UNIVERSITY OF SOUTHAMPTON

FACULTY OF MEDICINE

Clinical Experimental Sciences

Volume 1 of 1

The Exploration and Differentiation of Early and Late Onset Psychosis

by

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Thesis for the degree of Doctor of Medicine

August 2015

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

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Lisa Taylor

Background: Schizophrenia is a heterogeneous disorder; the mean global lifetime prevalence has been reported 0.4% and point prevalence as 0.46 % (Saha, S et al 2005). It is a highly-stigmatised disorder. It is generally considered to be an illness that starts in early adult life, but a significant proportion of those with schizophrenia (around 15%) develop the disorder between the ages of 40 and 60 years. There is uncertainty whether the late onset condition is a discrete entity or lies on a continuum with early onset schizophrenia. Four sub-groups based on the stress vulnerability model have been proposed; drug related, traumatic, stress sensitivity and anxiety psychosis. A semi-structured clinical interview (SCIPS) has been developed to classify these sub-groups. Age of onset is a core characteristic of the stress sensitivity and anxiety psychoses. Stress sensitivity psychosis is regarded as an early onset disorder (under 30 years old) and anxiety psychosis a late onset psychosis (after 30 years old).

Aims: This study aimed to explore the differences and similarities between the stress sensitivity and anxiety psychosis sub-groups; to see if they are discrete sub-groups which correspond to early and late onset psychoses. This study also aimed to explore psychoses with an onset between 40 and 60 years old, to differentiate this group from early onset psychosis and determine if late onset psychosis is a discrete homogenous disorder or lies on a continuum with early onset psychosis.

Methodology: Participants aged 18 to 65 years old with early or late onset psychosis were recruited by convenience sampling and classified into anxiety or stress sensitivity psychosis using the SCIPS tool. Data on socio-demographic, clinical and psychological variables was analysed using two independent samples tests; t-test, Mann-Whitney U test, chi-squared and Fisher's exact test. Spearman's rank correlation coefficient was used to analyse the relationship of the variables with age.

Results and conclusions: The results fail to confirm the hypothesis that stress sensitivity psychosis is an early onset disorder and anxiety psychosis is a late onset disorder. The study did not find any significant differences in any of the demographic, clinical or psychological variables between the participants classified as stress sensitivity psychosis or anxiety psychosis suggesting they are homogenous and not distinct sub-groups. The study found some significant differences between the late and early onset groups, in particular higher levels of persecution and systematization of delusions and a greater proportion of females in the late onset group. Positive correlations were found between age of onset and both thoughts of persecution and systematisation of delusions. Systematised delusions and persecutory delusions and later age of onset are characteristics of the proposed anxiety psychosis subgroup but neither are necessary in the classification scheme. The correlations therefore are not sufficient to differentiate between the anxiety and stress sensitivity subgroups. Many of the clinical and demographic results were inconsistent with the existing literature on early and late onset psychosis. The late onset group had higher levels of self-serving attributional bias; no other differences in the psychological variables measured were found between the sub-groups.

This study is exploratory and the findings are limited due to the small sample size; type 2 errors in the statistical analysis may have occurred. The exclusion of individuals with drug related and trauma psychosis also limits the generalizability of the results and may confound some of the findings when comparing the early and late onset groups. The results need confirming in larger studies.

The results from this study failed to confirm the validity of the stress sensitivity and anxiety subgroups. This may inform future research into schizophrenia and into whether subgroups exist and if so the nature of them. The validity of the SCIPS tool has not been confirmed and requires further evaluation if there is to be further exploration and revision of the subgroups it has been developed to classify participants into.

This exploratory study demonstrates the proposed subgroups are not valid alternatives to the current classification system. The positive and negative findings relating to the age of onset of psychosis may contribute to the knowledge base of schizophrenia and the psychotic disorders.

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DECLARATION OF AUTHORSHIP

I, Lisa Taylor declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

The Exploration and Differentiation of Early and Late Onset Psychosis

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission.
8. Signed:  Date: 25.8.15

Acknowledgements

I would like to thank Professor David Kingdon, University of Southampton, for giving me the opportunity to become involved in psychosis research in the early stages of my psychiatry training. I am grateful for his guidance, patience and inclusivity throughout this time.

Dr Lars Hansen, Southern Health NHS Foundation Trust, Southampton, has provided endless enthusiasm, positivity and encouragement with this study. I am very grateful for his support, advice and time.

I am very grateful to Mr Scott Harris, Medical Statistician, Public Health Sciences & Medical Statistics, University of Southampton for his support with the statistical analysis.

This research could not have taken place without the involvement of colleagues from teams throughout Southern Health NHS Foundation Trust, who assisted with the recruitment of participants. I am also extremely thankful to the service users who gave up their time to participate. Participants were very supportive and often displayed genuine interest and desire to be involved in the research of psychosis.

I am very grateful to Dr Alison Collins for her advice and guidance during the writing of the thesis, and for proof reading the final version. Dr Matt Symons very kindly gave his time to assist with formatting and proof reading.

I am very appreciative of the support and tolerance of my husband and children when my research commitments interfered with family life.

Definitions of Abbreviations

ASQ	Attributional Style Questionnaire
CBT	Cognitive behaviour therapy
CPRS	Comprehensive Psychopathological Rating Scale
DSM	Diagnostic and Statistical Manual of Mental Disorders
EOP	Early onset psychosis
EOS	Early onset schizophrenia
GAF	Global Assessment of Functioning
ICD	International Classification of Diseases
JTC	Jumping to conclusions
LOP	Late onset psychosis
LOS	Late onset schizophrenia
RSE	Rosenberg Self-Esteem Scale
SCID	Structured Clinical Interview for DSM IV disorders
SCIPS	Structured Clinical Interview for Psychosis
SE	Standard error of the mean

Chapter 1: Schizophrenia and Psychosis

1.1 Introduction

Schizophrenia is a very complex chronic disorder with a huge burden both on the individual and on society. A mean global life time prevalence of 0.4% schizophrenia has been reported (Saha S et al 2005). It is a diagnosis that has been frequently misunderstood and stigmatised. It places a huge economic and social burden on society (Kings Fund 2010) while patients not only face stigma but also social decline and a high comorbidity of physical illness (Dept. Health 2001). Difficulties with diagnosis and classification have continued since it was first described by Bleuler over a century ago (Bleuler 1911).

It is fundamentally a heterogeneous disorder with very varied symptomology, course, treatment response and outcome. Schizophrenia, schizoaffective and delusional disorders ('the psychoses') comprise the group of psychoses but there is little consensus on their differentiation, and so, as in most studies, this research will discuss and explore the group as a whole.

The mental and behavioural symptoms of Schizophrenia and the psychoses are quite unique and individual. It is widely believed that homogenous sub-groups may lie within the umbrella diagnosis of schizophrenia. The concept of schizophrenia has been challenged with calls for renaming the disorder to tackle stigma and improve the validity and stability of the diagnosis (Andreasen 1995, Lieberman and First 2007, Kingdon, Taylor et al. 2013). Identification and differentiation of sub-groups may also assist with the reclassification, renaming and understanding of these complex conditions.

This thesis will explore classification of psychosis, in particular two of the sub-groups proposed by Kingdon and Turkington (Kingdon 2005) based on the stress vulnerability model and early and late onset psychosis which these sub-groups may correspond to. This research will review early and late onset psychosis and the

cognitive factors that are believed to be involved in the psychotic symptoms of these disorders. It will explore the role of these factors within the sub-groups, alongside demographic and clinical variables, exploring whether the sub-groups proposed can be differentiated into distinct groups or whether they lie within a continuum of psychosis (Turkington, Kingdon et al. 2006).

1.2 Classification

In 1911 Bleuler renamed Kraepelin's Dementia Praecox as Schizophrenia and recognised the influence of psychological factors in the development of the disorder. The diagnostic label has remained quite static. The term schizophrenia having been used since Bleuler described this diverse range of symptoms over 100 years ago. The disorder of schizophrenia is so varied that no single feature is either necessary or sufficient for the diagnosis.

Clinical practice and research requires classification of disorders to aid communication and ensure consistency within evidence based practice. Patients and their families often seek a formal diagnosis to help them understand their disorder and prognosis. Management, treatment and prognosis rely on diagnostic systems. Diagnostic terms not only have to be acceptable to both patients and professionals, but also to be reliable and valid.

Schizophrenia is a diagnostic category that has been shown to be a clinically useful term, but numerous limitations of the current categorical system of diagnosis have been argued (Dutta, Greene et al. 2007, Kingdon, Taylor et al. 2013, Lasalvia, Penta et al. 2015). Many patients do not accept the diagnosis and express very negative attitudes towards the term schizophrenia (Kingdon, Gibson et al. 2008).

Replacement terms for schizophrenia such as "salience dysregulation syndrome" (van Os 2009), "Neuro-Emotional Integration disorder" (Levin 2006) and "dopamine dysregulation disorder" (Sugiura, Sakamoto et al. 2001) have been suggested. There is international interest in renaming psychotic disorders. South Korea have adopted

a new term “Johyeonbyung” meaning Attunement Disorder which metaphorically describes schizophrenia as a mistuning of the brains neural network (Lee, Park et al. 2014). This is expected to be embraced within South Korea as it is seen as less stigmatising and accounts for less misunderstanding of the disorder. Japan has also renamed its term for schizophrenia "Seishin Bunretsu Byo" ("mind-split-disease") to “integration disorder” after a shift from the Kraepelinian disease concept to the vulnerability-stress model (Sato 2006). This has also been an attempt to tackle the stigmatisation of the disorder. Since the adoption of the new term the percentage of patients being informed of their diagnosis has doubled to 70% and it’s been noted that therapeutic alliance has improved with clinicians finding it easier and more acceptable to engage patients and discuss the disorder using the new terminology (Sugiura, Sakamoto et al. 2001). Other countries such as Canada, China and the Netherlands have also started to consider alternative names (Henderson and Malhi 2014).

Debate also continues whether a continuum of psychosis or the current categorical diagnostic systems are best suited for research and clinical practice. The diagnosis in ICD and DSM classification systems lack clearly defined validity and long term stability of the sub-groups (Deister and Marneros 1993). It has also been argued that there is a lack of clear zones of rarity between disorders with individuals often meeting multiple diagnostic criteria (Lawrie, Hall et al. 2010). It is also noted that there is significant heterogeneity of individuals within each of the diagnostic groups (Allardyce, Gaebel et al. 2007) suggesting the classification lacks diagnostic clarity. It is often seen as an umbrella diagnosis which would benefit from the delineation of sub-groups within it. Sub-group classification may give the patient a clearer and more defined understanding of their symptoms and difficulties. This in turn may enhance empowerment of the patient rather than overwhelming them with an uncertain, broad and non-specific diagnosis which they may feel poorly describes their experiences.

Psychotic symptoms such as delusions and hallucinations are on a continuous spectrum with the general population (van Os, Hanssen et al. 2001, Johns, Cannon et

al. 2004). Despite continuity with the general population psychosis symptoms remain qualitatively distinct from the normal experience and it remains likely there are underlying sub-groups which can be defined using categorical systems (Tyrer, Owen et al. 1984, Lawrie, Hall et al. 2010). Categories are more easily communicated and utilised than a continuum which may create more uncertainty for professionals and patients with uncertain cut off and positioning of the patient within the health care system.

Revisions of the DSM and ICD continue to fuel the debate surrounding classification and the suitability of terms. Sub-groups within the DSM and ICD classification systems have been modified over the updated editions (Heckers, Barch et al. 2013). The most recent revision, DSM-5, has removed all sub-groups of schizophrenia (paranoid, disorganised, catatonic, undifferentiated and residual) which previously were rarely utilised in clinical work or research.

1.3 Summary

Delineation of sub-groups within psychosis may help inform the debate on classification and the renaming of psychotic disorders. It may aid acceptance of alternative terminology for discrete sub-groups identified or the disorders as a whole, compared to the rather broad, stigmatised and often disliked current diagnostic term schizophrenia. Elucidation of differences and similarities of individuals within the heterogeneous population of psychoses will inform preventative measures, care pathways, treatment and prognosis.

Chapter 2: Psychosis Sub-groups

An evidence base for psychosocial interventions for Schizophrenia and psychosis has developed over the last twenty years (Bentall 1994, Kingdon and Turkington 2005, Freeman 2007). Over the last decade psychosocial interventions have developed such as cognitive behavioural therapy (CBT) with established evidence that cognitive therapy is an effective therapy for psychosis (Deister and Marneros 1993, Kingdon, Rathod et al. 2008, Mander and Kingdon 2015). Targeted at specific symptoms, in particular delusions and hallucinations, CBT has been shown to reduce symptoms, distress and increase adherence with medication (Turkington, Kingdon et al. 2002). CBT along with family interventions are incorporated into clinical guidelines (NICE Guidelines CG 178 2014)

Kingdon and Turkington report (Kingdon and Turkington 2005), that through their work in cognitive therapy of psychosis, (which requires investigation of the initial episode), at least four common presentations were apparent that required similar management plans. These groups, sensitivity psychosis, drug related psychosis, anxiety psychosis and traumatic psychosis, had certain variables that distinguished them from each other. These subgroups were initially developed with patients and informally tested with them and psychiatric staff. Opinion to the subgroups was also sought by Kingdon during training workshops and informally with psychiatrists and mental healthcare professionals

A pilot study (Kingdon, Gibson Kinoshita et al 2007) was undertaken to systematically investigate the attitudes of staff, service users and their relatives towards the term schizophrenia and the four psychosocial alternatives proposed. Participants were shown cards describing the four subgroups, schizophrenia and a sixth stating “none of these”, they were asked to match the description with their experience in particular of how their illness began, Patients and carers were positive towards alternatives to schizophrenia, consultant psychiatrists less so. The descriptions of the subgroups used can be found in Appendix A.

The research provided some support for the subgroupings, demonstrating the impact of stimulant and hallucinogenic drugs and the role of trauma and stress sensitivity in psychosis (Kinoshita, Kingdon et al 2011). Paranoid states where systematised delusions develop in mature individuals experiencing stressful situations led to the revival of Wernicke's term anxiety psychosis.

Medical student's attitudes to the proposed subgroups were explored, demonstrating less negative attitudes to the subgroups than to the term schizophrenia. A Q-sort methodology study undertaken by Dudley et al (Dudley, Siitarine, James, Dogson 2009) exploring the identification by patients of the self-determining factors which were involved in the precipitation of their disorder found subgrouping similar to the ones proposed by Kingdon et al (2007).

