GAF at Class 0 ( $M = 43.57$ ) with their functioning then increasing linearly (in a direction contrary to the hypothesis) to the moderately impaired level at Class 2 (neurotic symptoms;  $M = 55.25$ ).

Separate one-way ANOVAs for each gender showed no significant differences in global functioning between positions on Foulds's hierarchy (Males,  $F [4, 35] = .90, p = .47$ ; Females,  $F [4, 47] = 1.93, p = .12$ ). However, for females there was a significant linear decrease across the five ordered means,  $F (1, 47) = 5.92, p = .019$ . Looking at males and females individually, therefore, the position on Foulds's hierarchy was not related to functioning, although the functioning of females was trending in the direction hypothesised.

**Table 12**

Means and standard deviations of global functioning scores for each gender by highest class satisfied on Foulds's (1976) hierarchy

Highest Foulds class satisfied (Conforming patterns only)	Male			Female		
	N	Mean	SD	N	Mean	SD
Class 0	7	43.57	16.67	7	65.29	10.47
Class 1	7	47.43	8.81	8	62.75	17.11
Class 2	8	55.25	19.17	18	56.56	11.60
Class 3	10	55.10	15.88	10	52.20	6.29
Class 4	8	48.88	11.59	9	55.22	9.18

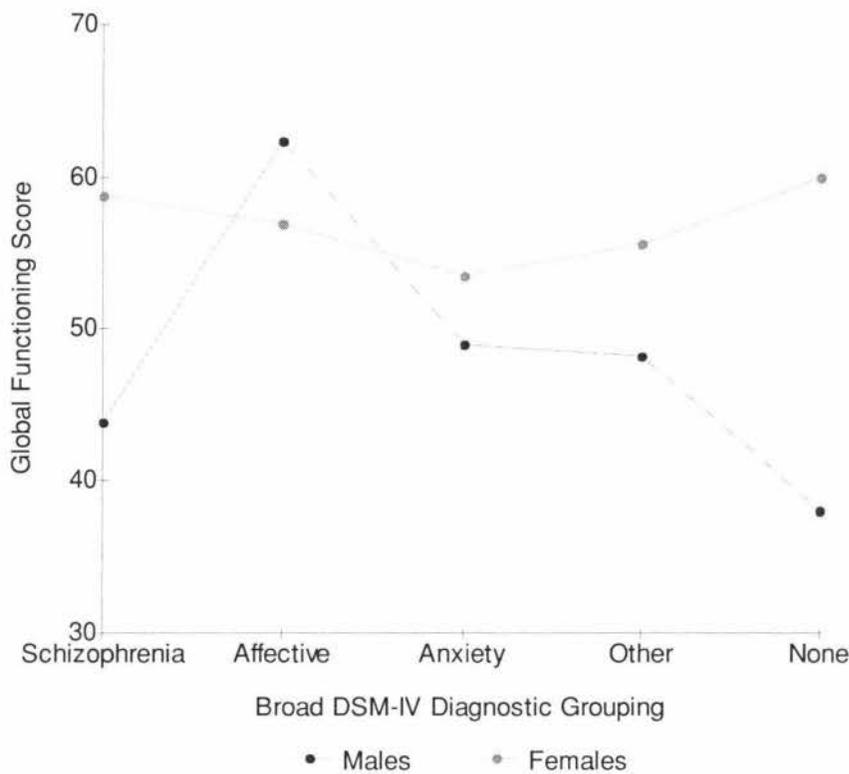


**Figure 3.** Mean global functioning score by gender and class on Foulds's (1976) hierarchy

Given the inevitable comparisons between alternative methods of classification and DSM-IV, the relationship of broad DSM-IV diagnostic groupings to functioning was also explored. Mean differences in Global Functioning scores were assessed using a two-way ANOVA (gender x DSM-IV diagnostic groupings [schizophrenia spectrum disorders, affective disorders, anxiety disorders, other disorders, and no diagnosis]). There was a significant interaction effect between gender and DSM-IV diagnostic grouping,  $F(4, 94) = 3.12, p = .019$ . There were main effects for gender,  $F(1, 94) = 5.90, p = .017$ , and for DSM-IV diagnostic grouping,  $F(4, 94) = 2.51, p = .047$ . Planned pair-wise comparisons for the entire sample showed a significant difference between the schizophrenia spectrum group and the affective disorder group (Bonferroni's test,  $p = .004$ ). This difference was clearly attributable to the males in the sample (see Table 13, which contains the group means, and Figure 4, which reproduces these graphically). Broad DSM-IV diagnostic groupings were related to functioning, in contrast to Foulds's hierarchy, which was not. On average, males with schizophrenia spectrum diagnoses functioned worse than males with affective disorder diagnoses. Figure 4 illustrates that the most pronounced gender differences were for schizophrenia spectrum diagnoses and for the absence of a diagnosis.

**Table 13**  
Mean global functioning scores by DSM-IV diagnostic grouping and gender

	Male			Female		
	N	Mean	SD	N	Mean	SD
Schizophrenia spectrum	21	43.81	11.75	9	58.78	10.57
Affective disorders	16	62.38	13.00	21	56.96	14.02
Anxiety disorders	4	49.00	4.90	9	53.44	11.83
Other disorders	5	48.20	18.35	5	55.60	11.10
No diagnosis	1	38.00	-	13	60.00	9.50



**Figure 4.** Mean global functioning score by gender and broad DSM-IV diagnostic grouping

*Hypothesis 5: That the frequency of unusual conscious experiences influences global functioning.*

Consistent with the hypothesis, there was a significant negative correlation between the frequency of unusual conscious experiences and global functioning,  $r = -.18$ ,  $p = .04$ . When gender was controlled for, the negative correlation increased in size and significance,  $r = -.21$ ,  $p = .02$ . Given the suggested inverse relationship between symptom related distress and functioning, the relationship of symptom related distress to unusual conscious experiences was also assessed. A significant positive correlation was found between unusual conscious experiences and symptom related distress,  $r = .65$ ,  $p < .01$  (two-tailed), and this result did not change when gender was controlled for. To conclude, consistent with the hypothesis, there was an inverse relationship between unusual conscious experiences and global functioning, albeit small in size. In contrast, symptom related distress was positively and strongly related to unusual conscious experiences.

Hypothesis 6: *That symptom related distress will be associated with poor functioning.*

The correlation between symptom related distress and global functioning was not significant,  $r = -.07$ ,  $p = .24$ . When gender was controlled for, the correlation still did not reach significance,  $r = -.10$ ,  $p = .16$ . Unexpectedly, symptom related distress was unrelated to functioning.

### **8.7 Hypotheses 7 and 8: Interrelationships between unusual conscious experiences**

Hypothesis 7: *That participants will be biased either towards attributing events to supernatural causes or to attributing events to chance (but not both), supporting the notion that they represent converse examples of errors in the same process.*

Powerful Forces and Chance Beliefs were not significantly correlated,  $r = -.08$ ,  $p > .05$ . Participants attributing events to supernatural forces were equally likely to attribute events to chance, failing to support the notion that they represented converse examples of errors in the same cognitive process.

Hypothesis 8: *That the remaining subscales will be positively correlated (consistent with unusual conscious experiences arising through one process), rather than negatively correlated (in a manner consistent with individual CEQ subscales recording converse examples of errors in separate processes).*

With the exception of Chance Beliefs, all subscales were significantly and positively correlated (see Table 14 for Pearson's  $r$  and significance levels). The Chance Beliefs subscale was significantly correlated only with Mindblindness,  $r = .30$ ;  $p < .01$ . The data did not support the notion that unusual conscious experiences arise through a number of separate processes.

**Table 14**

Correlations between subscales of the Conscious Experiences Questionnaire.

	1	2	3	4	5	6	7	8	9	
1	Feelings of Unreality									
2	Imagined Seems Real	.62**								
3	Déjà vu	.48**	.48**							
4	Mind Control	.35**	.52**	.41**						
5	Passivity Phenomena	.71**	.65**	.41**	.43**					
6	Somatic Control	.59**	.50**	.43**	.26**	.60**				
7	Referential Thinking	.33**	.47**	.46**	.56**	.37**	.27**			
8	Mind-blindness	.43**	.33**	.27**	.26**	.50**	.38**	.38**		
9	Powerful Forces	.42**	.49**	.29**	.61**	.38**	.35**	.50**	.22*	
10	Chance Beliefs	.08	-.02	-.02	-.06	.11	.13	.00	.30**	-.08

\*\* P &lt; .01

\* P &lt; .05

### 8.8 Hypotheses 9 to 15: Relationship between cognitive processes and symptoms

Hypothesis 9: *That participants experiencing delusions of persecution (with or without other delusions) will experience more frequent difficulties in determining the intentions of others than will persons who do not experience delusions of persecution.*

Mean differences in combined Referential Thinking / Mindblindness scores were tested using a two-way ANOVA (gender x Delusions of Persecution [presence/absence]). The presence or absence of delusions of persecution had a significant main effect on combined Referential Thinking / Mindblindness scores,  $F(1, 98) = 17.81, p < .0005$ ,  $M_{\text{Delusions of persecution}} = 18.71$   $SD = 6.19$   $n = 17$ ,  $M_{\text{No delusions of persecution}} = 11.86$   $SD = 4.67$   $n = 85$ . Gender differences were not significant,  $F(1, 98) = 1.93, p = .168$ , and there was no interaction effect,  $F(1, 98) = 3.70, p = .057$ . The analysis was repeated for the subset of the sample that reported General Delusions ( $n = 53$ ). The presence or absence of delusions of persecution had a significant main effect on combined Referential Thinking / Mindblindness scores,  $F(1, 49) = 4.14, p = .047$ ,  $M_{\text{delusions of persecution}} = 18.71$

SD=6.19  $n=17$ ,  $M_{\text{General Delusions}}=14.64$  SD=3.97  $n=36$ . Gender differences were not significant,  $F(1, 49)=3.29$ ,  $p=.08$ , and there was no interaction effect,  $F(1, 49)=1.79$ ,  $p=.19$ . On average participants experiencing delusions of persecution (with or without other delusions) had more difficulty in determining the intentions of others than participants experiencing General Delusions (but not delusions of persecution), irrespective of gender. By way of comparison, the analysis was repeated substituting delusions of passivity for delusions of persecution. A significant main effect was not observed for the presence or absence of delusions of passivity,  $F(1, 49) = .002$ ,  $p = .964$ ,  $M_{\text{delusions of passivity}}=15.86$  SD=5.02  $n=14$ ,  $M_{\text{General Delusions}}=15.97$  SD=5.20  $n=39$ . Gender differences were not significant,  $F(1, 49)=1.49$ ,  $p=.228$ , and there was no interaction effect,  $F(1, 49)=1.56$ ,  $p=.218$ . On average, participants experiencing delusions of passivity (with or without General Delusions) had no more difficulty in determining the intentions of others than participants experiencing General Delusions (but not delusions of passivity).

*Hypothesis 10: That participants experiencing delusions of passivity will have more frequent difficulty determining their own intentions than participants who do not experience delusions of passivity.*

Differences in mean combined Passivity Phenomena / Somatic Control / Mind Control scores between participants experiencing and not experiencing delusions of passivity were significant,  $t(100) = 3.41$ ,  $p = .0005$ ,  $M_{\text{delusions of passivity}}=27.21$  SD=9.01  $n=14$ ,  $M_{\text{no delusions of passivity}}=19.01$  SD=8.27  $n=88$ . On average, participants with delusions of passivity experienced more difficulty in determining their own intentions than participants who did not. Differences in mean combined Passivity Phenomena / Somatic Control / Mind Control scores, between participants experiencing delusions of passivity (with or without other delusions) and participants experiencing General Delusions (but not delusions of passivity), approached but did not reach significance,  $t(51) = 1.62$ ,  $p = .055$ ,  $M_{\text{delusions of passivity}}=27.21$  SD=9.01  $n=14$ ,  $M_{\text{General Delusions}}=23.44$  SD=6.91  $n=39$ . On average, participants with delusions of passivity had no more difficulty determining their own intentions than participants with General Delusions.