Kinoshita Kingdon et al determined the core characteristics of these proposed subgroups through exploration of the literature of the stress vulnerability model and of the common psychosocial characteristics of the proposed subgroups – such as drug use and trauma, age of onset, premorbid adjustment. Repeated discussion and revision with psychiatrists who had extensive clinical experience in treating and diagnosing schizophrenia allowed face validity to be determined and to determine the core characteristics of the subgroups and their translation to items on the Structured Clinical interview for psychosis (SCIPS) tool.

To determine interrater and test-retest reliability Kinoshita undertook a study with 42 participants with DSM-IV diagnosis of schizophrenia (Kinoshita, Kingdon et al 2012). The interview was carried out twice by two independent researchers who were blind to the other diagnosis. 20 of the participants returned two weeks later for a second interview to determine retest reliability. Kingdon who had originally conceptualised the subgroups then remained blind to the diagnosis given collected data from the notes and classified each participant into the four subgroups. Inter-rater reliability for each item on the SCIPS subgroup diagnosis was calculated, ranging from kappa coefficient of 0.47 for item 1.2 mode of onset to 0.90 traumatic experience.

The work described above based on cognitive therapy, clinical work and discussion with patients and professionals has led to the delineation of four psychosocial sub-groups of schizophrenia based on the vulnerability stress model (Kingdon, Gibson et al. 2008).

The proposed sub-groups are:

- Anxiety psychoses
- Stress sensitivity psychoses
- Traumatic psychoses
- Drug related psychoses

The proposed sub-groups names, as above, have been shown to be acceptable to patients and carers, however professionals felt they were too imprecise and expressed concerns regarding the combination of anxiety with psychosis (Kingdon, Gibson et al. 2008). The sub-groups have been shown to be associated with less negative attitudes of medical students to people diagnosed with schizophrenia (Kingdon, Gibson et al. 2008). It is believed that such sub-groups will allow a greater understanding of the psychopathology patients present with. This in turn will result in enhanced understanding of the disorder and further the development of treatment for these different disorders. The use of sub-groups and alternative terminology may also aid de-stigmatising schizophrenia and increase understanding of and empowerment for patients (Bentall, Jackson et al. 1988, Kingdon, Taylor et al. 2013).

2.1 The Structured Clinical Interview for Psychosis (SCIPS)

A diagnostic tool The Structured Clinical Interview for Psychosis (SCIPS) has been developed to sub-group patients according to this classification system (Kinoshita, Kingdon et al. 2012). The SCIPS tool can be found in appendix A. The SCIPS interview is semi structured interview which contains questions to be posed by the interviewer and explanations how to assess the respondents answers thereafter assisting in the standardisation of ratings. The SCIPS can be used by a mental health practitioner due

to the standardisation of questions and explicit instruction on marking so training is not required. It takes approximately 15 minutes to complete.

The SCIPS requires information to be gathered in three subsections. The first section gathers information on the age and the mode of onset of psychosis and any stressful life events that may have taken place. The second gathers information on social functioning including pre-morbid relationships. The third section gathers information on factors relating to the aetiology of the psychosis includes drug use and early traumatic experiences. Each item has questions to put to the participant and instructions are included on how to rate the responses. To explore stressful triggers that may have occurred in the three months prior to the onset of the psychotic symptoms the Social Readjustment Rating Scale Questionnaire is used alongside SCIPS. The participants are asked to identify any event on the social readjustment scale which may have happened three months prior to the onset of psychotic symptoms and this is then rated by the researcher as scoring less than 40 or above 40. This then is scored on the SCIPS as per the instruction provided,

The DSM-IV Diagnostic Criteria for Borderline Personality disorder is also used alongside SCIPS. The presence of the borderline personality diagnosis (with co-morbid psychotic symptoms, hence the psychosis sub group classification) would classify the participant within the traumatic psychosis group.

The diagnostic criteria for the SCIPS sub-groups are in two parts – The first section assesses if the participant belongs to the drug related or traumatic psychosis group. The use of psychoactive substances is recorded and if used 2 weeks prior to onset of psychotic symptoms the drug related criteria are met. If these criteria are not met then the criteria goes on to assess if the anxiety or stress sensitivity group should be used. SCIPS criteria allow for the co-existence of drug related and traumatic psychosis but anxiety and stress sensitivity classifications should not exist with any other subtype.(Kinoshita, Kingdon et al. 2012) The diagnostic tool has a hierarchal approach and drug related and traumatic psychosis have precedence over the anxiety psychosis and stress sensitivity psychosis subgroup, so they can only be

diagnosed if excluded from the drug or traumatic subgroups. (Kinoshita, Kingdon et al 2012)

During the development of SCIPS by Kinoshita Kingdon et al 2012 Kappa coefficients were calculated for inter-rater reliability and test-retest reliability for each item within the SCIPS and for the tool as a whole. Kappa coefficients were calculated for each item within the SCIPS. A Kappa Coefficient is often judged as moderate if >0.40 and substantial if >0.60. A Kappa coefficient greater than 0.80 would generally be seen as an indication of good agreement (Petrie, Sabin 2003). Inter-rater reliability for some of the items within the SCIPS tool were reported as comparatively low when compared with other items within the SCIPS, but still with kappa coefficients that were moderate and therefore acceptable (Kinoshita, Kingdon et al. 2012). For example, the kappa coefficient for the mode of onset item is reported by Kinoshita as 0.47 (0.45 -1.32), and item on premorbid close relationships as 0.50 (0.12 – 1.30) which is low when compared to the items such as age of first onset with a Kappa coefficient (95% CI) of 0.89 (0.45-1.32) and item on traumatic experience with a Kappa coefficient of 0.90 (0.46-1.33).

The kappa coefficient (95% Confidence Interval) for internal reliability is reported as 0.93 (0.66-1.20) and 0.73 (0.47 – 1.00) for concurrent validity which was calculated for SCIPS diagnosis and subgrouping as determined independently by Kingdon (Kinoshita, Kingdon et al. 2012). Therefore, the SCIPS has demonstrated concurrent validity and high reliability but has yet to be used in clinical practice or research. The construct validity is yet to be established.

Therefore, some questions within the SCIPS had higher reliability values calculated than others. The SCIPS allows further research and exploration of the sub-groups, minimising discrepancy between interviewers and ensuring consistency when applying the sub-groups to individuals with psychosis. It may also be used as an assessment tool prior to starting cognitive therapy, as information collected by SCIPS is relevant to such therapy which often explores the psychosocial factors involved in the onset of the symptoms (Kingdon 2005).

2.2 Sub-group Definitions

The determination of the SCIPS diagnosis is dependent on age of onset, mode of onset, pre-morbid adjustment and aetiology such as drug misuse or traumatic experience. Psychosocial research has provided some support for these groupings, in particular stimulant and hallucinogenic drugs, the role of trauma and stress sensitivity (Kinoshita, Kingdon et al. 2012). The core characteristics are of the groups as defined by Kinoshita and Kingdon are as follows:

Stress Sensitivity Psychosis

- The person is more sensitive to stress with a high emotional reactivity to daily hassles and stresses.
- They are less sociable with fewer friends in childhood and adolescence and tend not to have spouses or partners prior to the onset of psychosis.
- It is proposed that stress-sensitivity psychosis is an early onset psychosis with age of onset usually in teens or early 20s.
- It has an insidious onset (more than one month).
- The symptoms in stress sensitivity psychosis are diverse but negative symptoms in early stages are prominent.

Anxiety Psychosis

- The person will have experienced stressful life events which precede the onset of psychotic symptoms within three months.
- The person has had good peer relationships and usually developed close relationships with a spouse or partner.
- The age of onset is usually in 30s or older.
- It has an acute onset (less than one month)
- The symptoms are characterised by delusions particularly those which are systematised.
- Hallucinations and negative symptoms are less prominent.

Drug Related Psychosis

- The person has used stimulants/hallucinogens within two weeks prior to the onset of the psychosis.
- The person tends to be young (in teens or 20s).
- Onset is acute or insidious
- Relatively sociable with many friends and may have a partner or spouse.
- Symptoms are diverse, negative symptoms are less prominent.

Traumatic Psychosis

- Onset in teens or 20s.
- Acute or insidious.
- Chaotic pre-morbid relationships.
- The content of the hallucinations are often abusive.

A person meeting criteria for emotionally unstable personality disorder with psychosis could be included in this sub-group.

Drug related psychosis is a well-established diagnosis and clinically recognised. Drug related psychosis is comparable to Substance Induced Psychotic Disorder in DSM-5 (although the DSM-5 diagnosis requires the psychosis to have lasted less than one month). Many patients with psychosis hover around the boundary with schizoaffective disorder and borderline personality disorder (Kingdon, Ashcroft et al. 2010, Kingdon, Taylor et al. 2013). Traumatic psychosis is a sub-group which encompasses many of these cases. Traumatic psychosis typically occurs in young females and is comparable to emotionally unstable personality disorder, another well-established disorder with psychotic symptoms (Kingdon, Ashcroft et al. 2010).

In anxiety psychosis delusional beliefs, especially grandiose or persecutory beliefs are particularly evident. These beliefs develop into well systematised delusional systems, in particular in mature individuals experiencing stressful circumstances. Anxiety and distressing feelings are often relieved by the “meaningful” explanation provided by the delusional system (Kingdon, Rathod et al. 2008). The person is often isolated

e.g. living away from home or relationship may have broken down. The onset is often in response to stress.

Stress sensitivity psychoses is the renaming of Kraepelin's Dementia Praecox. It is believed to be an early onset psychosis, developing in teens or early twenties. Relatively minor stresses may precipitate episodes. This group often feel under pressure with increasing difficulty managing the stressful situations such as academic study or social situations. Delusions of reference and thought broadcasting are features of stress sensitivity psychosis. Negative features are also prominent.

The age of onset is one characteristic for stress sensitivity and anxiety psychosis which are believed to be comparable to early and late onset psychosis respectively. The SCIPS criteria includes age as a characteristic for anxiety and stress sensitivity psychosis however the stress sensitivity and anxiety diagnosis could occur across all age ranges but the former is more likely earlier in life and the latter in later life. The proposed later age of onset (>30years) or earlier onset (<29 years) is often present when classifying persons into anxiety or stress sensitivity psychosis but this defined age of onset it is not an essential condition. It must be noted that these are not yet clinically recognised terms. It is these two sub-groups as classified by SCIPS, and their relationship with psychosis defined by the age onset, that is the central focus of this study.

There are two threads to this research. The first explores if early and late onset psychosis are distinct sub-groups or on a continuum. A review of the literature exploring the similarities and differences between Early Onset Psychosis (EOP) and Late Onset Psychosis (LOP) is presented in chapter 3.Secondly the research will explore the characteristics of stress sensitivity psychosis and anxiety psychosis to see if they too are distinct sub-groups of psychotic disorder, or on a continuum of psychosis. It will also assess whether these SCIPS defined sub-groups correlate with early and late onset psychosis.

Chapter 3: Early and Late Onset Psychosis

3.1 Introduction

Schizophrenia is often thought of as an illness presenting in late adolescence or early adulthood and indeed the majority of patients with schizophrenia develop the illness at this time. However there is a second peak in incidence in middle age, especially for women (Kirkbride, Errazuriz et al. 2012). Both Kraepelin and Bleuler observed this minority of patients with schizophrenia who developed the onset in late middle age (Gelder, Cowen et al. 2006). It is currently accepted that approximately 14% to 23 % of those with schizophrenia develop the illness (late-onset psychoses) between the age of 40 and 60 years old (Harris, Cullum et al. 1988, Castle and Murray 1993, Faraone, Chen et al. 1994, Riecher-Rossler, Hafner et al. 2003, Howard 2010). According to Reicher-R ossler et al (Riecher-Rossler, Hafner et al. 2003) the average age of onset for patients with late-onset schizophrenia is 50 years old.

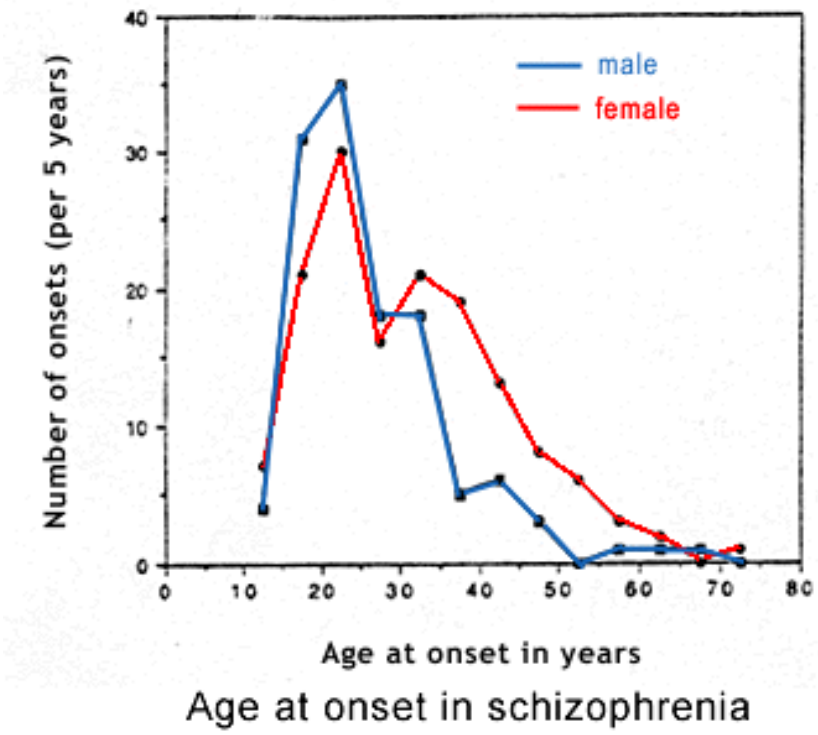

Figure 1: A typological model of schizophrenia based on age at onset, sex and familial morbidity (Sham, MacLean et al. 1994).

Although, there has been considerable research investigating schizophrenia developing in later life there is a paucity of research specifically investigating the late onset group of patients. Much research explores psychosis in later life, but this often merges with those developing it after 60 years into very old age, which in itself may be another discrete disorder (Howard, Rabins et al. 2000). The terminology for psychosis in later life is muddled and is not used consistently. Despite the inconsistencies within the literature, age, along with mode of onset, has been recognised as two aspects of schizophrenia which relate to clinical features of the illness (Dernovsek and Tavcar 1999, Jeste 2000). There has been much debate whether late onset schizophrenia is a discrete subtype of schizophrenia and, if so, whether this should be classified as such. Difficulties with terminology and inconsistent definitions of age ranges within these groups confuse this understudied area (Howard, Rabins et al. 2000). The age of onset of these disorders is one factor which may contribute to the heterogeneity of psychoses.

3.2 Diagnosis by Age of Onset and Sub-groups

Ever since the original conceptualisation of schizophrenia by Kraepelin and Bleuler, sub-types of psychoses have been proposed. Kraepelin noted that some cases of dementia praecox arose in middle and later life (Bleuler and Zinkin 1950). He renamed such later onset cases, with symptoms of dementia praecox but predominant paranoid features, as Paraphrenia. Later cases with paranoid delusions but without the other symptoms of dementia praecox such as formal thought disorder and disturbance of perception were named as Paranoia (Gelder, Cowen et al. 2006).

Early versions of the DSM did not include age limits for a diagnosis of schizophrenia but DSM-III required the onset of the disorder to be before 45 years old to meet a diagnosis of schizophrenia. This was changed in DSM III-R which allowed a diagnosis

but added a specifier of late onset for those developing the disorder after 45 years old. The later versions of DSM do not include any age-related criteria.

3.3 Consensus Statement

Late-onset schizophrenia has been quite a neglected area of research. The definitions of the group are inconsistent with paraphrenia, delusional disorder, paranoid states and late onset schizophrenia being interchangeably used within the literature. Poor methodology (especially in defining the onset of the disorder) and arbitrary and inconsistent age categories muddle and confuse the literature. In particular, late onset schizophrenia is often defined as onset older than 40 years old but lacking clarity in the upper age limit cut off age. Thus the group characteristics merge with the very late onset or late-paraphrenia group.

In an attempt to tackle the difficulties with the definitions and the ambiguous position of patients who develop schizophrenia in middle age the International Late Onset Schizophrenia Group produced a consensus statement in the year 2000 (Howard, Rabins et al. 2000). Members of the International Late Onset Schizophrenia Group met over two days to discuss the findings of a Medline literature review and produced a consensus statement on diagnosis, nomenclature, treatment guidelines, and future research directions. The statement concluded that late onset schizophrenia (onset of symptoms after 40 years old) and very-late-onset schizophrenia-like psychosis (onset of symptoms after 60 years of age) are categories that show face validity and clinical utility. However, following publication of the consensus statement the adoption of these categories has been slow; in particular the term late onset is still used for those with onset aged 60 and above.

It is noteworthy that the consensus statement uses arbitrary age limits to define the sub-groups rather than clinical characteristics or aetiology.

Late onset psychosis and late onset schizophrenia are used interchangeably within this thesis. The term psychosis is deemed to be a more suitable term than

schizophrenia in this study as the population sampled includes individuals with other psychotic disorders, namely schizoaffective and delusional disorder.

3.4 Demographic Characteristics

It is clear from the literature that males tend to develop psychosis at a younger age than females and a marked gender difference exists between early onset psychosis and late onset psychosis. Bleuler noted a tendency among women toward late onset schizophrenia noting females have a second peak incidence in their late 40s and early 50s (Harris and Jeste 1988). Faraone et al used pre-existing data set and corrected for gender distributions of observed age at onset for sex-specific age distributions. This reliable study reported the age of onset for males shifted towards older ages but it still found a statistically significant difference in the gender differences of age at onset, with only 5.6% of men developing psychosis after 35 years old compared to 18.5% of females (Faraone, Chen et al. 1994). A secondary peak of onset for women after 45 years old has also been reported in a systematic review and meta analyses of the incidence of psychoses in England 1950 to 2009 (Kirkbride, Errazuriz et al. 2012). Many other studies demonstrate the predominance of females in the late onset psychosis group (Riecher-Rossler, Hafner et al. 2003, Vahia, Palmer et al. 2010). Pearlson et al reported 87% of late onset patients being female (Pearlson, Kreger et al. 1989) and a male to female ratio ranging from 1: 1.9 to 1:22 has been reported (Howard, Castle et al. 1993). Castle and Murray et al (Castle and Murray 1993) analysed the Camberwell Register for Psychosis and determined males have a bimodal distribution with onset 21 and 39 years and females have three modal onsets at 22, 37 and 62 years. This robust study used a large catchment area with participants with first contact with non-affective, non-organic psychosis in both in patient and community settings. Data was collected over a 20 year period on a wide population, rather than a narrow preselected age range that often used in such studies. The catchment area of Camberwell changed in its demographics, including ethnicity and social economic status over this time adding to the high external validity of the results. In particular, the population wide finding of later onset of psychosis in females. Nearly half of all male patients had onset before 25 years old with a decline thereafter, whereas less than a third of females had their onset of

psychosis before 25 years old and 20% having an onset between 46 and 65 years old. This robust study strongly supports female gender as a risk factor for late onset psychoses, which is consistently reported in the literature, with the gender distribution of later onset for females compared to males. (Castle and Murray 1993, Howard, Castle et al. 1993, Pearman 2012)

The reasons for this gender difference however remain unclear. Social factors such as marital status and higher levels of social support may have some impact but the literature suggests these sociological factors are less influential than any neurobiological differences. Seeman (Seeman 1997) notes that the hormonally induced propensities are shaped in a social context so both neither can be considered in isolation. Hormonal changes in foetal development may impact on the brain in a way not clearly understood, with large fluctuations in oestrogen through adulthood until oestrogen production cease in menopause. A menopausal related reduction in oestrogen as a contributing factor to women's greater risk of developing psychosis in later life compared to men has been suggested (Palmer, McClure et al. 2001). Oestrogen treatment has been shown to affect dopamine release (Blum, McEwan Roberts 1986) but such studies tend to use in vitro animal evidence which may limit applicability to human population. Oestrogen has been suggested as treatment for many psychiatric disorders with gender differences but the biological basis of these differences remains poorly understood due to the complex interaction of the genes, environment, sex hormones and neurochemicals in the brain, and as such the role of oestrogens in psychosis is not yet proven (Craig 2013, Castle, Murray 1993). It has been postulated that oestrogen acts as a protective factor in those otherwise predisposed to develop the disorder, again suggesting complex interaction between genetic vulnerability and biochemistry. Oestrogen replacement therapy has been investigated as a potential therapeutic treatment with psychotic symptoms in a postmenopausal condition. The proposed protective nature of oestrogen suggests the onset of psychosis is delayed relative to men, but evidence also suggests there is not just a shift in incidence into older age in women but an additional increased spike in onset (Seeman 1997, Hafner et al 1991). A review by Pearlson and Rabins (Pearlson, Kreger et al. 1989) concluded that an age-related fall in dopamine D2

receptors may be more rapid in men than women. Pearlson investigated 45 inpatients that had onset of psychotic symptoms after 45 years old. An upper age limit however was not defined and so results need interpreting with caution as the very late onset like psychosis cases may skew the data, as well as the inpatient status which may limit comparability with community samples. The study found 87% of these cases were females.

Pearlson proposed females may have a relative excess of D2 dopamine receptors. It has also been proposed that it is an effect of androgens in adolescent and in early adulthood in males that causes the gender bias in the younger years (Castle and Murray 1993), so the bias could be due to a aetiological factor within the male population rather than the female population. It has been argued by Castle and Murray (1993) that males and females are prone to different subtypes of schizophrenia. Early onset sub-type may be due to a primary neurodevelopmental deviance which males may be more prone to whereas late onset females may be more likely to develop a disorder which has aetiological links to affective disorders. Although the gender difference in age of onset is clearly established, the underlying cause is not. Further investigation into the mechanisms behind the gender difference is required, incorporating genetic developments and results from studies exploring the pathophysiology of early and late onset psychosis.

Riecher-Rossler et al (Riecher-Rossler, Hafner et al. 2003) reported greater rates of paranoia in females compared to males in these late onset psychosis groups. This gender difference in age of onset of psychosis and the increased paranoia in females may contribute to the increased prevalence of paranoia reported in the late onset group.

3.5 Education and Pre-Morbid Functioning

Elevated risks of childhood maladjustment and fewer education years have been reported to be similar for both early and late onset psychosis compared to a population without psychosis (Jeste, Symonds et al. 1997), however this study incorporates all cases over 45 and does not look at late onset psychosis specifically.

Cognitive symptoms are a strong indicator of a person's functioning. Some studies report the typical patient with LOP will have functioned well throughout adult life with good premorbid adjustment (Jeste 2000, Wynn Owen, Castle 1999). Cognitive impairments in LOP have been reported in some studies (Jeste, Symonds et al. 1997). A meta-analysis by Rajji et al (Rajji, Ismail et al. 2009) compared specific neurocognitive variables (including executive function, processing speed, global cognition and IQ) in early and late onset groups with first episode schizophrenia. They found those with late onset schizophrenia (onset after 40 years old) had relatively preserved cognitive function compared to the early onset group who demonstrated significant cognitive deficits. An upper age limit was not defined for the late onset group in the studies reviewed and so the individuals with very late onset schizophrenia-like psychosis, with potentially organic and physical comorbidities may have skewed the data. Other studies have found that there is no difference between EOP and LOP in cognitive function or decline between the two groups (Jeste, Harris et al. 1995, Vahia, Palmer et al. 2010), however the meta-analysis provides evidence of cognitive differences in the different age groups which requires further exploration with a defined LOP group, excluding those with psychosis onset after 65 years old. The variability in cognitive function may be inter-related to other demographic and clinical factors, including medication, premorbid IQ and chronicity of the disorder.

Wynn et al reports late onset psychoses patients tend to have good pre-morbid occupational adjustment in contrast to many people with early onset psychosis (Wynn Owen and Castle 1999). Greater number of individuals with LOP than EOP have more successful occupational and marital histories (Jeste, Symonds et al. 1997,

Vahia, Palmer et al. 2010). The LOP group were found more likely to be married than the EOP group and functioned moderately well throughout adulthood (Jeste 2000). However given the age of the patients in the late onset group it may be expected that they would have a higher rate of marriage and stability in relationships, the older population would have had longer to develop stable relationships whereas a person in their late teens who develop psychosis may not rate as high on premorbid adjustment as they are at an age where they are embarking on long term relationships for the first time and have had less opportunity to develop stability in their life, rather than it being a direct result of the disorder or their vulnerability to developing psychosis.

3.6 Family History

Heritability estimates for schizophrenia suggest 60-80% of individuals with schizophrenia have a family history of schizophrenia (Jeste, Symonds et al. 1997). The family aggregation has been noted to be more common in earlier onset than late onset cases (Harris and Jeste 1988, Howard, Graham et al. 1997). Reicher-Rossler reported only 8% of patients with LOP had a first degree relative with psychosis compared 10-15 % of EOP (Jeste, Symonds et al. 1997, Riecher-Rossler, Hafner et al. 2003). Weiner found 4.4% to 19.4% of those developing psychosis between 40 and 45 years old had a first degree relative with psychosis but this reduced to 1% to 7.3% of those with onset aged 50 to 60 years (Harris, Cullum et al. 1988). However as frequently stated these studies need replicating with LOP defined with an upper age limit to prevent the very-late onset schizophrenia group, which may skew the results for the LOP. It is also of note that there are difficulties with reliability of data of family history, migration or breakdown of families may result in gaps in data and the older generation may have had a family history that had not been diagnosed or recorded in the manner it is today, and so the younger patients may have knowledge of family with an established diagnosis. Recall bias when asking participants about family history may also be an issue.

3.7 Clinical Characteristics

Both Kraepelin and E. Bleuler considered late onset cases to have much in common with the typical early onset cases of schizophrenia. This view was confirmed by Manfred Bleuler who carried out the first comparison of patients who developed symptoms after the age of 40 with those who developed an onset of symptoms at an early age (Howard, Rabins et al. 2000). In 1943 Bleuler (cited in Castle DJ 1992) concluded the symptomology of this late-onset group did not differ significantly from that occurring in early life. Riecher-Rossler et al (Riecher-Rossler, Hafner et al. 2003) found a relatively high overlap between early and late onset groups and concluded the clinical diagnosis was more influenced by age than on difference in symptomatology. Similarly Howard et al (Howard 2010) found prevalence of delusions of reference, bizarre delusions, delusional perception or lack of insight to be similar in early and late onset groups. This study used first contact patients, removing the bias relating to hospitalisation of participants in an inner city with wide demographic providing a reasonable accurate reflection of clinical presentation of schizophrenia. However as with all studies comparing early and late onset groups the late onset group are less likely to have come to the attention of secondary mental health services. However a strength of the study and therefore the results is the wide range of participants over a large geographical area.

Many studies do not define an upper age limit to the late onset group. The results therefore may not accurately reflect LOP but may be confounded by participants that meet the very late onset schizophrenia like psychosis diagnosis. This extension of age is likely to include many more confounding variables such as physical comorbidity. Lack of clarification of definition of late onset is also apparent in other studies (Cohen, Vahia et al. 2008) that report similarities rather than differences between early and late onset psychosis.

Some studies however do report differences in clinical presentation between the two groups (Jeste 2000). Milder symptomatology with less affective flattening and less formal thought disorder, thought interference, passivity, grandiosity and primary

delusions are also reported as rarer in late onset than early onset groups (Howard, Castle et al. 1993, Howard, Castle et al. 1993, Jeste, Symonds et al. 1997, Howard, Rabins et al. 2000). First rank symptoms such as thought broadcasting and two voices arguing are less common but not rare in the late onset group. Loosening of associations and inappropriateness of affect have been reported as less prevalent in the late onset group (Howard, Castle et al. 1993, Howard 2010).