By way of comparison, additional analyses were undertaken substituting delusions of persecution for delusions of passivity. Mean differences in combined Passivity

Phenomena / Somatic Control / Mind Control scores were tested using a two-way ANOVA (gender x Delusions of Persecution [presence/absence]). The presence or absence of delusions of persecution had a significant main effect on combined Passivity Phenomena / Somatic Control / Mind Control scores,  $F(1, 98) = 5.74, p = .018$ ,  $M_{\text{Delusions of persecution}} = 24.18$   $SD = 6.19$   $n = 17$ ,  $M_{\text{No delusions of persecution}} = 19.33$   $SD = 9.04$   $n = 85$ . Gender differences were not significant,  $F(1, 98) = 2.03, p = .157$ , and there was no interaction effect,  $F(1, 98) = .138, p = .711$ . On average, participants with delusions of persecution experienced more difficulty in determining their own intentions than participants who did not. When the analysis was repeated for the subset of the sample that reported General Delusions ( $n = 53$ ) there was no significant main effect for delusions of persecution,  $F(1, 49) = .08, p = .776$ ,  $M_{\text{delusions of persecution}} = 24.18$   $SD = 6.19$   $n = 17$ ,  $M_{\text{General Delusions}} = 24.56$   $SD = 8.28$   $n = 36$ . Gender differences were not significant,  $F(1, 49) = 2.37, p = .130$ , and there was no interaction effect,  $F(1, 49) = .209, p = .65$ . On average participants experiencing delusions of persecution had no more difficulty in determining the intentions of others than participants experiencing General Delusions (but not delusions of persecution), irrespective of gender.

*Hypothesis 11: That participants experiencing hallucinations will attribute imagined percepts to external sources more frequently than participants who do not experience hallucinations.*

Differences in mean Imagined Seems Real scores between participants experiencing and not experiencing hallucinations were significant,  $t(26.13) = 4.63; p < .0003$ ,  $M_{\text{hallucinations}} = 12.00$   $SD = 2.24$   $n = 13$ ,  $M_{\text{no hallucinations}} = 8.48$   $SD = 4.14$   $n = 89$  (the variances were unequal under Levine's test ( $p = .007$ ), so variances were assessed separately). On average, hallucinators were more likely than other participants to attribute imagined percepts to external sources. Differences in the mean Imagined Seems Real scores, between participants experiencing hallucinations (whether or not also experiencing General Delusions) and participants experiencing General Delusions (but not hallucinations), were also significant,  $t(37.92) = 2.22; p = .016$ ,  $M_{\text{General Delusions}} = 10.02$   $SD = 4.07$   $n = 41$  (the variances were not equal under Levine's test [ $p = .035$ ], so variances were assessed separately). (Note that the sample size for this analysis [ $n = 54$ ] was higher than for analyses restricted to participants experiencing General Delusions [ $n = 53$ ] since one participant who reported hallucinations did not report

General Delusions). On average, hallucinators were more likely than those experiencing General Delusions to attribute imagined percepts to external sources.

By way of comparison, analyses were undertaken to determine whether hallucinators were also more likely to make internalisation errors. Differences in mean Feelings of Unreality scores between participants experiencing and not experiencing hallucinations were significant,  $t(23.96) = 2.96$ ;  $p = .004$  (two-tailed),  $M_{\text{hallucinations}} = 9.46$   $SD = 2.67$   $n = 13$ ,  $M_{\text{no hallucinations}} = 6.84$   $SD = 4.58$   $n = 89$  (the variances were unequal under Levine's test ( $p = .007$ ), so variances were assessed separately). On average, hallucinators were more likely than other participants to attribute external percepts to the imagination. Differences in mean Feeling of Unreality scores, between participants experiencing hallucinations and participants experiencing General Delusions (but not hallucinations), were not significant,  $t(33.99) = 2.74$ ;  $p = .274$  (two-tailed),  $M_{\text{General Delusions}} = 8.34$   $SD = 4.39$   $n = 41$  (the variances were not equal under Levine's test [ $p = .039$ ], so variances were assessed separately). On average, hallucinators were no more likely than those experiencing General Delusions to attribute external percepts to the imagination.

*Hypothesis 12: That participants experiencing grandiose delusions or delusions of contrition will attribute the actions of others to themselves more frequently than participants who do not.*

Differences in mean Mind Control scores between participants reporting and not reporting delusions of grandeur (with or without other symptoms) were significant,  $t(24.36) = 4.37$ ;  $p < .0003$ ,  $M_{\text{delusions of grandeur}} = 7.35$   $SD = 4.13$   $n = 20$ ,  $M_{\text{no delusions of grandeur}} = 3.05$   $SD = 3.07$   $n = 82$  (the variances were unequal under Levine's test [ $p = .036$ ], so variances were assessed separately). On average, participants with delusions of grandeur were more likely to attribute the actions of others to themselves than were other participants. Differences in mean Mind Control scores between participants reporting delusions of grandeur (with or without General Delusions) and participants reporting General Delusions (but not delusions of grandeur) were significant,  $t(51) = 2.80$ ;  $p = .004$ ,  $M_{\text{General Delusions}} = 4.55$   $SD = 3.13$   $n = 33$ . On average, participants with delusions of grandeur were more likely than participants with General Delusions to attribute the actions of others to themselves.

Differences in mean Mind Control scores between participants reporting and not reporting delusions of contrition (with or without other symptoms) were significant,  $t(100) = 2.31, p = .012, M_{\text{delusions of contrition}} = 5.21, SD = 3.51, n = 29, M_{\text{no delusions of contrition}} = 3.37, SD = 3.67, n = 73$ . On average, participants with delusions of contrition were more likely to attribute the actions of others to themselves than were other participants. Differences in mean Mind Control scores between participants reporting delusions of contrition (with or without General Delusions) and participants reporting General Delusions were not significant,  $t(51) = .84, p = .20, M_{\text{General Delusions}} = 6.08, SD = 4.08, n = 24$ . On average, participants experiencing delusions of contrition attributed the actions of others to themselves no more frequently than participants experiencing General Delusions.

By way of comparison, the frequency with which participants experiencing delusions of passivity attributed the actions of others to themselves was also assessed. Differences in mean Mind Control scores between participants experiencing and not experiencing delusions of passivity were significant,  $t(100) = 2.77, p = .007$  (two-tailed),  $M_{\text{delusions of passivity}} = 6.36, SD = 4.33, n = 14, M_{\text{no delusions of passivity}} = 3.50, SD = 3.46, n = 88$ . On average, participants with delusions of passivity attributed the actions of others to themselves more frequently than participants without delusions of passivity. Differences in mean Mind Control scores, between participants experiencing delusions of passivity (with or without General Delusions) and participants experiencing General Delusions (but not delusions of passivity), were not significant,  $t(51) = .87, p = .388$  (two-tailed),  $M_{\text{General Delusions}} = 5.33, SD = 3.56, n = 39$ . On average, participants with delusions of passivity attributed the actions of others to themselves no more frequently than participants experiencing General Delusions.

Hypothesis 13: *That participants experiencing conversion symptoms and delusions of passivity will attribute actions of the self to external sources more frequently than participants who do not.*

Mean differences in combined Passivity Phenomena / Somatic Control scores were assessed using a two-way ANOVA (gender x conversion symptoms presence/absence)]. There were significant main effects for the presence or absence of conversion symptoms,  $F(1, 98) = 6.24, p = .014, M_{\text{conversion symptoms}} = 19.54, SD = 6.39, n = 24, M_{\text{no conversion symptoms}} = 15.23, SD = 6.36, n = 78$ ; for gender,  $F(1, 98) = 4.21, p = .04$ ; but there was no interaction effect,  $F(1, 98) = 1.25, p = .27$ . On average, participants

experiencing conversion symptoms attributed actions of the self to external sources more frequently than did participants not experiencing conversion symptoms. By way of comparison, the analysis was repeated with dissociative symptoms and gender as independent variables. There was a significant main effect for the presence or absence of dissociative symptoms,  $F(1, 98) = 11.22, p = .001$  (two-tailed),  $M_{\text{dissociative symptoms}} = 20.33$   $SD = 4.40$   $n = 21$ ,  $M_{\text{no dissociative symptoms}} = 15.19$   $SD = 6.68$   $n = 81$ ; no effect for gender,  $F(1, 98) = 1.93, p = .17$ ; and no interaction effect,  $F(1, 98) = .07, p = .80$ . On average, participants experiencing dissociative symptoms attributed actions of the self to external sources more frequently than did participants not experiencing dissociative symptoms.

The same type of analysis was used to assess the relationship of delusions of passivity and gender to combined Passivity Phenomena / Somatic Control scores. (A similar analysis to that for hypothesis 10, except that for the present analysis the scores from the CEQ subscale capturing internalisation errors [Mind Control] were excluded from the dependent variable). There was a significant main effect for the presence or absence of delusions of passivity,  $F(1, 98) = 8.53, p = .004$ ,  $M_{\text{delusions of passivity}} = 20.86$   $SD = 6.59$   $n = 14$ ,  $M_{\text{no delusions of passivity}} = 15.51$   $SD = 6.33$   $n = 88$ ; no effect for gender,  $F(1, 98) = 1.36, p = .25$  and, no interaction effect,  $F(1, 98) = .04, p = .85$ . On average, participants experiencing delusions of passivity attributed actions of the self to external sources more frequently than participants without such delusions. The analysis was repeated for the subset of the sample reporting General Delusions ( $n = 53$ ). None of the results were significant (delusions of passivity,  $F[1, 49] = 1.84, p = .18$ ,  $M_{\text{General Delusions}} = 20.86$   $SD = 6.59$   $n = 14$ ; gender,  $F[1, 49] = 2.08, p = .16$ ; interaction effect,  $F[1, 49] = .25, p = .620$ ). Participants experiencing delusions of passivity (with or without other delusions) attributed actions of the self to external sources no more frequently than participants with General Delusions (but without delusions of passivity).

By way of comparison, the effect of delusions of persecution and gender on combined Passivity Phenomena / Somatic Control scores were also tested for. There was no significant main effect for the presence or absence of delusions of persecution,  $F(1, 98) = 3.35, p = .07$ ,  $M_{\text{delusions of persecution}} = 18.29$   $SD = 5.53$   $n = 17$ ,  $M_{\text{no delusions of persecution}} = 15.84$   $SD = 6.75$   $n = 85$ ; no effect for gender,  $F(1, 98) = 2.62, p = .109$ ; and, no interaction effect,  $F(1, 98) < .0005, p = .986$ . On average, participants experiencing delusions of persecution

attributed actions of the self to external sources no more frequently than participants without such delusions. The analysis was repeated for the subset of the sample reporting General Delusions ( $n = 53$ ). None of the results were significant (presence vs. absence of delusions of persecution,  $F[1, 49] = .014$ ,  $p = .907$ ,  $M_{\text{General Delusions}}=19.08$   $SD=6.60$   $n =36$ ; gender,  $F[1, 49] = 2.88$ ,  $p=.096$ ; interaction,  $F[1, 49]=.028$ ,  $p=.867$ ). Participants experiencing delusions of persecution (with or without other delusions) attributed actions of the self to external sources no more frequently than participants with General Delusions (but without delusions of persecution).

Hypothesis 14: *That participants with dissociative symptoms will attribute percepts with an external origin to the imagination or to memory more frequently than participants without dissociative symptoms.*

Differences in mean combined Feeling of Unreality / Déjà Vu scores, between participants reporting and not reporting dissociative symptoms, were significant,  $t(44.95) = 5.03$ ;  $p < .0003$ ,  $M_{\text{dissociative symptoms}} = 14.29$   $SD=3.77$   $n=21$ ,  $M_{\text{no dissociative symptoms}}=9.12$   $SD=5.52$   $n=81$  (the variances were unequal under Levine's test [ $p = .011$ ], so the variances were assessed separately). By way of comparison, the analysis was repeated with conversion symptoms as the independent variable, and the differences were not significant  $t(100) = 1.92$ ,  $p = .057$  (two-tailed),  $M_{\text{conversion symptoms}}=12.08$   $SD=5.69$   $n=24$ ,  $M_{\text{no conversion symptoms}}=9.60$   $SD=5.48$   $n=78$ . Participants experiencing dissociative symptoms attributed percepts with an external origin to the imagination more frequently than participants without dissociative symptoms. No such difference was found for participants with conversion symptoms.