It has been reported that LOP patients have less negative symptoms than those with EOP (Castle, Murray, Howard, Wessely 1993, Skokou, Katrivanou et al 2012) however other studies have also shown no difference in the severity of negative deficit or depressive symptoms between EOP and LOP (Vahia, Palmer et al. 2010). The results from the Camberwell study (Howard, Castle, Wessely, Murray 1993) are however quite robust, a very large group of 470 subjects were assessed to see if 22 schizophrenic symptoms were present or absent. This data set from Camberwell (as previously detailed) provides reliable evidence for the differences and similarities in symptomatology between early and late onset psychosis. Vahia et al did not find any difference between severity of negative, deficit or depressive symptoms between early and late-onset psychosis groups (Vahia, Palmer et al. 2010). This study also used a large data set of 854 subjects and had the benefit of 359 control participants. Both studies used reliable raying scales the Camberwell study used McGuffins Operational Criteria Checklist for Psychotic Illness and Vahia et al also used well established rating scales PANNS and HAM-D. However, caution with results from both studies is required when applying to applying to the LOP and EOP groups defined by the international consensus statement as neither study had an upper limit to the age of onset.

3.8 Paranoia and Persecution

Many similarities between early and late onset psychosis have been reported, however a distinguishing feature between the two groups appears to be paranoia and persecutory delusions, which dominate the presentation of late onset schizophrenia. Increased rates of paranoia, suspiciousness and hostility have been reported in the late onset group (Wynn Owen and Castle 1999). Cohen et al (Cohen, Vahia et al. 2008) report a higher frequency of the paranoid subtype in patients in the LOP group compared to EOP. Similarly Harris, Jeste and Paulsen (Jeste 2000) report that it is the paranoid symptomology of LOP which characterises this group and that LOP have more paranoid symptoms and more systematised delusions beliefs. Hafner et al (Hafner, Hambrecht et al. 1998) also reports persecutory delusions to be most frequent in patients aged 35 to 59. Similarly Jeste et al (Jeste 2000) report the delusional beliefs held by the late onset group tended to be more persecutory but also more bizarre and greatly systematised compared to early onset schizophrenia. A Chart Review study by Pearlson et al (Pearlson, Kreger et al. 1989) concluded that organised and persecutory delusions along with accusatory or abusive third person auditory hallucinations are more common in the late onset group than early onset group.

Kay and Roth (Kay and Roth 1961) also suggest a persecutory theme predominates the clinical picture of patients who develop schizophrenia in middle-age, but hypochondriacally or grandiose themes were also quite prevalent. However, as with other studies the late onset group in Kay and Roth's study did not have an upper age cut off and so cases merged those with late-paraphrenia or very late onset schizophrenia-like psychosis diagnosis which may be confounded by comorbidities and organic disorder.

According to Pearlson et al (Pearlson, Kreger et al. 1989) a relatively high overlap exists between late onset schizophrenia and paranoid psychosis and may compose a delusional disorder of late onset. Even though the majority of studies have reported a higher proportion of late-onset patients experiencing paranoid symptoms

compared to the early onset patients, Vahia, Palmer et al reported no significant differences between early and late onset groups in terms of the proportion of patients with a paranoid subtype (Cohen, Vahia et al. 2008). Interestingly this study used a defined age range for LOP whereas older studies tend to omit an upper age range for the LOP group. It may be the very late onset group have more paranoia skewing the data for the LOP group, further studies using a clearly defined age category for LOP are required to support Vahia et als report.

3.9 Hallucinations

It is well reported that patients with late onset schizophrenia are more likely than those with early onset schizophrenia to have hallucinations in multiple modalities. Many papers report the late onset schizophrenia group frequently experience visual, tactile, and olfactory hallucinations whereas in early onset cases auditory hallucination typically predominate (Pearlson, Kreger et al. 1989, Cullum, Heaton et al. 1994, Jeste, Harris et al. 1995, Jeste, Symonds et al. 1997, Howard, Rabins et al. 2000).

3.10 Affective Symptoms

Studies comparing late and early onset psychosis tend to use non-affective psychosis as inclusion criteria, hence excluding anyone with comorbid severe depression and mania. The assessment of clinical characteristics tends to concentrate on psychotic symptoms and very few assess symptoms of anxiety and depression specifically. A further difficulty is that depressive symptoms often merge with negative symptoms (e.g. emotional blunting and flat affect) and so may be difficult to differentiate in some cases.

A study by Mason, Stott and Sweeting (Mason, Stott et al. 2013) is one of the few studies that have specifically assessed affective symptoms in the early and late onset

groups. On exploration of the dimensions of positive symptoms in early and late onset psychosis they did not find any significant differences between levels of depression or anxiety in the two groups. The study is limited by the small number of participants with late onset psychosis compared to the early onset psychosis, being 34 with LOP and 235 EOP. The chronicity of illness was considered as a confounding variable and when matched for this and also gender the findings did however remain. Similarly a comparative study of 470 cases of early and late onset psychosis (defined as onset aged 45 and older) found affective symptoms were more common in the early onset cases than late onset. (Howard, Castle et al. 1993). The results were explored to assess any difference in gender – the early onset group had affective symptom sin 35% of females and only 11% males, whereas the late onset group did not show any significant differences between affective symptoms and gender. An upper age limit for the late onset group was not defined and so it is difficult to ascertain if this is applicable to the late onset group defined in the consensus statement. Differences were found in depression, mania and apathy between these two early and late onset groups. Affective flattening present in 22% of early onset patients and 7.4% late onset cases. This may be more consistent with negative symptoms rather than depression.

3.11 Suicidality

Suicide is an important cause of premature death in people with schizophrenia and psychotic disorders. The lifetime risk of suicide in schizophrenia has been widely reported as 10%, but other studies, including a meta-analysis in 2005, suggest this is an overestimate and the true figure is closer to 5% (Palmer, Pankratz et al. 2005, Castelein, Liemburg et al. 2015). There are very few reports of suicide rates specifically in the late onset psychosis population. However, a higher suicide rate in patients with an earlier age of onset, compared to those with a later age of onset, has been reported in a longitudinal prospective study of 547 subjects by Bertelsen, Jeppesen et al. 2007. An upper age limit was not used in this study limiting it

generalizability to the LOP group. The association between suicide and young age may have been confounded by other variables also associated with the high risk of suicide including previous attempts and depressive symptoms. It is difficult to ascertain which of the variables measured had the strongest influence on the suicidality; the research took place in Denmark which may limit its generalisability to the UK, but the prospective longitudinal nature of the study

Conversely other studies found a relationship between increased rate of suicide and later age of onset (Castelein, Liemburg et al. 2015). Castelein Leimburg et al reported suicide in 2.4% of the 424 patients studied within 5.6 years of onset. A later age of onset was the only predictor of suicide confirmed by this study. Social isolation, negative symptoms and disorganized symptoms showed a trend towards significance but the results were not convincing and it may be the association with these symptoms and the age of onset that needs further investigation.

Pompili et al (Pompili, Amador et al. 2007) found those with better premorbid functioning are more likely to commit suicide. By definition the anxiety psychosis group and late onset group would have better pre-morbid functioning and should therefore have a greater suicide risk.

3.12 Treatment Response

There is a paucity of research investigating the antipsychotic treatment used and the response in patients with LOP. Pharmacological drug trials tend to use younger participants.

A lower antipsychotic dose in LOP has been reported (Vahia, Palmer et al. 2010) however Rabins et al (Rabins, Pauker et al. 1984) and Pearlson et al (Pearlson, Kreger et al. 1989) found 43% and 54%, respectively, of LOP cases had no or only a partial response to antipsychotic medication. However these findings have not been extensively replicated.

Dernovsek and Tavcar (1999) concluded neuroleptic dosage to be related to both age of onset and severity of symptoms. The study based in Slovenia used the age at first contact with psychiatric services to determine the age of onset. This has limitations as it is dependent on the help seeking behaviour of the groups and the severity of the disorder. There may also be a large group, in particular those with later onset illness who do not come into contact with psychiatry services. However, the study found similar findings to the established literature of younger age of onset in males. The chlorpromazine equivalent dose of neuroleptics was determined in patients whose dose had not changed for three months, suggesting they were relatively stable. This study is limited by the ethnicity of participants as they were all European Caucasian. A similar dosage for males and females genders in the late onset group was found removing any confounding influence gender may have on the findings. Overall the patients with a younger age of onset received higher doses of neuroleptic medication, and were less responsive with more continuing to display prominent symptoms.

A Cochrane review of antipsychotic drugs in elderly people with late onset psychosis (Essali and Ali 2012), found only 1 out of 88 studies specifically looked at late onset psychosis; the other studies failed to discriminate the late onset psychoses from the very late onset group. In such randomised controlled trials (RCT) 85% of participants assessed were over 65 years old. The one trial that did use LOP consisted of an 8 week RCT comparing olanzapine and risperidone in this late onset group with late onset schizophrenia. Both drugs were tolerated and equally effective in both LOP and EOP. However, they report that there were no other discriminatory findings or useable data. Howard (Howard, Castle et al. 1993) reports that a typical late onset patient would require one quarter to one half dose amounts of antipsychotic compared to someone with early onset psychosis, findings consistent with previous studies mentioned.

Not only is research lacking on LOP but a Cochrane review (Skelton, Khokhar et al. 2015) of treatment of delusion disorder, often equated this to late onset psychosis. Skelton also concluded that there is a paucity of high quality randomized trials on

delusional disorder and therefore there is currently insufficient evidence to make evidence-based recommendations for treatments of any type for person with delusional disorder, regardless of their age.

Psychological therapy specific to LOP is another treatment area lacking in research. Studies have explored cognitive-behaviour skills and social skills training in middle age and older persons which found to improve functioning, reduce defeatist attitudes in middle aged persons and older persons with schizophrenia (Granholm, Holden et al. 2013). Granholm et al provided weekly sessions of cognitive behavioural social skills therapy alongside social skills and problem solving training, the age range studies as 45 to 78 again failing to define a LOP group as per the consensus statement. This study only explores the late onset group and fails to compare directly with an early onset group. The external validity of the results when applying them to EOP and LOP comparisons. Social skills training has also been shown to reduce the level of negative symptoms (Mueser, Pratt et al. 2010). These results however cannot reliably be related to the LOP group as the majority of the population studied were patients with very late onset like schizophrenia rather than late onset schizophrenia.

3.13 Summary of Findings

Paranoia is a well-established symptom differentiating early and late onset psychosis. The other clinical characteristics and their relationship with early and late onset psychosis is less clear. It is difficult to make definite conclusions on late onset psychosis (defined as onset age 40 to 59) from the literature reviewed due to the inconsistent classifications and methodology used. The literature reviewed fails to discretely define late onset schizophrenia by age which along with the changes to the DSM diagnostic criteria for schizophrenia in relation to age means a clear evidence base comparing EOP an LOP is difficult to establish. Very few studies explicitly examine the late onset sub-group with the defined age limit of 40 to 60 years old.

Following the Consensus Statement in 2000 standardisation has developed within the research but still there appears to be few if any rigorous studies investigating and comparing early and late onset schizophrenia. A minority of studies investigate the differences in symptomology between these groups and even fewer by aetiology.

There is an agreement in the literature that a peak in incidence occurs in the second decade and then a second peak occurs in the fourth and seventh decade of life, with a well-established gender difference with female preponderance in the second and third incidence peaks. Neurobiological and hormonal factors may account for this difference but the literature does not strongly support either as an independent cause. The literature suggests Oestrogen has a role but further evidence is required to support this and to explore the implication of this for treatment and prevention. The interaction between hormonal sociological factors also requires further exploration and there is insufficient evidence to attribute either to the increased incidence of LOP in females compared to males. Family aggregation in EOP may be indicative of a subgroup with a genetic basis but this too requires further exploration.

There is agreement within the literature that some significant differences exist between early and late onset groups particularly as mentioned paranoia and also negative symptoms and nature of the psychotic experience. A greater level of systematised paranoid delusional beliefs are apparent in the late onset group, they are also more likely to have auditory hallucinations with abnormalities of perception in other modalities too. As reported the literature is quite inconsistent with respect to other symptoms. However many similarities between the groups may also exist, the evidence is inconclusive. Affective symptoms, suicidality and treatment response requires a stronger evidence base before any conclusions can be asserted.

Few studies have investigated the aetiology of the two groups and the relationship this may have on course, prognosis and response to treatment. The finding which does appear to be consistent with increasing age and relevant to this group is the lower severity of negative symptoms in the late onset group compared to early onset group.

This research aims to explore the characteristics of this group of patients with late-onset psychosis; to determine if it is fundamentally the same illness as early-onset psychosis. Furthermore, the aim is to understand if late-onset psychoses are on a continuum of psychoses or if it should be classified as a discrete entity. This research also aims to explore the anxiety and stress sensitivity sub-groups proposed by Kingdon et al (Kingdon, Gibson et al. 2008). By nature of the definition of the sub-groups, stress sensitivity psychosis and anxiety psychosis may correlate with early and late onset psychoses respectively. It is questionable whether anxiety psychosis and LOP are one and the same illness or if a sub-group of anxiety psychosis extends this age category. Similarly it is unknown if early onset psychosis and stress sensitivity psychosis are a homogenous disorder isolated to younger patients. If these sub-groups do correlate with the early and late onset psychosis groups then any differences found between early and late onset psychosis will also be evident in the stress sensitivity psychosis (early-onset schizophrenia) and anxiety psychosis (late onset schizophrenia). Exploration of the characteristics of the two groups will allow determination if these are discrete entities, or the same illness on the continuum of psychosis.

Chapter 4: Cognitive Models and Psychological Variables

4.1 Introduction

Cognitive models of psychosis are important and arguably necessary for understanding the processes involved in the development and maintenance of complex and multi factorial psychotic disorders. Garety et al (Garety, Kuipers et al. 2001) proposed that symptoms of psychosis may be better understood if the link between the phenomenological experiences and social, biological and psychological explanations were clearer. Cognitive models may provide some link between these domains and provide a psychological description of the psychotic experiences. If the subgroups explored in this study are distinct then psychological variables may differ between them. Exploration of any differences using statistical analysis may then generate hypothesis for future research.

During the development of the subgroups Kinoshita (Kinoshita, Kingdon et al 2012) explored levels of depression, fear of negative evaluation about selves and positive self-evaluative beliefs in the anxiety and stress sensitivity groups to establish construct validity of the stress and anxiety psychosis groups. The fear of negative evaluation from others was higher in the anxiety group than the stress sensitivity group. There were no significant differences found between the two groups. To extend this exploration of differences between the groups other psychological variables within this theme are explored.