Hypothesis 15: *That participants with delusions of persecution, passivity, grandiosity, or contrition will attribute events to an unseen power or force more frequently than participants without such delusions.*

Differences in mean Powerful Forces scores between participants reporting and not reporting Specific Delusions were significant,  $t(100) = 3.76$ ;  $p < .0003$ ,  $M_{\text{Specific Delusions}} = 9.46$   $SD=4.63$   $n=46$ ,  $M_{\text{No Specific Delusions}}=5.70$   $SD=4.78$   $n=56$ . Participants with Specific Delusions attributed events to unseen powers or forces more frequently than persons without them.

## CHAPTER 9

### DISCUSSION

In this section, a brief summary of the main findings will be followed by discussion of the descriptive statistics, analyses with respect to gender, and each hypothesis. The findings will then be discussed as an integrated whole.

#### **9.1 Brief summary of the main findings**

As predicted, Foulds's (1976) hierarchical theory of personal illness was found to be valid in this sample of New Zealand psychiatric outpatients. Also as predicted, a linear association was found between unusual conscious experiences and the severity of mental illness, as represented by participant position on Foulds's hierarchy. Consistent with Foulds's theory, a linear association was similarly found between deficits in the ability to determine intentionality and participant position on Foulds's hierarchy, although non-clinical unusual conscious experiences, conceptually unassociated with intentionality, were also associated linearly. The validity of Foulds's hierarchy as a measure of mental illness severity was not supported by global functioning scores, although on average women's functioning did decrease linearly the higher they were placed on the hierarchy. The frequency of unusual conscious experiences was weakly associated with reduced global functioning, but strongly associated with symptom related distress.

Discrete kinds of unusual conscious experiences were positively correlated with each other, failing to support the notion that participants would be biased towards particular unusual conscious experiences to the exclusion of others. While discrete unusual conscious experiences were more frequent in the presence of the symptoms outlined in Table 6 (consistent with the posited role of separate cognitive processes), the findings sometimes lacked specificity. Although the unusual conscious experiences separately linked with delusions of persecution, delusions of grandiosity, and hallucinations were more frequent in the presence of such symptoms than in the presence of General Delusions, this was not the case for delusions of contrition or delusions of passivity. In addition, unusual conscious experiences of the kinds linked with conversion symptoms were also more frequent in the presence of dissociative symptoms.

## 9.2 Descriptive statistics

### The Global Assessment of Functioning (GAF)

The mean GAF score of 54.39 in the present study is consistent with the Endicott et al. (1976) observation with respect to the GAS that most outpatients will fall within the range 30 to 70. This suggests that the outpatient sample in the present study is not atypical in terms of functioning.

### The Conscious Experiences Questionnaire (CEQ)

The CEQ mean of 69.28 in the present study was within one standard deviation of the mean CEQ score (53.30, SD = 20.13) derived by Morris and Johnson (unpublished manuscript) with respect to a university student sample. More notably, the CEQ mean for participants not experiencing symptoms was 40.79 (see Table 9), more than half a standard deviation less than the mean score obtained by Morris and Johnson. A comparison of Table 8 and Table 9 reveals that Morris and Johnson sample scored higher on Déjà Vu (3.15 cf. 2.98), Mindblindness (7.45 cf. 7.42), and Chance Beliefs (10.92 cf. 10.02). The contrasts with the findings of Morris and Johnson may partly reflect the different mean ages of the samples (37.51 years for the present study c.f. 21.41 years for Morris and Johnson), given findings that positive schizotypy scores decline with age (Mason et al., 1997). In addition, CEQ scores in the present study may have been depressed by difficulties experienced by some patients in completing the CEQ (observed by the writer), difficulties that were not experienced in relation to the DSSI. Questions asked and comments made by such patients while completing the CEQ suggested to the writer that a base level of cognitive functioning is necessary for the successful completion of the CEQ. The CEQ includes questions that require a functioning working memory (e.g. “Things that are happening seem to have happened before, although I know they can’t have done” - requiring a notion to be held in working memory while another notion is considered) and abstract thinking abilities (e.g. “Things feel unreal, as if I’m in a film or a play”).

### Symptoms

The present study’s finding that only 13% of participants experienced symptoms from only one DSSI symptom set is identical to the Foulds and Bedford (1975) finding, and highlights the incidence of comorbidity in this sample. Notably, most participants were

experiencing symptoms of anxiety or depression, and, without applying Foulds's (1976) non-reflexive principle, the incidence of each symptom set generally decreased the higher the class within which the symptom set lay.

### **9.3 Hypothesis 1: The validity of Foulds's (1976) hierarchical theory**

*Hypothesis 1: That Foulds's (1976) hierarchical theory of symptom structure will be valid in a heterogeneous New Zealand sample of psychiatric outpatients (i.e. 90% or more of participants will have symptom patterns that conform to Foulds's hierarchy).*

As noted, Foulds's (1976) hierarchical theory of symptomatology was found to be valid in the present study's sample of New Zealand psychiatric outpatients, applying the 90% inclusion criteria conventionally taken as indicating validity (Bedford & Deary, 1999). The success of Foulds's hierarchy in systematically classifying 90% of participants may be regarded as impressive, given the high level of comorbidity in the present study's sample. Furthermore, the symptom structure in the present study was consistent with Foulds's (1976) theory regarding the integral role of difficulties in determining intentionality in determining the severity of mental illness.

The finding that 89% of participants' symptom patterns conformed to Foulds's (1976) hierarchy when the symptom free "0000" patterns were excluded replicated the Rubino et al. (1997) finding that symptom free participants did not markedly inflate the percentage of patients conforming to the hierarchy.

The higher percentage of participants in Classes 2, 3 and 4 (25.5%, 19.6%, and 16.7% respectively) than in Classes 0 and 1 (13.7% and 14.7% respectively) may reflect the eligibility criteria for MidCentral Health Ltd, under which admission may only occur for persons who are suffering moderate to severe mental illness. Stricter eligibility criteria for admission may also explain the smaller percentages in Classes 0 and 1 in the present study relative to the percentages in the Foulds and Bedford study (1975). The larger percentage of participants experiencing delusions of disintegration (which includes delusions of passivity and hallucinations) in the present study compared with the Foulds and Bedford study (16.7% c.f. 3.4%) is notable, and suggests a greater severity of symptoms in the present study.

#### **9.4 Hypothesis 2: The relationship between the frequency of unusual conscious experiences and the severity of psychiatric symptoms**

*Hypothesis 2: That participants who are higher on Foulds's (1976) hierarchy of personal illness will experience more non-clinical unusual conscious experiences than participants who are lower on that hierarchy.*

The finding that unusual conscious experiences increased with each step of Foulds's (1976) hierarchy is promising, since Foulds's model has potential for accommodating findings that link positive schizotypy with affective (Thalbourne et al., 1999) and dissociative (Startup, 1999) analogues of symptoms - a potential not held by models that focus solely on schizophrenia (e.g., Meehl, 1962; 1990). The failure to find a relationship between broad DSM-IV diagnostic groupings and unusual conscious experiences is perhaps not surprising, given that the DSM-IV diagnoses obtained from participant's files were often historical in nature, providing no indication as to whether the symptoms were in remission or otherwise. Having said that, the diagnoses reported in the present study may be regarded as indicative of the application of DSM-IV in practice, given that these were the diagnoses available on file to guide treatment.

#### **9.5 Hypothesis 3: The relationship between deficits in the ability to determine intentionality and the severity of psychiatric symptoms**

*Hypothesis 3: That participants who are higher on Foulds's (1976) hierarchy of personal illness will more frequently exhibit non-clinical deficits in the ability to determine intentionality than participants lower on that hierarchy.*

The confirmation of this hypothesis adds credence to Foulds's (1976) assertion that the degree of a person's difficulty in discerning intentionality determines the severity of his/her mental illness. The notion that the seriousness of mental illness increases with each level of Foulds's hierarchy requires validation, however, hence the subsequent exploration of the relationship between the hierarchy and functioning. The finding that difficulties in determining the intentions of the self and others are both related to the severity of mental illness is consistent with the views of Frith (1992); and Morris (1997), who ascribe a key role to both difficulties in the genesis of psychiatric symptoms. The finding that such difficulties increased linearly with each step of

Foulds's hierarchy is consistent with the view that both kinds of deficit lie on a continuum with psychosis (Claridge & Beech, 1995; Langdon & Coltheart, 1999). The relationship of "normality" to that continuum cannot be gauged, however, due to the exclusively clinical nature of the sample in the present study.

The finding that unusual conscious experiences without a theoretical link to intentionality similarly increased in frequency with each step of Foulds's (1976) hierarchy weakens the above findings. The correct position may be that monitoring errors in general are related to the severity of mental illness (as reflected by Foulds's hierarchy). It may be that an awareness of intentionality is relevant only to errors in the monitoring of actions (as suggested by Morris, 1997).

## 9.6 Hypotheses 4 to 6: Relationship to functioning

*Hypothesis 4: That the higher the participant's position on Foulds's (1976) hierarchy, the more severe will be the decrement in functioning.*

The absence of an association between functioning and Foulds's (1976) hierarchy, and the presence of an association between functioning and broad DSM-IV groupings, on the face of it suggests that Foulds's hierarchy does not effectively assess the severity of psychiatric illness, and that DSM-IV does (to an extent, at least). Although Foulds's hierarchy has been validated against a recognised measure of psychiatric symptom severity (the BPRS; Morey, 1985), symptom severity is not synonymous with the severity of psychiatric illness (Peters et al., 1999; Roberts, 1991). The likelihood is that an interaction effect, involving a mediating variable or variables, has produced the appearance of an absent relationship. One possible interaction effect is that the functioning of persons receiving strong social support remains at a relatively high level irrespective of the level of symptoms, while the functioning of persons without social support drops sharply with the onset of symptoms. Similarly, high intellect may be a protective factor, increasing the ability to cope with symptoms and continue functioning, while the functioning of relatively cognitively impaired persons may reduce linearly with the onset of symptoms.

Be that as it may, the respective presence and absence of a relationship between functioning and participant position on Foulds's (1976) hierarchy and broad DSM-IV

diagnostic groupings would appear to be attributable, at least in part, to gender differences in the expression of symptoms associated with schizophrenia spectrum disorders. The positive symptoms of schizophrenia are more frequent in females with schizophrenia, and often manifest themselves in a schizoaffective presentation; while males typically suffer fewer positive symptoms but more negative symptoms (Lewis, 1992; Mason et al., 1995). The DSSI principally asks questions about the *presence* of symptoms, and does not effectively assess negative symptoms, which involve an *absence* of behaviour. Furthermore, the DSSI depends upon the reporters of symptoms having sufficient volition to do so - a forlorn hope for participants experiencing the negative symptom avolition. Against this background, the relatively low functioning of men within Class 0 (not personally ill) of Foulds's hierarchy may flow from negative symptoms (including social and interpersonal deficits) depressing functioning, in conjunction with a relative absence of positive symptomatology. Males at Class 1 of the hierarchy may be functioning at a higher level than males at Class 0 due to a reduced frequency of negative symptoms, despite more positive symptoms being reported. Women, on the other hand, may be relatively unaffected by negative symptomatology, explaining the linear reduction in functioning with each step on Foulds's hierarchy. This gender difference also assists in explaining the markedly different functioning of male and female schizophrenia spectrum participants, and the markedly inferior functioning of males afflicted with schizophrenia, compared with males with affective disorders (if it is accepted that negative symptoms are more salient in schizophrenia). Clinical interviews upon which DSM-IV diagnoses are based are better suited for the assessment of negative symptoms than self-report measures such as the DSSI, hence the significant relationship between DSM-IV diagnostic groupings and functioning. To conclude, future research may determine that a relationship indeed exists between Foulds's (1976) hierarchy and functioning, once negative symptoms are controlled for. This possibility is suggested by the downward trend of functioning scores for female participants, a group that expected to be less afflicted by negative symptoms, as they progressed up Foulds's hierarchy.

The above discussed gender differences may additionally in part also be artifactual, since male and female participants in the present study suffered different kinds of schizophrenia spectrum illness. Of the 21 male schizophrenia spectrum participants only one was diagnosed with schizoaffective disorder; compared with five of the nine

female schizophrenia spectrum participants. Given the association of schizoaffective presentations with positive rather than negative symptoms (Mason et al., 1997), the heavy weighting of schizoaffective disorder amongst female participants in the present study likely exaggerated the gender differences in the presentation of negative symptoms that already exist in the population at large.

A related further potential reason for the failure of this hypothesis lies in the fact that Foulds's hierarchical model was initially conceived to be only appropriate for acute patients (Bedford & Presley, 1978). When Bedford and Presley administered the DSSI to 33 chronic schizophrenia patients they found that an unusually high percentage were symptom free (33%) or located at Class 1 of the hierarchy (21%). This led to the speculation that the patients were "burned out", and without serious symptoms, although socially and interpersonally impaired. While no formal record was kept of the acuteness and chronicity of the present study's sample, the most functionally impaired were undoubtedly long-term sufferers of schizophrenia, many of whom reported few symptoms. In the present study this may have contributed to the low average functioning of males at the bottom of Foulds's hierarchy.

Finally, a methodological feature of the present study may have contributed to the failure to find a relationship between Foulds's (1976) hierarchy and global functioning. Whereas the DSSI (from which the participant's place on the hierarchy was determined) asked for symptoms experienced "recently" (in the last month or so), key workers were asked to provide a "current" GAF rating (to encourage reliance on current knowledge rather than memory). A mismatch may thus have occurred in some cases, with symptoms reported being historical in nature but with GAF scores being current.

*Hypothesis 5: That the frequency of unusual conscious experiences influences global functioning*

Turning now to the relationship between unusual conscious experiences and global functioning, the significant but small correlation between these constructs is consistent with a greater frequency of such experiences in persons who are functioning poorly. The finding is consonant with the Chapman et al. (1994) finding that the overall functioning of PerAb/MagicId participants was lower than that for other participants at

ten year follow-up (remembering that overall functioning was not measured in that study at the commencement of the 10 year period).

Hypothesis 6: *That symptom related distress will be associated with poor functioning.* Given the finding by Peters et al. (1999) that the absence of distress distinguished apparently high functioning new religious movement members from deluded psychotic inpatients, the absence of an association between symptom related distress and global functioning is surprising. Since the symptom related distress measure draws heavily upon the DSSI, the same measure used to construct Foulds's (1976) hierarchy of symptoms, a reason for this finding may lie in the DSSI's neglect of negative symptoms (discussed under hypothesis 4). In this respect, while cognitive deficits and negative symptoms were found to be related to specific deficits in adaptive skills in a study of geriatric patients with schizophrenia, positive symptoms were found to be unrelated to such deficits (Harvey et al., 1998). Similarly, the predominantly positive symptom content of the DSSI, as reflected by participant position on Foulds's hierarchy, was unrelated to global functioning in the present study. While this provides a possible explanation for the finding in the present study, negative symptoms such as affective flattening and avolition arguably do not give rise to subjective distress, consistent with their omission from a symptom related distress measure.

Alternatively, this may be merely another example of different rating sources disagreeing (Piersma & Boes, 1995). In this respect, no relationship was found between clinician rated global functioning (DSM-III-R GAF) and self reported symptom related distress (Brief Symptom Inventory, Derogatis & Spencer, 1982) in a sample of psychiatric inpatients (Piersma & Boes, 1995). Similarly, a low non-significant correlation ( $r = -.144$ ) was found between clinician rated GAS score and self reported distress on the Symptom Checklist 90 Revised (Derogatis & Leary, 1977), in a study of psychiatric outpatients (Clark & Friedman, 1983).

## 9.7 Hypotheses 7 and 8: Interrelationships between unusual conscious experiences

Hypothesis 7: *That participants will be biased either towards attributing events to supernatural causes or to attributing events to chance (but not both), supporting the notion that they represent converse examples of errors in the same process.*

Turning now to the cognitive process or processes involved in generating symptoms, the failure to confirm hypothesis 7 is inconsistent with the suggestion that there is a bias towards attributing events either to supernatural causes or towards attributing events to chance. Instead, persons attributing events to supernatural causes also tended to attribute events to chance. The idea that the two kinds of attribution in the “causation sense” domain were mutually exclusive, and the related inference that they were generated by a monitoring process distinct from that pertaining to other experiences, was not thus supported (c.f. the finding by Morris & Johnson, unpublished manuscript, in relation to a non-patient sample).

Hypothesis 8: *That the remaining subscales will be positively correlated (consistent with unusual conscious experiences arising through one process), rather than negatively correlated (in a manner consistent with individual CEQ subscales recording converse examples of errors in separate processes).*

Similarly, the positive correlations between the remaining CEQ subscales meant that the notion that groups of subscales record converse examples of biases within a number of distinct monitoring processes was not supported (thus replicating in an outpatient sample the finding of Morris and Johnson, unpublished manuscript). The strong positive correlations between CEQ subscales assessing monitoring errors within the “reality sense” and “agency sense” domains meant that support was not provided for the suggestion by Morris et al. (unpublished manuscript) and Morris (unpublished manuscript) that separate processes are involved in the monitoring of perceptions and the monitoring of actions of the self and the actions of others. Similarly, the strong correlations between the subscales that assess these domains and the Powerful Forces subscale, which assesses the “causation sense” domain, fail to support the existence of separate processes. On the above basis, the data is arguably more consistent with malfunctions in a single process (e.g. Baar, 1988) than malfunctions in separate monitoring processes (as mooted by Morris, unpublished manuscript). The existence of

a single process is also suggested by the very similar linear relationships found between CEQ subscales measuring and not measuring deficits in the awareness of intentionality and Foulds's (1976) hierarchy of symptomatology (see Figure 2).

The remaining hypotheses investigate relationships suggested by Table 6, which lists symptoms hypothesised to be associated with each kind of non-clinical monitoring error.

### **9.8 Hypotheses 9 to 15: Relationship between cognitive processes and symptoms**

*Hypothesis 9: That participants experiencing delusions of persecution (with or without other delusions) will experience more frequent difficulties in determining the intentions of others than will persons who do not experience delusions of persecution.*

Persons reporting delusions of persecution experienced more such difficulties in determining the intentions of others than persons without such delusions, and more difficulties than persons reporting General Delusions. By way of contrast, persons reporting delusions of passivity experienced no more difficulties in determining the intentions of others than persons reporting General Delusions. This finding is consistent with the notion that both kinds of experience (i.e., difficulties in determining the intentions of others and delusions of persecution) arise through errors in a monitoring process separate to the process or processes governing General Delusions or delusions of passivity.

The association found between delusions of persecution and difficulties in determining the intentions of others is consistent with the earlier finding that a paranoid symptom group (with or without delusions of passivity) exhibited more errors on "theory of mind" tasks than non-psychotic psychiatric outpatients or patients experiencing delusions of passivity (Frith & Corcoran, 1996). The contrasting failure to find an association between delusions of passivity and difficulties in determining the intentions of others is consistent with studies which have found "theory of mind" deficits present in paranoid subgroups but absent in passivity delusion subgroups (Corcoran et al., 1995; Frith & Corcoran, 1996). These findings lend support to the view that different processes lead to each kind of symptom (Frith, 1992; Morris, 1997).

Hypothesis 10: *That participants experiencing delusions of passivity will have more frequent difficulty determining their own intentions than participants who do not experience delusions of passivity.*

Relative to the sample as a whole, both delusions of passivity and delusions of persecution were significantly associated with more frequent difficulties in determining one's own intentions; failing to support to Frith's (1992) notion that different pathways lead to each category of delusion. When participants with each kind of delusion were compared on the frequency of such difficulties with the General Delusion group (to control for the presence of a general effect), however, the results were more promising. The delusions of passivity group experienced more difficulties in determining their own intentions than the general delusions group, and this result only just failed to reach significance ( $p = .055$ ). In contrast, the delusions of persecution group actually experienced fewer difficulties in determining their own intentions than the general delusions group. Thus the results are most consistent with the view that different processes lead to delusions of passivity and delusions of persecution.

Hypothesis 11: *That participants experiencing hallucinations will attribute imagined percepts to external sources more frequently than participants who do not experience hallucinations.*

Hallucinators attributed imagined percepts to external sources (an internalisation error) more frequently than the rest of the sample, and more frequently than participants experiencing General Delusions. This finding is consistent with the notion that hallucinations arise when the process of self-consciousness fails to distinguish the products of the imagination from products of perception (Kunzendorf, 1987). Although hallucinators similarly attributed external percepts to the imagination (an externalisation error) more frequently than the rest of the sample, they did so no more frequently than participants experiencing General Delusions. These findings are consistent with research indicating that hallucinators are biased towards attributing internal events to external sources (Baker & Morrison, 1998; Bentall et al., 1991; Morrison & Haddock, 1997).

Hypothesis 12: *That participants experiencing grandiose delusions or delusions of contrition will attribute the actions of others to themselves more frequently than participants who do not.*

While participants experiencing delusions of grandeur or delusions of contrition respectively attributed the actions of others to themselves more frequently than the rest of the sample (consistent with Morris, 1997), this was also the case for participants experiencing delusions of passivity (contrary to Morris, 1997). This raised the possibility that the effect was a general one, related to the level of disturbance rather than the nature of the symptom experienced. To explore this possibility, comparisons were made between each symptom group and participants experiencing General Delusions. Only participants experiencing delusions of grandeur were more likely to attribute the actions of others to themselves than those experiencing General Delusions, suggesting a monitoring error particular to persons experiencing these symptoms. The comparative failure to find a such a difference between participants experiencing delusions of contrition and participants experiencing General Delusions may suggest that delusions of contrition, which are associated with severe depression, occur through errors in a monitoring mechanism distinct from the mechanism involved in grandiose delusions (c.f. Morris, 1997).

Hypothesis 13: *That participants experiencing conversion symptoms and delusions of passivity will attribute actions of the self to external sources more frequently than participants who do not.*

While participants with conversion symptoms attributed actions of the self to external sources more frequently than participants without them (consistent with Morris, 1997), participants with dissociative symptoms similarly made more such attributions. This finding may be regarded as inconsistent with Morris, who described experiences of a dissociative nature (depersonalisation and derealisation experiences) as *internalisation* errors in the monitoring of *perceptions*, and conversion symptoms as *externalisation* errors in the monitoring of *actions*. The idea that dissociative symptoms occur through an error in the monitoring of actions is consistent with Startup's (1999) suggestion that schizophrenic passivity experiences and severe dissociative experiences each occur when monitoring processes fail to appropriately label actions as intentional (extending Frith, 1992). The similar findings for conversion and dissociative symptoms is unsurprising, given that some classification systems group conversion reactions with

dissociative phenomena, and given that conversion symptoms were only included with the somatoform disorders in DSM-IV to encourage the differential diagnosis of medical and neurological factors (APA, 2000). It may be that conversion symptoms constitute the behavioural sequelae of dissociative experiences, with both categories of symptoms stemming from a reduction in self-awareness, which leads to both the attribution of external perceptions to the self, and to the attribution of one's own actions to external forces - a notion that assumes the existence of a single process, charged with monitoring both perceptions and actions. The close relationship between dissociative and conversion symptomatology is illustrated by the inclusion of sleep walking as a dissociative symptom in the DSSI (item 12). Sleep walking is arguably better described as a conversion symptom than as a dissociative experience (Zuckerman, 2000).

Turning now to delusions of passivity, the failure to find a difference in the attribution of own actions to external sources, relative to persons experiencing General Delusions, is consistent with such errors being associated generally with delusions rather than with delusions of passivity in particular.

Hypothesis 14: *That participants with dissociative symptoms will attribute percepts with an external origin to the imagination or to memory more frequently than participants without dissociative symptoms.*

Participants with dissociative symptoms attributed external percepts to the imagination or memory more frequently than participants without dissociative symptoms. This finding was specific, in that participants with and without conversion symptoms did not differ in the frequency with which they attributed external percepts to the imagination or memory. The finding of a difference for dissociative symptoms but not conversion symptoms is consistent with the organisation proposed by Morris, (1997). It is difficult to fathom why there should be no difference for conversion symptoms, given the similar findings for dissociative and conversion symptoms under the previous hypothesis.