Cognitive models allow hypotheses regarding causal processes and the development of the psychoses to be drawn and tested. Premorbid vulnerability to psychosis is widely accepted (Jones, Rodgers et al. 1994). Pre-existing beliefs, emotional disturbances and social factors facilitate the appraisal of the anomalous mental state as originating externally. It is this appraisal, along with affective states, which combine to develop positive psychotic symptoms, in particular delusions and

hallucinations (Garety, Fowler et al. 2000). This subsequently can cause distress (Chadwick and Birchwood 1994).

Information processing and decision making does not conform to logic. Normal thought process use heuristics and models of probability to compensate for the brain's inability to hold all the information at one time (Kingdon, Turkington et al. 1994). Analysis of the rules and schemas used to make decisions has shown biases and errors that contribute to the development and maintenance of psychotic symptoms.

A bias in information gathering known as a jumping to conclusions bias, an exaggerated externalising attributional style and low self-esteem have all been postulated to interact with emotional experiences to create the psychotic state, in particular to manifest persecutory delusions. It has been proposed that the presence of these cognitive styles to varying degrees create a vulnerability to developing a psychosis and may in turn act to maintain the psychotic disorder (Garety, Kuipers et al. 2001).

The anxiety and stress sensitivity psychosis sub-groups and the early and late onset psychosis groups will be explored to elucidate any differences or similarities in the cognitive variables self- esteem, attribution bias and jumping to conclusions style.

4.2 Cognitive Behavioural Therapy (CBT) for Psychosis

CBT, initially developed by Beck for emotional disorders, has since been developed and applied to psychosis. There is a growing body of evidence that CBT is an effective treatment for psychosis, (Kingdon, Turkington et al. 1994) treating persistent negative symptoms (Turkington, Kingdon et al. 2002, Turkington, Kingdon et al. 2006), and reducing the severity of positive symptoms in particular persecutory delusions (Turkington, Sensky et al. 2008).

CBT is now included in international treatment guidelines including the 2014 NICE guidelines which recommend CBT on its own, or in conjunction with antipsychotic medication, should be offered to all adults with psychosis ((NICE) 2014).

CBT for psychosis is based on the assumption that distress occurs when the experiences are interpreted in a threatening manner. For example it has been shown that the nature of a person's belief about voices they hear is more distressing than the severity of the voice (Brett, Johns et al. 2009). Cognitive therapy aims to support the person to reduce their level of distress by recognising and modifying the unhelpful interpretations of events and unhelpful maintaining factors (Mander and Kingdon 2015). Garety states better treatments are needed based on sound understanding of the cause and maintenance of the disorder (Garety, Kuipers et al. 2001). A greater understanding of the cognitive process that may contribute to the development and maintenance of psychotic symptoms may have a role for enabling the cognitive therapy to be tailored to the individual. If psychosis sub-groups are identified, cognitive errors may be found to be specific for that group and may allow more targeted CBT and other treatment regimens.

4.3 Delusions

Delusions are one of the most common psychotic symptoms, often of a paranoid nature (Sartorius, Jablensky et al. 1986). A substantial proportion of persons with delusions show a relatively poor response to antipsychotic medication (Garety, Fowler et al. 2000, Manschreck and Khan 2006). It is reported nearly 50% of patients develop persistent delusions even after the first acute psychotic episode has diminished (Craig, Garety et al. 2004). Delusional beliefs, in particular systematised delusions, have been proposed to be a differentiating factor between the anxiety and stress sensitivity sub-groups (with anxiety psychosis having more prominent delusions compared to stress sensitivity psychosis). Similarly, the late onset group have more delusional symptoms particularly of paranoid nature than the early group (Pearlson, Kreger et al. 1989).

The understanding of persecutory delusions has rapidly developed over recent years (Freeman 2007). Delusions are individual and variable. They are known to exist on a spectrum from the normal population with 10-15% of general population regularly experiencing paranoid thoughts (Freeman 2007). A World Health Organisation Study in 10 countries found persecutory delusions to be the second most common psychotic symptom, after delusions of reference, occurring in 50% of cases (Sartorius, Jablensky et al. 1986).

One proposed explanation for delusions is the abnormality in reasoning, that the deluded person cannot evaluate information and adjust their beliefs accordingly. An example of this is the jumping to conclusions bias, whereby the person exhibits a tendency to reach decisions based on reduced data gathering. A bias in attribution style with excessive externalisation of negative events is also believed to be involved in the development of delusional beliefs. It has suggested that this may act to preserve self-esteem or self-esteem may fluctuate in response to the nature of the delusions (Bowins and Shugar 1998). There is a link between anxiety and paranoia. It is argued that anxiety can create thoughts with a paranoid content (Freeman 2007).

Freeman proposed (Freeman 2007), that paranoia builds upon common emotional concerns. There is strong evidence for a link between anxiety and paranoia and persecutory delusions, that emotional disturbance can lead to anxiety but combined with anomalous experiences persecutory ideation can evolve. On other occasions, it may be the paranoia develops and anxiety develops due to distress from paranoid cognitions. It is therefore possible the anxiety group would have more paranoia.

Delusions are multifactorial. Given the heterogeneity of schizophrenia it is unlikely there is one single cause. Self-esteem, attributional style and jumping to conclusions bias are all believed to interact and play a part in the development of delusions (Sharp, Fear et al. 1997, Garety, Kuipers et al. 2001, Jolley, Garety et al. 2006). This study will explore any differences and similarities between the cognitive variables in the anxiety psychosis and stress sensitivity psychosis group and look at impact the

age of onset may have by exploring any differences in cognitive errors and biases between the late and early onset groups.

4.4 Self-Esteem

It has been proposed that self-esteem acts to influence the development and maintenance of psychotic symptoms. Self-esteem can be defined as the confidence in one's own worth or abilities and self-respect (Nugent 1993). It is the evaluative component of the self-concept. A person may have a very accurate self-concept but a problem with self-esteem – for example if they accurately see themselves as domineering and arrogant but dislike these characteristics in others then it is likely they will have a low sense of self-esteem but if these qualities are ones they admire then their self-esteem will be enhanced.

Rosenberg (Rosenberg 1965) defines self-esteem as a favourable or unfavourable attitude towards oneself. He proposes it is likely to compromise a number of components – global self-esteem (An *attitude* of oneself as a totality) and specific self-esteem (a particular view of oneself in a particular situation or of a specific ability).

There is a well-established link between self-esteem and psychological wellbeing. It is deemed an integral part of affective disorders (Nugent 1993). The relationship between self-esteem and psychosis is not so clear. It is believed to be a significant component in schizophrenia and psychotic disorders, but the nature of its involvement uncertain. Freeman et al reported low self-esteem in many people with psychosis (Freeman, Garety et al. 1998) whereas others report normal or high levels of self-esteem in psychosis (Bentall 1994, Lyon, Kaney et al. 1994, Bentall, Corcoran et al. 2001). A reduction in self-esteem has been reported as particularly evident when associated with persecutory delusions. Such delusional beliefs may protect the individual from a further reduction in self-esteem, or it may be persecutory beliefs are an appropriate response to the negative experience of the symptoms of psychosis (Lyon, Kaney et al. 1994).

Other variations in self-esteem have been reported to be associated with the development and maintenance of psychotic disorders (Bentall 1994). It is uncertain however whether the change in self-esteem precedes the development of psychotic disorder or occurs as a consequence of the cognitive and emotional disturbance of the disorder.

The literature the relationship between self-esteem and psychosis is varied and inconclusive. However, a reduction in self-esteem has been reported as particularly evident when associated with persecutory delusions. Such delusional beliefs may protect the individual from a further reduction in self-esteem, or it may be persecutory beliefs are an appropriate response to the negative experience of the symptoms of psychosis (Lyon, Kaney et al. 1994). It is proposed that the anxiety subgroups would have higher levels of paranoia and persecution therefore it can be hypothesised that they too would have different levels of self-esteem compared to stress sensitivity group. Similarly, the late onset group has more paranoia than the early onset group and so again level of self-esteem would be expected to differ. This exploratory study will investigate any differences in the self-esteem in these groups. The direction of any difference in self-esteem in psychotic population is inconsistent in the literature but it is hypothesised in this study that as the anxiety group are proposed to experience more paranoia than the stress sensitivity group there levels of self-esteem will be different to the stress sensitivity group. The direction of this difference is unclear and will be explored in this study. Similarly, the literature suggests LOP group have greater paranoia than the EOP group and so it is hypothesised there will be in a difference in the self-esteem levels between the LOP and EOP group.

4.4.1 Gender, Age and Self-Esteem

A gender difference has been found to exist in levels of self-esteem in non-clinical samples, with females reporting lower self-esteem measures than males (Kendler, Gardner et al. 1998, Bagley 2001). This variation is believed to be due to genetic and individual-specific environment factors. In contrast however Robins et al (Robins W

2001) and Jones et al (Jones 2010) report females with psychotic illness reporting higher self-esteem compared to males with a psychotic illness. Bowins et al (Bowins and Shugar 1998) found no gender or age difference in self-esteem in patients in hospital with psychosis.

4.4.2 Self-Esteem, Delusions and the Defensive Function

Individuals with delusional beliefs have been postulated to have normal levels of self-esteem as the delusion is believed to act to maintain the self-esteem. The delusion is seen as defence mechanism – to allow the person to avoid blaming self for bad events, defending against low self-esteem. Bentall suggests favourable delusions may serve to protect from a reduction in a person's self-esteem, as a form of an exaggerated attributional bias (Bentall 1994). This "delusions as a defence" hypothesis has been replicated by others such as Lyon et al (Lyon, Kaney et al. 1994) who reported normal levels of self-esteem in people with persecutory delusions.

Bowins and Sugar (Bowins and Shugar 1998) concluded it is most likely self-esteem is reflected in the delusion rather than acts as a precursor as self-esteem is often reflected within delusional content - persons with low self-esteem experiencing delusional, persecutory beliefs, with unfavourable content about ones-self. This may further precipitate an understandable response of a further reduction in self-esteem. Bowins also recognises that the psychotic beliefs may be more firmly held if consistent with the person's beliefs about self – if they believe they are bad or stupid the delusion developed may support their thoughts about self and would then have a mutually reinforcing effect.

In contrast Freeman states that self-esteem does not have a central role in development and maintenance of delusions and that it is an understandable response to the negative experience of the disorder (Freeman 2007). If there is no central role for self-esteem it would be expected to be reflect the premorbid levels. It is therefore difficult to ascertain this evidence as a longitudinal prospective study

would be required to measure premorbid levels and subsequent change of self-esteem. Estimations can be acquired in persons with self-esteem but these are obviously sensitive to recall bias.

It is uncertain which way self-esteem and paranoia are related, this exploratory study will explore any differences between the subgroups and any relationship with paranoia. If as proposed the LOP group are more paranoid and the anxiety groups have more paranoid symptom then it would be expected a difference would be seen between the Anxiety and stress sensitivity groups and between the LOP and EOP groups. The direction and extent of any difference between the subgroups may generate hypothesis for further exploration of the psychological variables and psychotic symptoms which would benefit development of CBT.

4.3 Depression

It may be that self-esteem in psychosis is related to depressive symptoms. There is significant association between self-esteem and mood where low self-esteem is well-established to act as a cause and consequence of the depressive disorder (Jones 2010). It may be this which acts as a mediating component between self-esteem and psychosis, persecutory delusions. The direction of this relationship however is unclear.

Borras et al suggests patients with low self-esteem resulting from paranoid delusions will have a marked tendency towards depression (Borras, Boucherie et al. 2009).

A study by Birchwood and Chadwick (Birchwood and Chadwick 1997) found moderate depression in the majority of patients who experienced malevolent voices. Mood may therefore be a confounding variable in the relationship between self-esteem and psychotic symptoms. The occurrence of negative life events and the manner the person copes with these stressors may also moderate self-esteem. Freeman, Garety and colleagues proposed that a similar mechanism, a “normal

emotional process" may exist for self-esteem and persecutory delusions (Freeman, Garety et al. 1998).

4.4.4 Summary

Rosenberg's self-esteem scale was originally designed to measure adolescents global feeling of self-worth and is considered the standard against which many other self-esteems measurement are compared (Rosenberg 1965, Robins W 2001). The literature into the relationship between self-esteem and psychosis is so far inconclusive. Self-esteem is a relatively stable trait especially when compared with the content of delusions which may change quite dramatically and more quickly than any change in global self-esteem. This suggests self-esteem is more enduring and a cause rather than consequence of the delusional state.

It is likely the relationship between self-esteem and persecutory delusions is bidirectional and will vary between individuals. The degree to which cognitions, self-esteem, mood and the symptoms of psychosis interrelate is also likely to be variable between individuals, given the unique nature of each person's experiences, symptoms and psychological makeup.

If variables such as negative symptoms, depression and thoughts of persecution are distinct between the sub-groups then differences in self-esteem may also be evident. Investigation of self-esteem alongside attribution style and the nature of the psychopathology may help further elucidate and differentiate the relationship between these variables in the psychosis sub-group. It is hypothesised the late-onset or anxiety group with more stable premorbid functioning will have higher levels of self-esteem.

4.5 Attribution Style

Attribution theories suggest a person attributes a cause to events they encounter. If they believe the event was caused by something about them they demonstrate internal attribution. On the other hand they may believe the cause to be due to others or the situation, but not them. This is external attribution. The attribution a person makes may be stable, if attributed to non-transient factors or unstable if attributed to transient factors. The attribution may be global if cause is believed to be present in a variety of situation or specific if it is believed to be quite situation specific (Peterson 1982).

Attribution theory has long history within social psychology (Stroebe, Hewstone et al. 1996). The early theories of attribution bias tended to view the perceiver as a rational individual and based on the normative model. Development of this theory by Seligman et al (Petersson, Hedges et al. 1994) looked at occasions when the person makes an attribution "error" or are biased in their attribution, deviating from the norm.

The applications of the attribution theory to depression and anxiety states help to support and develop the cognitive model of these psychopathologies. This in turn helps inform psychological therapy such as CBT. The learned helplessness model of depression for example is based on an external attribution bias (Abramson, Seligman et al. 1978). People with depression demonstrate internal, stable and global attributions for negative events and an enhanced externalising bias for positive events. It is the perceived inability to control unpleasant occurrences which are attributed to these events when depression can ensue. Some authors argue that attributional abnormalities are only found in certain sub-groups or that attributional style may change with onset of depression (Kinderman, Kaney et al. 1992). It is appropriate to examine these beliefs with delusional persons as delusions often relate to a persons perceived position within the world (Kaney and Bentall 1989). The evidence for an attributional style in the development and maintenance psychosis however is very varied and inconsistent.