Hypothesis 15: *That participants with specific kinds of delusion (persecution, passivity, grandiosity, or contrition) will attribute events to an unseen power or force more frequently than participants without such delusions.*

Participants experiencing discrete categories of delusion attributed events to an unseen powerful force more frequently than did persons without such delusions. This association is consistent with delusions occurring through malfunctions in a process governing the attribution of causation (consistent with Morris & Johnson, unpublished manuscript), and supports the validity of research linking belief in supernatural causation to psychosis proneness (Peters et al., 1999; Thalbourne, 1994).

### **9.9 An integration of the findings**

The increased frequency of non-clinical unusual conscious experiences with the severity of “state-like” psychiatric symptoms, as indicated by participant position on Foulds’s (1976) hierarchy, is consistent with the *increase* in frequency of such experiences being state-like rather than trait-like in nature. (The alternative view, that participants at progressively higher levels of Foulds’s hierarchy coincidentally have more severe personality traits, is too coincidental to be tenable). Experiences additional to those “normal” for the person may constitute another category of symptoms, increasing in frequency but not in nature with the severity of the symptomatology that dictates participant position on Foulds’s hierarchy.

The existence of a stable base level of unusual conscious experiences in a mentally well person may signal the existence of a trait and a predisposition to psychosis, while increases in the frequency of such experiences may be symptomatic in nature, and lie on a continuum with psychosis. In other words, the increased frequency of unusual conscious experiences at each step of Foulds’s (1976) hierarchy may constitute a progressive worsening of a malaise that will become psychosis if unchecked - akin to a progressive increase in temperature which ultimately becomes the “fever” of serious mental illness (Tsuang et al., 2000). This position is consistent with dimensional views of psychosis proneness (Claridge & Broks, 1984; Eysenck & Eysenck, 1976), and consistent with the theoretical underpinnings of Foulds’s model which, while categorical in appearance, had its genesis in the idea that psychiatric symptoms lie on a continuum of severity (Foulds, 1964; 1976). For this position to hold, confirmation would be necessary that age explains the discrepancy between the mean CEQ score

found in the present study and the mean CEQ score found by Morris and Johnson (unpublished manuscript) in a student population (as suggested in paragraph 9.2). Confirming evidence would allow age-related norms to be produced for the CEQ, facilitating the use of the CEQ to identify predisposition to mental illness, and perhaps also to assess the severity of symptomatology, through assessing the frequency of unusual conscious experiences. Some consumers (e.g., those suffering from paranoia) may answer more honestly to the CEQ, given its apparently non-clinical nature.

The manner in which the present sample conformed to Foulds's (1976) hierarchical theory, and the observed increase in unusual conscious experiences with each step of Foulds's hierarchy, is consistent with errors in a single cognitive process leading to the pattern of symptoms observed. Foulds's claim, that the symptoms of mental illness worsen as difficulties in determining intentionality increase, was supported, although the claim that such difficulties are fundamental in producing symptoms was weakened by the observation that unusual conscious experiences unrelated to intentionality increased also. The failure to find the negative correlations, between the CEQ subscales (mooted by Morris and Johnson [unpublished manuscript] to assess converse errors in separate monitoring processes) was also consistent with the various errors occurring in the course of a single cognitive monitoring process.

The investigation of relationships between particular symptoms and posited monitoring errors had potential, both for assessing the potential of Foulds's hierarchy as evidencing a single underlying cognitive process, and for assessing the heuristic value of the cognitive processes outlined in Table 6. The finding that delusions of persecution were specifically associated with errors in monitoring the intentions of others, and the narrow failure to find a specific association between passivity delusions and errors in monitoring the intentions of the self, suggests that separate processes are involved in the formation of each delusion (consistent with Frith, 1992). These findings are inconsistent with Foulds's (1976) suggestion that delusions of persecution constitute a milder form of mental disturbance (an "integrated delusion") than delusions of passivity (which were included in his more severe "disintegrated delusion" category). (According to Foulds, a worsening of symptoms for a person experiencing delusions of persecution would lead to the addition of symptoms of delusions of passivity and hallucinations). Indeed, Foulds (1976) did not assign a separate role to difficulties in

determining the intentions of others, except as a secondary consequence of difficulties in discerning one's own intentions. In this respect, then, Foulds's hierarchical theory is inconsistent with the findings in the present study, which support rather the findings of Frith (1992).

The remaining posited relationships between symptoms and cognitive processes received substantial support. As expected, with respect to the monitoring of perceptions, hallucinations were associated with internalisation errors (consistent with Kunzendorf, 1987) and dissociative symptoms with externalisation errors (consistent with Morris, 1997). Also as expected, in the causation sense domain specific delusions (delusions of persecution, passivity, grandiosity, or contrition) were associated with the attribution of events to an unseen power or force (consistent with Morris & Johnson, unpublished manuscript).

The findings were more equivocal with respect to externalisation and internalisation errors in monitoring the actions of the self. In the case of externalisation errors (where intended actions of the self are mistakenly regarded as unintended) participants with passivity delusions made no more errors than participants with General Delusions. Furthermore, although participants with conversion symptoms made more externalisation errors than other participants (consistent with Morris, 1997), so did participants with dissociative symptoms (consistent with Startup [1999], but inconsistent with Morris [1997]). With respect to internalisation errors (where the actions of others are mistakenly regarded as intended by the self), participants with delusions of grandiosity made more internalisation errors as predicted, while participants with delusions of contrition did not. This finding is consistent with errors in an independent monitoring mechanism leading to the symptoms of severe depression (c.f. Morris, 1997).

The failure to find relationships between global functioning, and either participant position on Foulds's (1976) hierarchy or symptom related distress, appears to reflect the limitations of self-report symptom measures in accounting for functioning when negative symptoms are present. The better performance of DSM-IV diagnostic groupings in this respect may be considered unexceptional, given the very broad

groupings of DSM-IV diagnoses, and the predictably (in hindsight) large difference in functioning between the affective and schizophrenia spectrum groups.

### **9.10 Implications of the research**

The present study provides further evidence of the validity of Foulds's (1976) hierarchical theory, and the advantage of recognising hierarchical relationships in systematically accounting for the comorbidity of symptoms. Furthermore, the relationship between the frequency of unusual conscious experiences and Foulds's hierarchy supports the utility of the hierarchy as a heuristic tool in the investigation of the relationship between unusual conscious experiences and clinical symptoms. In this respect, a strength of the Foulds model is its ability to account for relationships between unusual conscious experiences and a range of disorders (a strength not shared by models that focus on schizophrenia, e.g., Meehl, 1962; Meehl, 1990).

Relationships found between particular symptoms and unusual conscious experiences, and the links made to underlying cognitive processes, will enable predictions to be made of the abnormal behaviours that will be manifested by persons exhibiting such symptoms (Frith, 1992). The generation of hypotheses for future research will thus be facilitated. In addition, the present study supports the use of the CEQ as a way to assess the presence of particular errors in underlying cognitive processes, and particular deficits in the awareness of intentionality. Such information may be used to identify cognitive distortions, for restructuring in cognitive behaviour therapy; or to otherwise assist in the clinical management of sufferers of mental illness.

In addition, the global CEQ score may be a useful indicator of psychosis proneness. In this respect, the associations found in the present thesis between unusual conscious experiences and delusions does not establish an association with psychosis, which requires gross impairment in reality testing and the creation of a new reality (Noll, 1992). In fact, none of the participants impressed the present study author as being psychotic. This impression was supported by the observation that only the participants with the three lowest GAF scores were within the bracket applicable when behaviour is considerably influenced by delusions or hallucinations (21-30), and participants may be allocated a score within this bracket in circumstances not involving reality distortion. On this basis, the delusions experienced could be described generally as

“encapsulated”, and not psychotic in nature, at least at the time of questionnaire completion. Nevertheless, the present study supports the relationship between non-clinical unusual conscious experiences and symptoms that are directly relevant to psychotic states.

### **9.11 Limitations of the present study and suggestions for further research**

The relationship between trait levels of unusual conscious experiences and “normality” was outside the scope of the present study, since the sample only included persons receiving mental health services. This limitation could have been remedied by including a general population control group. Indeed, the study would optimally have used a longitudinal within-subjects / between subjects repeated measure design, sampling participants hypothetically at high and low risk of mental illness (determined by reference to their scores on the CEQ). The base rate of unusual conscious experiences could then be assessed while participants were symptom free, enabling an assessment of the extent to which rates of unusual conscious experiences increased during periods of wellness and during the progressive onset of mental illness. This design would also enable determination of how fluctuations in unusual conscious experiences varied between the high-risk group and the low-risk group. In this manner the blurring of the trait versus symptom distinction, referred to by Peters et al. (1999), would be clarified.

Future research could usefully explore the mediating role of the person’s assessment of the social response to his/her unusual conscious experiences (Jackson, 1997), both in terms of symptoms experienced and functioning. Higher functioning might be expected where unusual conscious experiences receive subcultural acceptance, for example where they are considered to be of creative value or religious significance (as found by Peters et al., 1999). In the present study, participants reporting delusions who were amply supported by family members reported higher functioning than would otherwise be expected (according to the subjective assessment of their key workers). While family support does not imply social validation of delusional experiences, it at least suggests the absence of the social rejection that is implicit in the isolation experienced by many lower functioning participants. The possible mediating role played by the quality of the insight gained from the experiences (suggested by Jackson, 1997), could usefully be explored in conjunction with the mediating role of

intelligence. A high intellect may enable the experiencer to actually enhance functioning by creatively drawing upon his/her unusual conscious experiences in a productive way (Claridge & Beech, 1995).

With respect to “intelligence”, a multi-faceted construct, unlike Frith and Corcoran (1996) who controlled for the contribution of memory deficits to difficulties exhibited in determining the intentions of others, the present study assessed neither memory nor other cognitive abilities. The CEQ appeared to be relatively demanding upon the consumer, since it contains questions that require abstract thinking (e.g., “My dreams seem real and life-like”) and working memory (e.g., “Things that are happening seem to have happened before, although I know they can’t have done”). The present study would have been enhanced had such abilities been assessed, given that infrequently difficulties in understanding the CEQ occurred.

A replication of the present study could usefully consider the following. Low participant numbers for hallucinations, particular categories of delusion, and DSM-IV diagnoses limited the power of the analyses in the present study. A targeted increase in participant numbers would strengthen the research in this respect. The limitations of self report measures such as the DSSI in assessing negative symptomatology could be remedied by determining participant position on Foulds’s hierarchy through clinician completion of a measure such as the Present State Examination (as advocated by De Jong et al., cited in Bedford & Deary, 1999). DSM-IV diagnoses could be undertaken at the time of questionnaire completion, removing the need to rely upon historical file information. A recognised measure of symptom related distress, unrelated to the DSSI, could be used. Finally, consideration could be given to sampling both chronic and acute patient groups, with a mind to determining more accurately the symptom patterns of such groups on Foulds’s hierarchy.

Given the predominance of Caucasian participants in the present study, caution should be exercised before applying the research across cultural or ethnical boundaries.

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## APPENDIX A

**INFORMATION SHEET  
HOW ARE THINKING PATTERNS RELATED TO THE SYMPTOMS  
OF MENTAL ILLNESS?**

<b>Researcher:</b>	John Barclay	<b>Supervisor:</b>	Malcolm Johnson
<b>Position:</b>	M.A. Student Massey University	<b>Position:</b>	Senior lecturer
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<b>Phone:</b>	[REDACTED]	<b>Phone:</b>	(06) 3505799 ext 2060
<b>Email:</b>	[REDACTED]	<b>Email:</b>	<a href="mailto:M.Johnson@massey.ac.nz">M.Johnson@massey.ac.nz</a>

We invite you to take part in a study which will involve you completing some questionnaires, asking about your thoughts, experiences, and beliefs, and your recent symptoms.

You may decide at your leisure whether you want to take part in the study. Your participation is entirely voluntary (your choice). If you decide to take part, then you can withdraw at any time, without any bad effects, and without having to give a reason. Your future care/treatment will be the same, whether or not you choose to participate.

#### **What's it all about?**

Many people have thoughts, experiences and beliefs that are different from usual. Sometimes these happen under stressful or difficult circumstances and sometimes they just happen. For example, they may feel odd or strange, as if they are watching themselves, or find that their imagination is so life-like that it seems real.

Some people have these experiences so often or so vividly that they are troubled or worried by them. We are interested in discovering how experiences like these are related to symptoms experienced by users of mental health services, like yourself. The research will help us to better understand people's mental health difficulties, and may help in designing treatments.

#### **If you say "yes", what happens?**

If you are prepared to participate, all you need to do is fill two questionnaires:

- one asking how often you have had a range of thoughts, experiences and beliefs; and,
- another asking how much you are troubled by certain symptoms.

In addition, your mental health clinician will be asked to provide: your current diagnosis; confirmation that she/he considers you capable of giving informed consent; and, an estimate of your current level of functioning.

We expect that the questionnaires will take between 30 minutes and an hour to complete. Since the study is of no benefit to you, we will pay you \$10 as recompense for your time. **If you wish, you may bring someone (or more than one person) with you for support.**

**Who will see my answers?**

Your responses to the questionnaires will remain completely confidential to my supervisor and I, as will the information provided by your clinician. Your clinician will not have access to your questionnaire responses, which will be kept secure at Massey University. Following the study's completion, any information capable of identifying you will be deleted from our files. No material capable of personally identifying you will be used in any report on the study.

**What if I have questions?**

You have the right to be fully informed, and to ask questions. Please take time to consider whether you wish to take part, and consult others. If you have any queries or concerns, please contact me on 06 3508184. Likewise, if you have any queries after deciding to take part, contact me on this number. If your concerns are not resolved after speaking to me, then your clinician at Community Mental Health is available. Alternatively, if you have any queries or concerns about your rights as a participant, you may contact Advocacy Network Services, or "Adnet" (a service provided under the Health and Disability Act), on [REDACTED]

**What are my rights if I sign the consent form?**

You will not give up any of your rights by signing the consent form. You will retain the right to withdraw from the study at any time, or to decline to answer questions.

**Do I hear about the study results?**

If you wish, we will send you a summary of our findings when the study is complete. We expect this summary to be available by December 2000.

**Finally ...**

Thank you for your time.

John Barclay.

*This study has received ethical approval from the Manawatu/Wanganui Ethics Committee, and the Massey University Ethics Committee.*



## APPENDIX B

**Information for Clinicians**  
**How Are Thinking Patterns Related To the Symptoms of Mental  
 Illness?**

<b>Researcher:</b>	John Barclay	<b>Supervisor:</b>	Malcolm Johnson
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This study is about the relationship between non-symptom abnormal experiences, symptoms, symptom patterns, and patient functioning, in a heterogeneous group of psychiatric patients.

We would like you to pass on the Information Sheets to patients you consider able to provide informed consent, and then direct interested patients to John Barclay (who will make himself available). John will then attend to the signing of consent forms, and the administration of the questionnaires.

For your patients who choose to participate, we would then ask you to provide the current DSM diagnosis, and the patient's rating on the Global Assessment of Functioning scale. We anticipate that this will take a minimal amount of your time.

John Barclay will be available to deal with patients' queries and concerns, and with any concerns raised by you. While the Information Sheet provided to patients will state that any concerns unable to be resolved by John may be directed to you, such queries are not anticipated.

If you have any queries, please do not hesitate to contact John Barclay or Malcolm Johnson. You are under no obligation to participate. We attach copies of the questionnaires.

Thank you.

**Clinician's Report Form**  
**How Are Thinking Patterns Related to the Symptoms of**  
**Mental Illness?**

**Patient's name:**

**DSM diagnosis on file (if any):**

**GAF rating:**

**Domain determining bracket selected (tick one or more)**

- Psychological symptoms**
- Occupational functioning**
- Social functioning**
- Suicidality/dangerousness**

**Date GAF completed:**                    \_\_\_/\_\_\_/\_\_\_

**Key Worker's initials:**                    \_\_\_\_\_

### Global Assessment of functioning Scale ( GAF )

Consider psychological, social, and occupational functioning on a hypothetical continuum of mental health-illness. Do not include impairment in functioning due to physical (or environmental) limitations.

- 91 – 100** Superior functioning in a wide range of activities, life's problems never seem to get out of hand, is sought out by others because of his or her many positive qualities. No symptoms.
- 81 - 90** Absent or minimal symptoms (e.g., mild anxiety before an exam), good functioning in all areas, interested and involved in a wide range of activities, socially effective, generally satisfied with life, no more than everyday problems based concerns (e.g., an occasional argument with family members).
- 71 – 80** If symptoms are present, they are transient and expectable reactions to psychosocial stressors (e.g. difficulty concentrating after family argument); no more than slight impairment in social, occupational, or school functioning (e.g. temporarily falling behind in school work).
- 61 – 70** Some mild symptoms (e.g. depressed mood and mild insomnia) OR some difficulty in social, occupational, or school functioning (e.g. occasional truancy, or theft within the household), but generally functioning pretty well, has some meaningful interpersonal relationships.
- 51 – 60** Moderate symptoms (e.g. flat affect and circumstantial speech, occasional panic attacks) OR moderate difficulty in social, occupational, or school functioning (e.g. few friends, conflicts with peers or co-workers).
- 41 – 50** Serious symptoms (e.g. suicidal ideation, severe obsessional rituals, frequent shoplifting) OR any serious impairment in social, occupational, or school functioning (e.g. no friends, unable to keep a job).
- 31 – 40** Some impairment in reality testing or communication (e.g. speech is at times illogical, obscure, or irrelevant) OR major impairment in several areas, such as work or school, family relations, judgement, thinking or mood (e.g. depressed man avoids friends, neglects family, and is unable to work; child frequently beats up younger children, is defiant at home, and is failing that school).
- 21 – 30** Behavior is considerably influenced by delusions or hallucinations OR serious impairment in communication or judgement (e.g. sometimes incoherent, acts grossly inappropriately, suicidal preoccupation) OR inability to function in almost all areas (e.g. stays in bed all day; no job, home, or friends).
- 11 – 20** Some danger of hitting self or others (e.g. suicide attempts without clear expectation of death, frequently violent, manic excitement) OR occasionally fails to maintain minimal personal hygiene (e.g. smears faeces) OR gross impairment in communication (e.g. largely incoherent or mute).
- 1 – 10** Persistent danger of severely hurting self or others (e.g. recurrent violence) OR persistent inability to maintain minimal personal hygiene OR serious suicidal act with clear expectation of death.
- 0** Inadequate information.

**APPENDIX C****THE QUESTIONNAIRES****How Are Thinking Patterns Related To the Symptoms of Mental Illness?**

**Patient's name:**

**Age:**

**Date of Birth:**

**Gender (Male or Female):**

**Which ethnic group do you belong to? (Please Tick one)**

NZ European

NZ Maori

Samoan

Cook Island Maori

Tongan

Niuean

Chinese

Indian

Other (Such as Dutch, Japanese, Tokalauan)

Please State \_\_\_\_\_

## QUESTIONNAIRE I

### INSTRUCTIONS

Please read the statements, and mark the box that applies to you (“Never”, “Rarely”, “Sometimes”, “Often” or “Always”).

We are only interested in experiences that happen when you are physically well, and not under the influence of alcohol etc.

Please answer all questions truthfully and completely. There are no right or wrong, or good or bad answers.

---

1. It seems that whether good or bad things happen to me is just a matter of chance or luck.

Never       Rarely       Sometimes       Often       Always

2. When I suffer misfortunes it is because some unseen power or force is angry with me.

Never       Rarely       Sometimes       Often       Always

3. I feel odd or strange, as if I'm not really me.

Never       Rarely       Sometimes       Often       Always

4. I feel good things happen to me because some unseen power or force is rewarding me.

Never       Rarely       Sometimes       Often       Always

5. I feel as if I have made bad things happen to others just by wishing them ill.

Never       Rarely       Sometimes       Often       Always

6. People talk just for the sake of talking, what they say has no particular meaning or importance.

Never       Rarely       Sometimes       Often       Always

7. My dreams seem real and life-like.

Never       Rarely       Sometimes       Often       Always

8. I feel tired for no reason.

Never       Rarely       Sometimes       Often       Always

9. My body seems to do things without me wanting it to.

Never       Rarely       Sometimes       Often       Always

10. I feel like a robot, doing things without feeling anything.

Never       Rarely       Sometimes       Often       Always

11. Things that are happening seem to have happened before, although I know that they can't have done.

Never       Rarely       Sometimes       Often       Always

12. What people are thinking and feeling seems like a mystery to me.

Never       Rarely       Sometimes       Often       Always

13. Good days and bad days just happen, without any particular reason or cause.

Never       Rarely       Sometimes       Often       Always

14. I get aches and pains without any reason.

Never       Rarely       Sometimes       Often       Always

15. It seems that things people say on TV or in the Newspapers have special messages just for me.

Never       Rarely       Sometimes       Often       Always

16. It seems that accidents and misfortunes are meant to happen, and are the result of some power or force.

Never       Rarely       Sometimes       Often       Always

17. When I imagine something, it can be so life-like that it seems real.

Never       Rarely       Sometimes       Often       Always

18. When a misfortune happens to me I feel that it is 'just one of those things'.

Never       Rarely       Sometimes       Often       Always

19. Things people do can be special messages or signs just for me.

Never       Rarely       Sometimes       Often       Always

20. I feel that I make good things happen just by wishing for them.

Never       Rarely       Sometimes       Often       Always

21. Things feel unreal, as if I am in a film or play.

Never       Rarely       Sometimes       Often       Always

22. My daydreams seem real.

Never       Rarely       Sometimes       Often       Always

23. I feel as if I can 'will' misfortunes or accidents to happen to other people.

Never       Rarely       Sometimes       Often       Always

24. People I don't know try to pass hints or messages to me using signs or signals.

Never       Rarely       Sometimes       Often       Always

25. I think that many events are determined by the plan of some great power.

Never       Rarely       Sometimes       Often       Always

26. I do things without really meaning to or knowing why I do them.

Never       Rarely       Sometimes       Often       Always

27. My ability to see or hear properly is affected, without any obvious reason.

Never       Rarely       Sometimes       Often       Always

28. I think that when bad things happen it is just bad luck.

Never       Rarely       Sometimes       Often       Always

29. Thoughts and ideas seem to pop into my head for no particular reason.

Never       Rarely       Sometimes       Often       Always

30. I seem to remember being to a place before, but I know that I couldn't have been.

Never       Rarely       Sometimes       Often       Always

31. It feels as if I am able to 'will' good things to happen for other people.

Never       Rarely       Sometimes       Often       Always

32. My body feels strange, as if it doesn't really belong to me.

Never       Rarely       Sometimes       Often       Always

33. It seems that I have already done things when I have only thought about doing them.

Never       Rarely       Sometimes       Often       Always

34. Other people seem to be unaware of the effects of what they do and say.

Never       Rarely       Sometimes       Often       Always

35. I think that accidents happen for no particular reason.

Never       Rarely       Sometimes       Often       Always

36. Strangers that I pass in the street seem to be saying things that are meant for me.

Never       Rarely       Sometimes       Often       Always

37. I feel ill or poorly although there is nothing wrong with me.

Never       Rarely       Sometimes       Often       Always

38. I think that things happen as a result of mystical powers or unseen forces.

Never       Rarely       Sometimes       Often       Always

39. I have found myself walking or driving without really knowing where I'm going or why.

Never       Rarely       Sometimes       Often       Always

40. Memories come back to me so realistically that I seem to be re-living the experience.

Never       Rarely       Sometimes       Often       Always

41. It seems that I can make things happen by 'mind power'.

Never       Rarely       Sometimes       Often       Always

42. I feel detached from events, as if I am watching myself.

Never       Rarely       Sometimes       Often       Always

43. I say things without really meaning to or knowing why I do.

Never       Rarely       Sometimes       Often       Always

44. People seem do things without any particular reason or purpose.

Never       Rarely       Sometimes       Often       Always

45. People I don't know seem to do or say things that are meant to hurt or upset me.

 Never Rarely Sometimes Often Always

46. My body twitches or cramps up unexpectedly.

 Never Rarely Sometimes Often Always

## QUESTIONNAIRE II

### INSTRUCTIONS

This booklet contains descriptions of how you may have felt, thought, or acted *recently*.