4.5.1 Self-Serving Bias

It has been widely reported that persons with persecutory delusions make more excessively external self-ratings of their explanations for unpleasant events and excessively internal ratings for positive events (Kaney and Bentall 1989). Studies have shown that people with delusions, particularly those with paranoid themes, when compared to non-paranoid controls make attributions that are external for negative events (externalising bias) and internal for positive events (personalising bias) (Kaney and Bentall 1989, Lyon, Kaney et al. 1994).

This style of attribution of negative events to others, and positive ones to self is termed a self-serving bias. This self-serving bias is observed in normal individuals as well as those with persecutory delusions (Lyon, Kaney et al. 1994, Janssen, Versmissen et al. 2006). It appears persons with paranoid delusional beliefs have an abnormal extreme form of the self-serving bias. The defence model proposed by Bentall suggests it has functions to maintain self-esteem (Lyon, Kaney et al. 1994, Jolley, Garety et al. 2006).

Krstev et al (Krstev, Jackson et al. 1999) found a trend for suspicious individuals with first episode psychosis and paranoid delusions to endorse the self-serving bias.

Levels of self-esteem, negative symptoms and depression were also taken into account and controlled for. Lyon et al also found a self-serving attribution style in paranoid patients (Lyon, Kaney et al. 1994). They demonstrated higher scores of suspiciousness predicted lower scores on internalising of negative events, hence the more likely they were to externalise negative events. This is in line with a proposed self-serving bias.

This study by Lyon et al had mean age of study sample of 35.6 years. It may be that the greater the chronicity or age of the individual the more pronounced the threat to self is and hence the greater the externalising attribution bias. The relationship of attributional style and age of onset of the psychotic disorder will be explored in this study. As the evidence shows a higher self-serving bias is found in paranoid patients

(Krstev, Jackson et al. 1999 (Lyon, Kaney et al. 1994, Lyon, Kaney et al. 1994, Jolley, Garety et al. 2006) it is hypothesised the LOP group which the literature suggests have greater paranoid delusional symptomatology than EOP would demonstrate a higher self-serving bias.

4.5.2 Contradictory Findings

There have been contradictory findings to those that support the self-serving bias in deluded patients. Langdon et al (Langdon, Still et al. 2013) found patients with persecutory delusions did not differ from controls in externalising or personalising bias. They suggest young persons in early stages of psychosis do not have prominent attribution bias. However it was also reported that those with extreme persecutory beliefs did show a tendency to avoid self-blame for negative events. Jolley et al also did not find an association between attributional style and persecutory beliefs (Jolley, Garety et al. 2006). Sharp et al (Sharp, Fear et al. 1997) found those with delusional disorder were more likely to externalise attributions for negative events when compared to a control group, however no differences were found in attribution style for positive events.

4.5.3 Attributional Style as a Predisposing Factor

Attributional style, in particular an external attribution bias, may determine the person's vulnerability to psychosis (Langdon, Still et al. 2013). Jansen et al found an association between externalising bias for negative events in persons with psychotic symptoms but they did not find a deviant style to be to be part of vulnerability to psychosis (Janssen, Versmissen et al. 2006). Suk Kyoon et al (An, Kang et al. 2010) demonstrated a biased attribution style to be present in first episode psychosis patients. They proposed this may have evolved prior to the onset of the frank psychotic symptoms, being pivotal in the development of paranoid delusions.

However other investigation into the primacy of attributional bias in early psychosis patients raised doubt over the primacy of such attributional bias (Garety, Kuipers et al. 2001) It has been proposed that the attribution style may shape the content of the delusion rather than have a role in the actual onset and formation of all delusions (Sharp, Fear et al. 1997).

4.5.5 Explanations for Inconsistent Results

It has been suggest that the variability in the findings of attribution bias within the psychotic population may be explained by the dynamic nature of the self-concept and associated and reasoning styles (Bentall, Corcoran et al. 2001, Jolley, Garety et al. 2006). The inconsistencies in the attributional style in paranoid patients may also be due to a fluctuating attribution style. Attribution may depend on many other factors including chronicity of the psychotic disorder, comorbid conditions such as depression or more individual factors such as the age of onset of the disorder.

Conflicting results may also arise due to small samples sizes in many studies from a population with heterogeneous psychopathology. Jolley and colleagues suggest sub-groups of psychotic patients with paranoia may exist based on grandiosity and depressive symptoms, and that the presence of these sub-groups may account for some inconsistencies in the literature. (Jolley, Garety et al. 2006).

4.5.6 Summary

This study will explore any variation in attributional style in early and late onset groups and between the anxiety and stress sensitivity groups. The literature for attributional bias and psychosis is inconclusive but literature suggests the self-serving bias may be more prevalent in those with persecutory beliefs (Krstev, Jackson et al. 1999 (Lyon, Kaney et al. 1994, Lyon, Kaney et al. 1994, Jolley, Garety et al. 2006) . If

paranoia is greater in late onset groups as proposed then a difference in attributional style may be related to this. It will be informative to elucidate the similarities and differences of the psychological variables (self-esteem, attributional bias and jumping to conclusions reasoning bias) within and between the sub-groups and then explore the relationship of these with clinical symptoms (particularly delusions and paranoia).

Differences between the groups may help delineate anxiety and stress sensitive sub-groups and will inform future research. Increased knowledge on attribution will also be beneficial to and influence CBT based practices for these groups.

4.6 The Jumping to Conclusions (JTC) Reasoning Bias

It has become clear from the research that people use many different cognitive models and mechanisms to make judgements. One process that may contribute to the biased attributions that are believed to take palace in psychosis is the process of distorted reasoning. Garety and Hemsley predicted that, based on a Bayesian inference framework, people with delusions would make overconfident rapid decisions compared to controls (Garety, Hemsley et al. 1991). This tendency to jump to conclusions is now an empirically tested and validated process (Garety, Hemsley et al. 1991, Garety and Freeman 1999, Garety, Kuipers et al. 2001) The JTC bias is believed to be central to the distorted reasoning process which leads to the development of pathological symptoms and is widely reported to be present in those with delusional beliefs (Garety and Freeman 1999, Van Dael, Versmissen et al. 2006, David, Kapur et al. 2011).

Delusions have been shown to be associated with reduced data gathering. Individuals with delusional beliefs have been shown to seek less information to make a decision, a data gathering bias (Van Dael, Versmissen et al. 2006). Garety and colleagues (Garety and Freeman 1999) have provided empirical evidence that persons with delusions jump to conclusions when evaluating evidence. Garety et al have also

shown deluded people request less information than controls on probabilistic reasoning tasks and express greater certainty about their judgements. Under certain conditions this may contribute to erroneous conclusions and hence the formation and maintenance of delusions.

The probabilistic reasoning task – the beads task, is a widely-used test to assess the JTC bias. The beads task is based on a Bayesian model of probabilistic inferences. (The Bayesian model provides a framework for assessing the level of prior belief the individual holds and the way the new belief should be made in light of new evidence being provided.) In this task individuals are shown two jars, one has 85 beads of one colour and 15 of another. The second jar has the opposite ratio of coloured beads. The key variable is how many beads are requested to be seen by the participant before they make their judgement as to which jar the beads are belief drawn from. Compared to controls persons with delusional beliefs have been shown to make a decision on which jar a bead has been drawn from (with the jar hidden from view) based on fewer pieces of information (seeing fewer beads drawn from the jar).

4.6.1 Jumping to Conclusions and Vulnerability to Psychosis

It has been shown the JTC bias is present in persons not just with delusions but specifically in those with a diagnosis of schizophrenia irrespective of the specific symptoms (Van Dael, Versmissen et al. 2006). It has been shown to be present within the normal population and relatives of first degree relatives of those with schizophrenia and psychotic disorders (Van Dael, Versmissen et al. 2006). Broome et al (Broome, Johns et al. 2007) also found people in a high risk mental state for psychosis had an intolerance to uncertainty and displayed a jumping to conclusions reasoning style. A study of reasoning bias in the normal population found those with a high delusional ideation (as measured on Peterson's Delusions Inventory) had more of a "jump to conclusions" style of data gathering than those with low delusional ideation (Peters, Thornton et al. 2008).

4.6.2 Jumping to Conclusions Bias and Symptomatology

A dose response relationship between the JTC bias and the level of psychosis liability has been found in non-psychotic relatives of patients with schizophrenia (Van Dael, Versmissen et al. 2006). The severity of the delusion and the presence of JTC bias also were also found to be significantly correlated. Controlling for age gender and educational level reduced the association by small amounts, but they remained significant. Adjusting for general intelligence level however did reduce the association to a non-significant level. In this study Van Dael et al used the Scale for Assessment of Positive Symptoms and the Scale for Assessment of Negative symptoms and found JTC bias to be associated most strongly with delusions foremost then formal thought disorder, hallucinations attention and depression. After analyses they concluded the association with hallucinations was indirectly due to the close relationship often displayed between the hallucinatory experience and the delusional beliefs. It has been shown that the JTC bias is increased when emotionally salient material is used (Dudley, John et al. 1997).

4.6.3 Jumping to Conclusions Bias and Anxiety

The affective state of the individual is will also influence the development of the biased appraisal. Cosoff reports a significant proportion of patients with psychosis have comorbid anxiety disorders which often may not be treated. Catastrophic thinking and anxiety are known to be common in patients with persecutory beliefs (Cosoff and Hafner 1998). According to Freemans and Garety's model (Freeman, Garety et al. 2002) anxiety provides a threat theme integral to the development of paranoid delusions. Anxiety will increase the probability a threatening explanation will be sought and accepted (Garety, Kuipers et al. 2001). It has also been shown that those with anxiety performed between those with delusions and a non-clinical control in the beads task, hypothesising that anxiety may increase the JTC bias. Ho-Wait, Garety and Freeman (So, Freeman et al. 2008) studied the impact of state

anxiety on the jumping to conclusions bias by manipulating state anxiety through anxiety inducing or reducing imagery. They concluded state anxiety does not influence JTC, though recognised the imagery may not have been sufficient to induce an adequate anxiety state manipulation effect.

4.6.4 Summary of Jumping to Conclusions Bias

The jumping to conclusions bias is, like the other cognitive process thought to be involved, a complex process. Garety et al have shown deluded people request less information than controls on probabilistic reasoning tasks and express greater certainty about their judgements (Freeman, Garety et al. 2002, Garety, Freeman 1999, Garety Hemsley et al 1991). There is strong evidence from studies using the Beads Task that a jumping to conclusions style is associated with delusional beliefs. Anxiety has been shown to be associated with this it can therefore be hypothesised that the anxiety psychosis sub-group which is, by definition, a group with higher levels of anxiety would display a greater JTC bias. The literature also suggests a positive correlation between JTC style and the level of paranoia.

Chapter 5: Procedure and Method

5.1 Summary of Study Design

The design of this quantitative study is an exploratory prospective, single centre study using convenience sampling. The participants were service users within Southern Health NHS Foundation Trust. Participants were aged between 18 and 60 years old with a clinical diagnosis of schizophrenia, schizoaffective disorder or delusional disorder. Participants were both from the community and in-patient teams. Opportunistic sampling was required due to the small numbers of late onset cases, a randomized recruitment method of a CMHT would not have identified sufficient numbers of late onset psychosis cases in the limited time available. The convenience sampling method across Southern Health NHS Foundation Trust was therefore required to maximise recruitment of LOP cases.

Eligible participants were identified by their Psychiatrist or Care Coordinator, who approached them to seek their permission to be contacted by the researcher. If the service user expressed interest in the study they were given a participant information sheet. If they wished to participate and met the inclusion criteria informed consent was taken. (See appendix B for participant information sheet and consent form.)

Information was then collected by interview and case note review. Demographic information including ethnicity and social circumstance information such as accommodation and smoking behaviour was collected along with the following rating scales; Structured Clinical Interview for Psychosis Sub-groups (Kinoshita, Kingdon et al. 2012), Comprehensive Psychopathological Rating Scale (Asberg, Montgomery et al. 1978), Structured Clinical Interview for DSM disorders (American Psychiatric Association 1987), Global Assessment of Functioning (American Psychiatric Association 1987), Rosenberg's Self-Esteem Scale (Rosenberg 1965), The Attributional Style Questionnaire (Peterson 1982) and The Beads Task (Garety and Freeman 1999).

Details of these rating scales can be found in chapter 6 and copies of scales and questionnaires can be found in appendix C.

5.2 Justification of Study

As previously discussed schizophrenia is a very heterogeneous disorder. It affects around 1% of the population. Schizophrenia and psychosis places a huge economic and social burden on society while patients are faced with stigma, social decline, and a high comorbidity of physical illness. The mental and behavioural symptoms are quite unique to each individual. It is widely believed that homogenous sub-groups may lie within the umbrella diagnosis of schizophrenia.

A significant proportion of people with psychosis develop the disorder in middle age - it is estimated 15-20 % of persons with schizophrenia developed it between the ages of 45 and 60 years (Howard, Rabins et al. 2000). Late onset schizophrenia has been a neglected area of research and it remains unclear if late onset psychosis is a distinct disorder from psychosis that develops in early adulthood.

Sub-groups based on the vulnerability stress model have been proposed. The structured clinical interview for psychosis sub-groups (SCIPS) has been developed to classify persons with psychosis into these sub-groups. Two of the four sub-groups, namely stress sensitivity psychosis and anxiety psychosis, are party defined by age of onset and are thought to be comparable to early and late onset psychosis respectively. This study aimed to explore and further differentiate the anxiety and stress sensitivity sub-groups and see if there is a relationship between these groups and the groups solely defined by age of onset – early and late onset psychosis. This research also explored clinical, demographic and psychological variables to identify areas of similarity or differences. A greater understanding of variables differentiating sub-groups will inform future research and add to the discussion on reclassification. The more knowledge there is on potential sub-groups the greater the potential for

development of treatment and therapy in particular cognitive model of psychosis within sub-groups which would inform cognitive therapy for psychosis.

5.3 Aims and Objectives

The aim of this exploratory research is to assess the hypothesis that late onset psychosis and early onset psychosis are distinct subgroups. It also tested the hypothesis that stress sensitivity psychosis and anxiety psychosis are distinct subgroups.