After reading each statement you have to put a circle round either 'False' or 'True', depending upon which is the correct answer for you. On the occasions when you have marked 'True' you then have to indicate how much this *upset* you. Do this by putting a circle round the *one* phrase or word which best explains this.

If you had marked 'False' with a circle you would just go on to read the next statement.

Your answers will be regarded as strictly confidential.

### EXAMPLES

1. Recently I have been getting frequent headaches.

False

True

If true, this has upset me:-

Unbearably

A lot

A bit

The first example would mean that recently you have been getting frequent headaches, which upset you a lot.

2. Recently my concentration has been poor.

False

True

If true, this has upset me:-

A bit

A lot

Unbearably

The second example would mean that recently your concentration has been poor, which upset you a bit.

3. Recently people have been getting on my nerves.

False

True

If true, this has upset me:-

A bit

A lot

Unbearably

The third example would mean that recently people have *not* been getting on your nerves.

4. Recently I have worried about family troubles.

False

True

If true, this has upset me:-

A bit

A lot

Unbearably

The fourth example would mean that recently you had worried about family troubles, which has upset you unbearably.

If you are not sure what to do please ask *now*. Otherwise begin on the next page.

1. Recently I have been breathless *or* had a pounding of my heart.

False	True	If true, this has upset me:-		
		A bit	A lot	Unbearably

2. Recently I have lost the use of one of my arms *or* legs for a time.

False	True	If true, this has upset me:-		
		Unbearably	A lot	A bit

3. Recently I have felt that an organisation or group has been planning my downfall.

False	True	If true, how sure are you?		
		Not very	Fairly	Certain

4. Recently I have been excitedly happy for no particular reason.

False	True	If true, how often?		
		Nearly always	Often	Seldom

5. Recently I have been *unnecessarily* careful about carrying out even simple everyday tasks.

False	True	If true, this has upset me:-		
		A bit	A lot	Unbearably

6. Recently I have seen visions of strange things which no one else could see.

False	True	If true, how sure are you?		
		Certain	Fairly	Not very

7. Recently the future has seemed hopeless.

False	True	If true, how hopeless?		
		A bit	Very	Completely

8. Recently I have been afraid of heights.

False	True	If true, this has upset me:-		
		Unbearably	A lot	A bit

9. Recently I have considered myself superior to *everyone*.

False	True	If true, how sure are you?		
		Not very	Fairly	Certain

10. Recently I have had nagging doubts about nearly everything that I have done.

False	True	If true, this has upset me:-		
		Unbearably	A lot	A bit

11. Recently I have harmed people because I am unclean *or* evil.

False	True	If true, how sure are you?		
			Not very	Fairly
				Certain

12. Recently I have been sleep walking.

False	True	If true, this has upset me:-		
			Unbearably	A lot
				A bit

13. Recently, for no good reason, I have had feelings of panic.

False	True	If true, this has upset me,-		
			Unbearably	A lot
				A bit

14. Recently I lost my sight *or* hearing for a while and then it came back.

False	True	If true, this has upset me:-		
			A bit	A lot
				Unbearably

15. Recently there have been people trying to poison me or do me *very great harm*.

False	True	If true, how sure are you?		
			Certain	Fairly
				Not very

16. Recently I just haven't been able to stop laughing and joking with *everyone*.

False	True	If true, how often?		
			Seldom	Often
				Nearly always

17. Recently I have been unable to stop myself from counting, *or* tapping things, *or* uttering phrases *quite pointlessly*.

False	True	If true, this has upset me:-		
			Unbearably	A lot
				A bit

18. Recently I have felt that I have been interfered with sexually *or* electrically.

False	True	If true, how sure are you?		
			Not very	Fairly
				Certain

19. Recently I have lost interest in just about *everything*.

False	True	If true, how much loss?		
			Complete	A lot
				A bit

20. Recently I have had a fear of some harmless animal *or* insect.

False	True	If true, this has upset me:-		
			A bit	A lot
				Unbearably

21. Recently I have felt that I am a *very much* greater person than most people think.
- |       |      |                            |         |        |          |
|-------|------|----------------------------|---------|--------|----------|
| False | True | If true, how sure are you? |         |        |          |
|       |      |                            | Certain | Fairly | Not very |
22. Recently I have been afraid of the thought that I might make a physical attack on someone.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me:- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
23. Recently people have been talking about me because of my wicked deeds.
- |       |      |                            |         |        |          |
|-------|------|----------------------------|---------|--------|----------|
| False | True | If true, how sure are you? |         |        |          |
|       |      |                            | Certain | Fairly | Not very |
24. Recently I have lost my memory and forgotten who I was, *or* where I lived.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me:- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
25. Recently I have been so 'worked up' that I couldn't sit still.
- |       |      |                              |            |       |       |
|-------|------|------------------------------|------------|-------|-------|
| False | True | If true, this has upset me:- |            |       |       |
|       |      |                              | Unbearably | A lot | A bit |
26. Recently I have had pains which *moved about* to different parts of my body.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me:- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
27. Recently someone has *deliberately* tried to make me ill.
- |       |      |                            |        |          |           |
|-------|------|----------------------------|--------|----------|-----------|
| False | True | If true, how sure are you? |        |          |           |
|       |      |                            | Fairly | Not very | Uncertain |
28. Recently new ideas and schemes have been *rushing* through my head one after another.
- |       |      |                     |        |       |               |
|-------|------|---------------------|--------|-------|---------------|
| False | True | If true, how often? |        |       |               |
|       |      |                     | Seldom | Often | Nearly always |
29. Recently I have had to keep checking things again and again *quite unnecessarily*.
- |       |      |                              |            |       |       |
|-------|------|------------------------------|------------|-------|-------|
| False | True | If true, this has upset me:- |            |       |       |
|       |      |                              | Unbearably | A lot | A bit |
30. Recently I have wondered whether I am male or female.
- |       |      |                               |       |      |           |
|-------|------|-------------------------------|-------|------|-----------|
| False | True | If true, how puzzled are you? |       |      |           |
|       |      |                               | A bit | Very | Extremely |

31. Recently I have been so depressed that I have thought of doing away with myself.
- |       |      |                         |            |          |
|-------|------|-------------------------|------------|----------|
| False | True | If true, how seriously? |            |          |
|       |      |                         | Completely | Very     |
|       |      |                         |            | Not very |
32. Recently I have been afraid of handling some weapon or sharp object.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | A lot      |
|       |      |                              |       | Unbearably |
33. Recently I have felt that I have been sent to save the world.
- |       |      |                            |         |          |
|-------|------|----------------------------|---------|----------|
| False | True | If true, how sure are you? |         |          |
|       |      |                            | Certain | Fairly   |
|       |      |                            |         | Not very |
34. Recently I have had an *unreasonable* fear that I might forget to do something and then something *really awful* might happen.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | A lot      |
|       |      |                              |       | Unbearably |
35. Recently I have thought that the world is such an evil place that I, and those nearest to me, would be better out of it.
- |       |      |                            |         |          |
|-------|------|----------------------------|---------|----------|
| False | True | If true, how sure are you? |         |          |
|       |      |                            | Certain | Fairly   |
|       |      |                            |         | Not very |
36. Recently all my behaviour became like that of a young child for quite some time.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | A lot      |
|       |      |                              |       | Unbearably |
37. Recently I have had a pain *or* tense feeling in my neck or head.
- |       |      |                              |            |       |
|-------|------|------------------------------|------------|-------|
| False | True | If true, this has upset me:- |            |       |
|       |      |                              | Unbearably | A lot |
|       |      |                              |            | A bit |
38. Recently I have often had difficulty in keeping my balance.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | A lot      |
|       |      |                              |       | Unbearably |
39. Recently people have been secretly plotting to ruin me.
- |       |      |                            |         |          |
|-------|------|----------------------------|---------|----------|
| False | True | If true, how sure are you? |         |          |
|       |      |                            | Certain | Fairly   |
|       |      |                            |         | Not very |

40. Recently I have had so much pep and energy that I could hardly stop doing things.
- |       |      |                     |        |               |
|-------|------|---------------------|--------|---------------|
| False | True | If true, how often? |        |               |
|       |      |                     | Seldom | Often         |
|       |      |                     |        | Nearly always |
41. Recently I have kept having to wash myself *again and again*.
- |       |      |                              |            |       |
|-------|------|------------------------------|------------|-------|
| False | True | If true, this has upset me:- |            |       |
|       |      |                              | Unbearably | A lot |
|       |      |                              |            | A bit |
42. Recently someone else has been doing the thinking that goes on in my head.
- |       |      |                            |          |         |
|-------|------|----------------------------|----------|---------|
| False | True | If true, how sure are you? |          |         |
|       |      |                            | Not very | Fairly  |
|       |      |                            |          | Certain |
43. Recently I have been so miserable that I have had difficulty with my sleep.
- |       |      |                              |            |       |
|-------|------|------------------------------|------------|-------|
| False | True | If true, this has upset me:- |            |       |
|       |      |                              | Unbearably | A lot |
|       |      |                              |            | A bit |
44. Recently I have had an *unreasonable* fear of germs.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | A lot      |
|       |      |                              |       | Unbearably |
45. Recently I have felt I must tell the whole world of my brilliant ideas.
- |       |      |                            |         |          |
|-------|------|----------------------------|---------|----------|
| False | True | If true, how sure are you? |         |          |
|       |      |                            | Certain | Fairly   |
|       |      |                            |         | Not very |
46. Recently I have had nagging fears that someone close to me might be killed or seriously injured.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | A lot      |
|       |      |                              |       | Unbearably |
47. Recently I have felt that I am condemned *forever*.
- |       |      |                            |         |          |
|-------|------|----------------------------|---------|----------|
| False | True | If true, how sure are you? |         |          |
|       |      |                            | Certain | Fairly   |
|       |      |                            |         | Not very |
48. Recently people around me have seemed strange, unfamiliar, or different.
- |       |      |                                   |            |            |
|-------|------|-----------------------------------|------------|------------|
| False | True | If true, are they <i>really</i> ? |            |            |
|       |      |                                   | Not really | Not sure   |
|       |      |                                   |            | Really are |
49. Recently I have worried about every little thing.
- |       |      |                              |            |       |
|-------|------|------------------------------|------------|-------|
| False | True | If true, this has upset me:- |            |       |
|       |      |                              | Unbearably | A lot |
|       |      |                              |            | A bit |

50. Recently I have been unable to control my violent shaking.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me:- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
51. Recently someone has had evil designs against me.
- |       |      |                            |         |        |          |
|-------|------|----------------------------|---------|--------|----------|
| False | True | If true, how sure are you? |         |        |          |
|       |      |                            | Certain | Fairly | Not very |
52. Recently I have been absolutely 'on top of the world'.
- |       |      |                     |        |       |               |
|-------|------|---------------------|--------|-------|---------------|
| False | True | If true, how often? |        |       |               |
|       |      |                     | Seldom | Often | Nearly always |
53. Recently I have felt *compelled* to do things in a certain order, *or* a certain number of times, to guard against something going wrong.
- |       |      |                              |            |       |       |
|-------|------|------------------------------|------------|-------|-------|
| False | True | If true, this has upset me:- |            |       |       |
|       |      |                              | Unbearably | A lot | A bit |
54. Recently voices have spoken to me when no one was there at all.
- |       |      |                            |          |        |         |
|-------|------|----------------------------|----------|--------|---------|
| False | True | If true, how sure are you? |          |        |         |
|       |      |                            | Not very | Fairly | Certain |
55. Recently I have been so low in spirits that I have sat for ages doing absolutely nothing.
- |       |      |                              |            |       |       |
|-------|------|------------------------------|------------|-------|-------|
| False | True | If true, this has upset me:- |            |       |       |
|       |      |                              | Unbearably | A lot | A bit |
56. Recently I have had a fear of enclosed spaces.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me:- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
57. Recently I have felt that I have a mission to carry out of great importance to the world.
- |       |      |                            |         |        |          |
|-------|------|----------------------------|---------|--------|----------|
| False | True | If true, how sure are you? |         |        |          |
|       |      |                            | Certain | Fairly | Not very |
58. Recently nasty thoughts *or* words have kept running through my mind *against my will*.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me:- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
59. Recently I have felt that I have committed the unforgivable sin.
- |       |      |                            |         |        |          |
|-------|------|----------------------------|---------|--------|----------|
| False | True | If true, how sure are you? |         |        |          |
|       |      |                            | Certain | Fairly | Not very |