The research explored the relationship between the sub-groups stress sensitivity and anxiety psychosis to see if they are equivalent, or any similarities which need further exploration, to an early and late onset psychosis respectively.

The following secondary hypothesis will be assessed to meet the above aim.

Sub-groups

- There is no significant difference in the clinical and demographic characteristics between patients with early-onset psychoses and late-onset psychoses.
- There is no significant difference in the clinical and demographic characteristics between anxiety psychosis and stress induced psychosis.

Demographics

- There will be a greater number of participants with anxiety psychoses in the late-onset group than the early onset group.
- There will be more participants with stress psychosis in the early onset group than late onset group.
- There will be more females than males in the late onset psychosis group.
- There will be more females than males in the anxiety psychosis group.
- Participants in the late onset psychosis group will have better current and premorbid functioning than those in early onset group.

- Participants in anxiety psychosis group will show better current and pre-morbid functioning than those in the stress sensitivity psychosis group. (As determined by proxy markers of marital status, educational attainment, employment status, accommodation status)
- Participants in early onset psychosis group will have higher levels of family history of psychosis compared to the late onset psychosis group.
- Participants in stress sensitivity group will have a higher levels family history of psychosis than those in the anxiety psychosis group.

Symptomatology

- Participants in the anxiety psychosis group will show more symptoms of anxiety than those in the stress sensitivity group.
- Participants in the stress sensitivity group will have more negative symptoms than those in the anxiety group.
- Participants in the early onset group will have more negative symptoms than those in the late onset group.
- Participants in the late onset group will have higher levels of paranoia than those in the early onset group.
- Participants in the anxiety group will have higher levels of paranoia than those in the stress sensitivity group.
- Participants in anxiety psychosis group will have more systematised delusions than those in stress sensitivity group.
- Participants in the late onset psychosis group will have more systematised delusions than those in the early onset group.
- There will be no difference in suicidality between early and late onset psychosis groups.
- There will no difference in the level of suicidality in the stress sensitivity and anxiety psychosis groups.

Medication

- Participants with early onset psychosis will be on higher levels of anti-psychotic medication than those with early onset psychosis.
- Participants with stress sensitivity psychosis will be on higher levels of anti-psychotic medication than those with anxiety psychosis.

Psychological Variables

- There will a difference in self-esteem between early and late onset groups.
- There will be a difference in self-esteem between anxiety and stress sensitivity psychosis groups.
- There will be a greater jumping to conclusion bias in late onset than early onset psychosis group.
- There will be a greater jumping to conclusion bias in anxiety psychosis than stress sensitivity psychosis group
- A greater self-serving attributional bias will be seen in late-onset psychosis patients compared to early onset.
- A greater self-serving attributional bias will be seen in anxiety psychosis patients compared to stress sensitivity psychosis.

5.4 Procedure

5.4.1 Recruitment

A convenience sampling methodology was used due to the time and financial limitations of the study.

Eligible participants were identified by discussion with care coordinators and psychiatrists. The principal researcher attended Community Mental Health Team meetings within Southern Health Foundation Trust (SHFT) to advertise the study and identify potential participants. Emails were sent to all psychiatry trainees within SHFT. Posters and leaflets were distributed at local research conferences.

A screen of RiO electronic patient records for potentially eligible candidates within SHFT was carried out on by behalf by SHFT IT department. Details of this screen can be found in appendix D. The electronic notes of individuals identified by this screen were further assessed by the researcher. If they met the inclusion criteria their care coordinator or psychiatrist were asked if they felt it appropriate to seek the individual's participation. If so, the care coordinator or psychiatrist then sought their permission for the researcher to contact them.

Sample Size

On advice from statisticians a power calculation was not undertaken due to the exploratory nature of this study. The time limitations of the study meant the participants were recruited opportunistically and least 40 participants were planned to be recruited with equal numbers with early onset and late onset psychosis.

Setting

Southern Health Foundation Trust is an NHS trust with general adult community mental health teams and general adult mental health in-patient units. Community teams and in- patient teams within Southern Health were approached for eligible participants. All interviews took place on SHFT premises.

Participant Eligibility Criteria

Participants were recruited to the study if they were:

- 18 – 65 years old.
- Had a clinical ICD 10 diagnosis of schizophrenia, delusional disorder or schizo-affective disorder.
- Had capacity to give fully informed consent.

Participants were excluded from the study if they were:

- Lacking capacity to give fully informed consent.
- Unable to adequately understand verbal explanations or written information given in English.
- Deemed unable to tolerate or likely to become distressed during the administration of the structured questionnaires and cognitive tests.
- Known to have a drug induced psychosis or onset of their first psychotic symptoms within two weeks of using a psychoactive substance, meeting a diagnosis of Mental and behavioural disorders due to psychoactive substance use.
- Co-morbid diagnosis of emotionally unstable personality disorder.

5.4.2 Measures Used

Copies of the rating scales and questionnaires can be found in appendix C.

The interviews were carried out by the lead investigator and three psychiatry trainees. The interviews took between one and half and three hours. Participants were offered breaks and the opportunity to complete the questionnaires over two sessions if they preferred.

Socio-Demographic Information

Socio-demographic information was collected at interview with the participant. The following demographic information was collected:

- Current age

- Marital status at onset of their illness and currently
- Gender
- Ethnicity
- Cigarette smoking status
- Current and past illicit drug use
- Accommodation status at time of onset and currently
- Information regarding the participant's status as community or inpatient and their current Mental Health Act status
- The number of admissions, duration and Mental Health Act status of any current or previous hospital admissions
- Current psychotropic medication

If there was any uncertainty the information was checked the RiO electronic notes

Rating Scales

The following rating scales were administered**:**

- The Structured Clinical Interview of Psychosis Sub-groups (Kinoshita, Kingdon et al. 2012)
- Comprehensive Psychopathological Rating Scale (Asberg, Montgomery et al. 1978)
- Rosenberg Self-Esteem Scale (Rosenberg 1965)
- Global Assessment of Functioning (Association 2000)
- Attributional Style Questionnaire (Peterson 1982)
- The Beads task (Garety, Hemsley et al. 1991) was used to assess for a jumping to conclusions bias.

An inter rater reliability was established using the CPRS scale. A recording of an interview with a participant using the Comprehensive Psychopathological Rating Scale was made (with the participants' informed consent). The 4 raters involved in this study then watched the video independently and rated the CPRS based on this interview. An intra class correlation coefficient was then calculated to establish inter rater reliability. This was supplemented with discussion and review of the video after

rating with the lead investigator. Training was also provided and discussion held on the use of the other rating scales used by .

5.4.3 Ethics Approval

Ethical approval for this study was obtained from NRES Committee South Central-Southampton B.

Ethics Regional Ethics Committee reference number: 12/SC/300.

Approval was also obtained from Research Governance at the University of Southampton and Southern Health NHS Foundation Trust Research and Development.

5.4.4 Patient Confidentiality

Written informed consent was obtained from all participants.

Confidentiality of the service users was maintained by anonymization of all information collected. Each participant was assigned a number on entry to the study. All information was then identified by this number to prevent identification of any persons. The key to this number was stored securely and separate to any information with the participant's codes.

Only patients deemed stable enough by their treating team were recruited to the study. They were made aware their participation would not affect their clinical care in any way and they could withdraw at any time. The psychiatrist collecting data was vigilant to any distress and the patient was informed that should there be any

concerns the researcher would contact the participant's mental health professional. (See participant information sheet in appendix B.)

Payment of £20 was made to each participant to recompense for their time. It was noted within the participant's psychiatry electronic RiO notes that the participant had given informed consent to take part in the exploratory study and paid for their participation. No other information was passed on to a third party without the participant's consent.

5.4.5 Changes to Protocol

There were no changes to protocol. One non-substantial amendment was made; once the study has commenced it became evident the data collection was taking less time than anticipated, with only one meeting not two being required. The participant information sheet was therefore updated to reflect this. (Participant Information sheet version 3 can be found in appendix B.)

5.5 Data Management

Missing Values

One participant was unable to complete the CPRS.

Statistical Analyses

Data was analysed using SPSS version 22. Statistical advice was sought from the statistics department at University of Southampton Faculty of Medicine.

Two tailed tests with significance level of 5% were used for all statistical tests. Comparison of nominal data between the groups was tested using chi-squared test and Fisher's exact test. The independent t-test was used for ordinal data that met

parametric assumptions. If the parametric assumptions were not satisfied for the ordinal independent variable being tested then Mann-Whitney U Test was used. The chi-squared test for independence and Fisher's exact test were used to examine the relationship between two categorical variables. Fisher's exact test was used when the expected frequencies in 1 or more cell was less than 5.

Spearman's rank correlation coefficient was used to assess the degree of association between age of onset and ordinal data or non-parametric data. This test was also suitable due to the small sample size and as the distribution of age of onset was non-parametric.

Chapter 6: Rating Scales

Copies of all rating scales can be found in appendix C.

6.1 Comprehensive Psychopathological Rating Scale (CPRS)

The CPRS was developed in 1971 by a working group in the Swedish Medical Research Council. It was constructed explicitly to measure change in psychopathology and includes items that were relevant for psychiatric illness that are able to be elicited in a psychiatric interview. The scale was developed to cover arrange of psychopathology or used as a pool of items from which subscales can be drawn for particular psychiatric syndrome (Asberg, Montgomery et al. 1978).

The scale assesses the present psychopathology and consists of 65 items; 40 symptoms and 25 observed items. It takes around one hour to complete. An interview technique is recommended but each item can be asked for individually.

Items are rated on the following four-point scale;

- 0 = symptom absent.
- 1 = pathological or variant of normal.
- 2 = clearly pathological.
- 3 = extreme degree of psychopathology.

The Montgomery-Asberg Depression Rating Scale is a subscale of the CPRS shown to be a valid and reliable measure of depression (Faravelli, Albanesi et al. 1986). The Brief Scale for Anxiety is a 10 item subdivision of the CPRS (Tyrer, Owen et al. 1984). It is suitable for rating pathological anxiety alone or anxiety comorbid with other disorders such as psychosis.

The CPRS has items for 12 reported psychotic symptoms which have been validated as a subscale for schizophrenia. These items are ideas of persecution, feeling controlled, disrupted thoughts, delusional mood, ideas of grandeur, ecstatic

experiences, morbid jealousy, other delusions commenting voices, other auditory hallucinations, visual hallucinations, other hallucinations (Montgomery, Taylor et al. 1978).

A subscale for negative symptoms has been developed by validating CPRS items against Schedule for the Assessment of Negative Symptoms (Lindstrom and Lindstrom 1996).

The Suicidality item from CPRS (item 7) has been validated as a strong indicator of suicidality in a population with psychotic illness (Hansen and Kingdon 2006).

The CPRS requires the rater to have experience in interviewing psychiatric patients. An explicit description of each item is provided to improve rater reliability. It requires clinical judgement to define the severity of each symptom rated. In this study comprehensive training of the CPRS was provided by the principal investigator (Dr Taylor, Author) with three psychiatry trainees who were carrying out the interviews for data collection. An inter rater reliability coefficient for the CPRS was calculated.

The CPRS does not include assessment of the systematisation of delusions. An item from the Present State Examination (Wing et al 1974) was therefore used to assess this. This item has not been validated for assessing the systematisation of delusion as a single item and so caution is required when analysing the results.

6.2 Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (Rosenberg 1965) consists of ten items on self-esteem answered on a four point scale - from strongly agree to strongly disagree. This widely used scale was originally developed to assess global feelings of self-worth and self-acceptance in American High School students. It includes 10 items which have face validity and has been shown to have acceptable and extensive reliability

(both internal consistency and re-test reliability) and has convergent and discriminate validity (Adler 2004).

6.3 The Attributional Style Questionnaire

The Attributional Style Questionnaire (Peterson 1982) is a self-report instrument, used with permission from Dr Seligman, University of Pennsylvania. The ASQ tool requires the participant to imagine they are in a hypothetical situation, for example "you have been looking for a job unsuccessfully for some time". There are 6 positive and 6 negative situations.

Participants are required to write down one major cause of this situation. They then rate the cause along a 7-point continuum for each of the three causal dimensions. It takes approximately 15 minutes for the participant to complete. The scores obtained demonstrate explanatory style for bad events and for good events. It also rates in terms of their belief that the event is due to themselves or others (internal vs external attribution) the likelihood this will reoccur in the future or is a single event (stable vs unstable) and how likely it is to affect other areas of their life (global vs specific attribution). Seligman does not recommend using the dimensional scores unless there is strong theoretical reasons for investigating individual dimensions as these have much lower validity and reliability(Peterson 1982). Therefore the recommended composite scores, detailed below, are used.

The Composite negative attribution style (CoNeg) is calculated by sum of all bad events divided by 6, total number of bad events. The worst score is 3 the best score is 21.

The composite positive attributional style (CoPos) score is the sum of all total events divided by 6, total number of good events, the best score is 3 the worst score is 21.

The composite positive minus composite negative score (CPCN). This can range from +18 to -18.

6.4 The Beads Task

This task is designed to examine individuals reasoning style under conditions of uncertainty. It is used to demonstrate a jumping to conclusions bias (Garety, Hemsley et al. 1991). Individuals were presented with two jars of coloured beads. One jar has 85 of white and 15 black beads and the second jar contains opposite proportions of beads.

The beads were removed from view. The participant was shown a bead chosen in a pseudo-random order (they were of pre-determined order to maintain reliability between participants). The participant was then asked to decide which jar they believe the bead has been taken from. They were asked if they were completely sure with their decision. If there was any uncertainty they were offered another draw of a bead from the chosen jar. This was repeated until they are confident in their decision.

If their decision is based on being shown two or fewer beads they were rated as having a positive jumping to conclusions bias.

6.5 The Global Assessment of Functioning

The Global Assessment of Functioning scale is rated by the researcher who gives a numerical value on a hypothetical continuum from 0 to 100. To do this the psychological, social, and occupational functioning is considered. Impairment in functioning due to physical (or environmental) limitations is not included. The appropriate code for the lowest level of functioning during the week of poorest functioning in past month is recorded. An intermediate level (e.g. 45, 68, or 72) can be used when appropriate. The scale is useful for comparing severity of disorder which reflects current support needs between different diagnoses and measuring change over time (Startup, Jackson et al. 2002). It has excellent inter-rater reliability

and has a proven validity of measuring symptoms and social functioning among patients with schizophrenia. Only brief training is required in order to use the scale reliably (Jones, Thornicroft et al. 1995).