60. Recently things around me have seemed odd, unfamiliar, or changed.
- |       |      |   |
|-------|------|---|
| False | True | If true, are they really odd or do they just seem so? |
|       |      | Not really      Not sure      Really are              |
61. Recently worrying has kept me awake at night.
- |       |      |                                  |
|-------|------|----------------------------------|
| False | True | If true, this has upset me:-     |
|       |      | Unbearably      A lot      A bit |
62. Recently I have had fits.
- |       |      |                                  |
|-------|------|----------------------------------|
| False | True | If true, this has upset me:-     |
|       |      | A bit      A lot      Unbearably |
63. Recently I have thought that I was being followed for a special reason.
- |       |      |                                   |
|-------|------|-----------------------------------|
| False | True | If true, how sure are you?        |
|       |      | Certain      Fairly      Not very |
64. Recently I have been so cheerful that I have wanted to decorate myself with *much brighter, more* colourful things, than I usually do.
- |       |      |                                      |
|-------|------|--------------------------------------|
| False | True | If true, how often?                  |
|       |      | Seldom      Often      Nearly always |
65. Recently I have had to wash things *again and again* to make absolutely certain that they were safe.
- |       |      |                                  |
|-------|------|----------------------------------|
| False | True | If true, this has upset me:-     |
|       |      | Unbearably      A lot      A bit |
66. Recently I have felt there was a special meaning in one side of my body being different from the other.
- |       |      |                                   |
|-------|------|-----------------------------------|
| False | True | If true, how sure are you?        |
|       |      | Not very      Fairly      Certain |
67. Recently I have been depressed without knowing why.
- |       |      |                                 |
|-------|------|---------------------------------|
| False | True | If true, how depressed?         |
|       |      | Extremely      Very      Fairly |
68. Recently I have been frightened of going into crowds or social gatherings.
- |       |      |                                  |
|-------|------|----------------------------------|
| False | True | If true, this has upset me:-     |
|       |      | A bit      A lot      Unbearably |

69. Recently I have thought that I am the richest person in the world.
- |       |      |                            |         |        |          |
|-------|------|----------------------------|---------|--------|----------|
| False | True | If true, how sure are you? |         |        |          |
|       |      |                            | Certain | Fairly | Not very |
70. Recently I have been worried by the thought that certain things might have been left lying around.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me:- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
71. Recently I have felt that I am the vilest, most wicked person alive.
- |       |      |                            |         |        |          |
|-------|------|----------------------------|---------|--------|----------|
| False | True | If true, how sure are you? |         |        |          |
|       |      |                            | Certain | Fairly | Not very |
72. Recently I have lost consciousness for a few seconds without actually falling.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me.- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
73. Recently I have been so anxious that I couldn't make up my mind about the simplest thing.
- |       |      |                       |           |      |        |
|-------|------|-----------------------|-----------|------|--------|
| False | True | If true, how anxious? |           |      |        |
|       |      |                       | Extremely | Very | Fairly |
74. Recently I have had burning *or* tingling sensations under my skin which were much worse than 'pins and needles'.
- |       |      |                              |       |       |            |
|-------|------|------------------------------|-------|-------|------------|
| False | True | If true, this has upset me:- |       |       |            |
|       |      |                              | A bit | A lot | Unbearably |
75. Recently people have been trying to drive me insane.
- |       |      |                            |         |        |          |
|-------|------|----------------------------|---------|--------|----------|
| False | True | If true, how sure are you? |         |        |          |
|       |      |                            | Certain | Fairly | Not very |
76. Recently things could not have been better in *any* way.
- |       |      |  |               |       |               |
|-------|------|--|---------------|-------|---------------|
| False | True | If true, how often have you felt that way? |               |       |               |
|       |      |  | Now and again | Often | Nearly always |
77. Recently I have felt *compelled* to keep on touching things.
- |       |      |                              |            |       |       |
|-------|------|------------------------------|------------|-------|-------|
| False | True | If true, this has upset me:- |            |       |       |
|       |      |                              | Unbearably | A lot | A bit |
78. Recently my feelings have been taken over by someone.
- |       |      |                            |          |        |         |
|-------|------|----------------------------|----------|--------|---------|
| False | True | If true, how sure are you? |          |        |         |
|       |      |                            | Not very | Fairly | Certain |

79. Recently I have gone to bed not caring if I never woke up.
- |       |      |                                |             |        |
|-------|------|--------------------------------|-------------|--------|
| False | True | If true, how serious was this? |             |        |
|       |      |                                | Desperately | Fairly |
|       |      |                                | Very        |        |
80. Recently I have been quite unable to bring myself to go out alone.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | Unbearably |
|       |      |                              | A lot |            |
81. Recently I have felt that I have special, almost magical, powers.
- |       |      |                            |         |          |
|-------|------|----------------------------|---------|----------|
| False | True | If true, how sure are you? |         |          |
|       |      |                            | Certain | Not very |
|       |      |                            | Fairly  |          |
82. Recently I have had persistent feelings of having left something unfinished without knowing what.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | Unbearably |
|       |      |                              | A lot |            |
83. Recently I have felt that my insides are all rotten.
- |       |      |                            |         |          |
|-------|------|----------------------------|---------|----------|
| False | True | If true, how sure are you? |         |          |
|       |      |                            | Certain | Not very |
|       |      |                            | Fairly  |          |
84. Recently I have found myself in some place without knowing *why* I was there or *how* I got there.
- |       |      |                              |       |            |
|-------|------|------------------------------|-------|------------|
| False | True | If true, this has upset me:- |       |            |
|       |      |                              | A bit | Unbearably |
|       |      |                              | A lot |            |

## APPENDIX D

Means and standard deviations for males and females for the study variables; Levine's test p values for equality of variances; and, the t values applicable to group differences (two-tailed, and without adjustment for multiple comparisons)

	Gender	N	Mean	Std. Deviation	Whether Equal Variances Assumed	Levene's Test for Equality of Variances		t-test for Equality of Means		
						F	Sig.	t	df	Sig. (2-tailed)
Global functioning (Global Assessment of Functioning: GAF)	Male	47	50.91	14.81	Assumed	3.72	.057	-2.43	102.00	.017
	Female	57	57.26	11.79	Not assumed			-2.38	87.09	.019
Unusual Conscious Experiences (Conscious Experiences Questionnaire: CEQ)	Male	47	66.00	25.57	Assumed	1.12	.292	-1.25	102.00	.214
	Female	57	71.98	23.14	Not assumed			-1.24	93.92	.218
CEQ subscales and derived variables:										
Feelings of Unreality	Male	47	5.89	4.23	Assumed	0.32	.575	-2.45	102.00	.016
	Female	57	8.02	4.52	Not assumed			-2.47	100.36	.015
Déjà Vu	Male	47	3.17	1.86	Assumed	0.04	.849	0.94	102.00	.352
	Female	57	2.82	1.89	Not assumed			0.94	98.90	.351
Imagined Seems Real	Male	47	8.57	4.08	Assumed	0.01	.927	-0.83	102.00	.407
	Female	57	9.25	4.10	Not assumed			-0.83	98.42	.407
Mind Control	Male	47	3.66	4.03	Assumed	2.10	.150	-0.68	102.00	.499
	Female	57	4.16	3.46	Not assumed			-0.67	91.22	.506
Passivity Phenomena	Male	47	6.85	3.40	Assumed	0.90	.344	-2.52	102.00	.013
	Female	57	8.75	4.17	Not assumed			-2.57	101.99	.012
Somatic Control	Male	47	7.81	3.18	Assumed	0.01	.937	-1.11	102.00	.268
	Female	57	8.56	3.62	Not assumed			-1.13	101.57	.262
Referential Thinking	Male	47	6.11	4.49	Assumed	3.62	.060	1.58	102.00	.118
	Female	57	4.88	3.46	Not assumed			1.54	85.30	.128
Mindblindness	Male	47	7.26	3.24	Assumed	5.63	.020	-0.58	102.00	.566
	Female	57	7.56	2.15	Not assumed			-0.55	77.23	.581
Powerful Forces	Male	47	7.38	5.75	Assumed	5.96	.016	0.02	102.00	.988
	Female	57	7.37	4.39	Not assumed			0.01	84.67	.989
Chance Beliefs	Male	47	9.30	3.83	Assumed	0.63	.431	-1.81	102.00	.073
	Female	57	10.61	3.58	Not assumed			-1.80	95.48	.076

Continued on next page

APPENDIX D: (Continued)

	Gender	N	Mean	Std. Deviation	Whether Equal Variances Assumed	Levene's Test for Equality of Variances		t-test for Equality of Means		
						F	Sig.	t	df	Sig. (2-tailed)
Intentionality generally	Male	47	31.68	13.18	Assumed	0.12	.726	-0.88	102.00	.382
	Female	57	33.91	12.67	Not assumed			-0.87	96.72	.384
Intentionality (self)	Male	47	18.32	7.79	Assumed	0.47	.495	-1.85	102.00	.067
	Female	57	21.47	9.31	Not assumed			-1.88	101.97	.063
Intentionality (others)	Male	47	13.36	6.83	Assumed	9.80	.002	0.84	102.00	.405
	Female	57	12.44	4.35	Not assumed			0.80	75.02	.425
Non-intentionality subscales	Male	47	34.32	13.69	Assumed	1.93	.168	-1.51	102.00	.135
	Female	57	38.07	11.67	Not assumed			-1.49	90.86	.141
Externalisation errors in relation to Actions of the self	Male	47	14.66	5.63	Assumed	1.07	.303	-2.08	102.00	.040
	Female	57	17.32	7.13	Not assumed			-2.12	101.82	.036
Internalisation errors (perception)	Male	47	9.06	5.41	Assumed	0.34	.562	-1.61	102.00	.110
	Female	57	10.84	5.76	Not assumed			-1.62	100.22	.108
DSSI subscale and derived variables:										
Delusions of persecution	Male	45	2.58	3.96	Assumed	26.37	.000	2.78	100.00	.006
	Female	57	0.96	1.67	Not assumed			2.56	56.35	.013
Delusions of grandeur	Male	45	2.91	4.38	Assumed	4.28	.041	2.01	100.00	.047
	Female	57	1.44	3.02	Not assumed			1.92	74.91	.058
Delusions of contrition	Male	45	2.71	3.45	Assumed	0.00	.976	0.56	100.00	.578
	Female	57	2.33	3.35	Not assumed			0.56	93.23	.579
Conversion symptoms	Male	45	1.91	2.72	Assumed	0.27	.602	-0.31	100.00	.754
	Female	57	2.07	2.38	Not assumed			-0.31	88.04	.758
Dissociative symptoms	Male	45	1.60	2.38	Assumed	0.06	.801	-0.56	100.00	.579
	Female	57	1.88	2.58	Not assumed			-0.56	97.63	.575
Passivity delusions	Male	45	1.31	2.04	Assumed	0.02	.904	0.52	100.00	.606
	Female	57	1.11	1.95	Not assumed			0.52	92.52	.608
Hallucinations	Male	45	1.20	1.97	Assumed	1.40	.239	0.92	100.00	.360
	Female	57	0.86	1.76	Not assumed			0.91	88.96	.367
Symptom related distress	Male	45	22.87	17.36	Assumed	0.06	.803	-1.23	100.00	.222
	Female	57	27.11	17.28	Not assumed			-1.23	94.38	.223