Chapter 7: Results

7.1 Sample Characteristics

Data was collected from a total of 44 participants. Thirty-two of these were classified using the SCIPS as having anxiety psychosis and 12 were classified as having stress-sensitivity psychosis. Twenty-eight participants had early onset psychosis and 16 had late onset psychosis, as defined by the Consensus Statement from the International Late Onset Schizophrenia Group (Howard, Rabins et al. 2000).

The study had aimed to collect an equal number of participants with early and late onset psychosis, but due to the low incidence of late onset psychosis and difficulties experienced in this study recruiting those with late onset psychosis, the groups were not equally balanced. The demographic and clinical characteristics of this sample are presented in table 1.

Thirty-three of the sample met the DSM-IV criteria for schizophrenia, six for schizoaffective disorder and five for delusional disorder.

Figure 2. Recruitment Flow

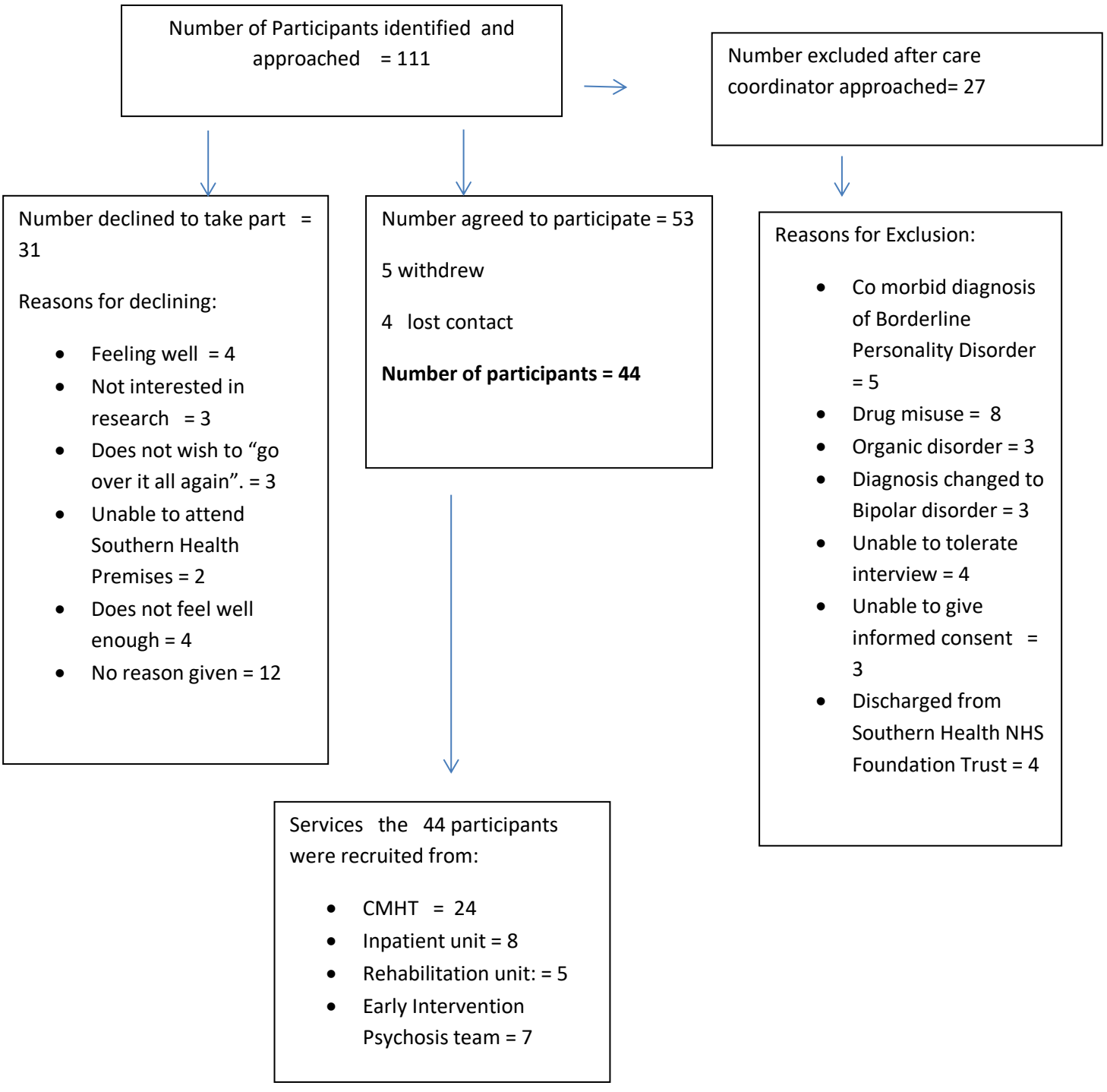

Table 1: Demographic characteristics of the sample		
Number of Participants		44 (100%)
Current Age (years)	Mean (SD) Min - max Median (IQR)	45 (13.18) 18 – 65 49 (21-65)
Gender	Female Male	16 (36.4%) 28 (63.6%)
Admission Status	Outpatients Outpatients community subject to MHA Inpatient detained under MHA Informal inpatients	30 (68.2%) 1 (2.3%) 7 (15.9%) 6 (13.6%)
Age of Onset (years):	Mean (SD) Median (IQR) Range	32 (12.96) 32 (20-41) 15 - 57
Substance Misuse		14 (31.8%)
Ethnicity	White Caucasian Asian/Asian British Black/Black British	39 (88.6%) 3 (6.8%) 2 (4.5%)
Current Marital Status	Married/Cohabiting/civil partnership Divorced/separated Single	13 (29.5%) 3 (6.8%) 28 (63.6%)
Employment Status	Full-time employment/self-employment Part-time employment/self-employment Unemployed Student/ retired/homemaker/carer	6 (13.6%) 8 (18.2%) 27 (61.4%) 3 (6.8%)
Accommodation Status	Home owner Rent Live with family Hostel/supported accommodation	6 (13.6%) 24 (54.5%) 8 (18.2%) 6 (13.6%)
Highest Qualification:	O-level/CSE/GCSE A/AS Level NVQ 3/GNVQ/BTEC/Diploma/City & Guilds/RSA advanced Undergraduate degree Postgraduate degree Professional qualification No qualification	11 (25.0%) 5 (11.4%) 12 (27.3%) 4 (9.1%) 4 (9.1%) 1 (2.3%) 7 (15.9%)
DSM-IV Diagnosis:	Schizophrenia Schizoaffective disorder Delusional disorder	33 (61.4%) 6 (13.6%) 5 (11.4%)

7.2 Sub-group Analysis

Of the 28 participants with early onset psychosis the majority, 18 (64.3%) met a SCIPS diagnosis of anxiety psychosis and 10 (35.7%) met the stress sensitivity diagnosis. Of the 16 participants with late onset psychosis the majority, 14 (87.5%) also met the diagnosis of anxiety psychosis and only 2 (12.5%) were diagnosed with stress sensitivity psychosis. See table 2 and figure 3.

Table 2: Prevalence of anxiety psychosis and stress sensitivity sub-groups within late and early onset psychosis groups

	Anxiety Psychosis	Stress Sensitivity Psychosis	Total
Early Onset Psychosis	18 (64.3%)	10 (35.7%)	n= 28 (100%)
Late Onset Psychosis	14 (87.5%)	2 (12.5%)	n=16 (100%)
Total	32	12	44

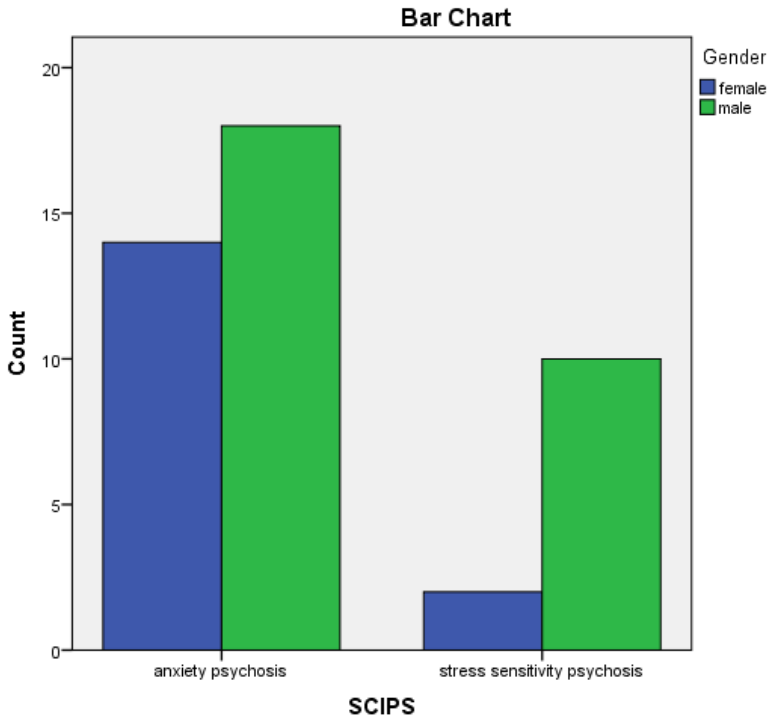

Figure 3: Prevalence of anxiety psychosis and stress sensitivity sub-groups within late and early onset psychosis groups

A Fisher's exact test did not find significant difference between the number of cases of stress sensitivity and anxiety psychosis in the early and late onset groups ($p = 0.160$).

The age range for the late onset group is defined as 40 to 60 years old. The age criteria used in the classification of anxiety psychosis is 30 years old. To confirm whether there is a population diagnosed with anxiety psychosis but not meeting age range for LOP classification (and which may skew the results), re-analysis with the age range for LOP from 35 years old was undertaken.

If the age ranges are altered to include those 35 years old and above in the late onset group and those 34 years and below in the early onset group, the distributions change slightly as displayed in table 3.

Table 3: Prevalence of anxiety psychosis and stress sensitivity sub-groups within late and early onset psychosis groups with modified age of late onset group to 35 years' old			
	Anxiety Psychosis	**Stress Sensitivity Psychosis**	**Total**
Early Onset Psychosis defined by 18- 34	17 (68.0%)	8 (32.0%)	n= 25 (100%)
Late Onset Psychosis Defined as 35-65	15 (78.9%)	4 (21.1%)	n=19 (100%)

Three more cases meet diagnosis of late onset psychosis and hence the number of early onset cases reduces by three. There is a resultant increase in the number of cases of anxiety psychosis within the early onset group (increased from 64.3% to 68.0% and a reduction in the number of stress sensitivity cases (35.7% cf. 32.0%). There are fewer cases of anxiety psychosis in the late onset group with this revised age range (87.5% to 78.9%) and nearly doubling of the number of stress sensitivity cases (12.5% cf. 21.0%). This meant were no longer cells with expected value of less than 5 and so a chi-squared test of independence was carried to out to examine the relationship between the SCIPS groups within early and late onset groups using the revised age definition. There was no significant difference between the number of number anxiety and stress sensitivity cases in the revised early and late onset groups (chi-squared = 0.652, p= 0.419).

A SCIPS criterion for anxiety psychosis is age of onset 30 years and above. If the age range of late onset psychosis is again modified to 30 years and above and early onset being 29 years and below the number of late onset cases increases to 24 and early onset reduces to 20.

It remains that most both groups are diagnosed with anxiety psychosis; 65% of the early onset group and 79.2% of the late onset group (see table 4). There is no significant difference in the number of anxiety and stress sensitivity cases in the early and late onset groups (chi-squared = 1.104 p=0.293) (see table 5).

Table 4: Distribution of sub-groups within late and early onset psychosis as defined with late onset 30 years and above

	Anxiety Psychosis	Stress Sensitivity Psychosis	Total
Early Onset Psychosis defined by 18-29	13 (65%)	7 (35%)	n= 20 (100%)
Late Onset Psychosis Defined as 30-65	19 (79.2%)	5 (20.8%)	n=24 (100%)

There is no statistical difference in the number of cases of early or late onset psychosis within the anxiety and stress sensitivity psychosis groups (Fisher's exact test = 1. 644 p = 0.160).

Table 5: Distribution of anxiety and stress sensitivity classification within the early and late onset groups

	Early Onset Psychosis	Late Onset Psychosis	Total
Anxiety Psychosis	18	14	n= 32 (100%)
Stress Sensitivity Psychosis	10	2	n=12 (100%)

7.3 Demographic Variables

Demographic variables for the Subgroups are displayed in Tables 6 and 7.

Table 6: Demographic Characteristics of the Stress Sensitivity and Anxiety Psychosis Groups			
Number of Participants		Stress Sensitivity Psychosis n= 12 (100%)	Anxiety Psychosis n= 32 (100%)
Gender	Female Male	2 (16.7%) 10 (83.3%)	14 (43.8%) 18 (56.3%)
Admission Status	Outpatients Outpatients community subject to MHA Inpatient detained under MHA Informal inpatients	7 (58.3%) 0 (0%) 2 (16.7%) 3 (25%)	23 (71.9%) 1 (3.2%) 5 (15.6%) 3 (9.4%)
Current Substance Misuse		3 (25%)	8 (25%)
Ethnicity	White Caucasian Asian/Asian British Black/Black British	11 (91.7) 1 (8.3%) 0 (0%)	28 (87.5%) 2 (6.3%) 2 (6.2%)
Current Marital Status	Married/Cohabiting/civil partnership Divorced/separated Single	3 (25.0%) 2 (16.7%) 7 (58.3%)	9 (28.1%) 8 (25.0%) 15 (46.9%)
Employment Status	Full-time employment/self-employment Part-time employment/self-employment Unemployed Student/ retired/homemaker/carer	6 (50%) 0 (0%) 5 (41.7%) 1 (8.3%)	15 (46.9%) 7 (21.9%) 6 (18.8%) 4 (12.5%)
Accommodation Status	Home owner Rent Live with family Hostel/supported accommodation	1 (8.3%) 5 (41.7%) 5 (41.7%) 1 (8.3%)	6 (18.8%) 18 (56.3%) 8 (25%) 0 (0. %)
DSM-IV Diagnosis:	Schizophrenia Schizoaffective disorder Delusional disorder	9 (75.0%) 2 (16.7%) 1 (8.3%)	24 (75.0%) 4 (12.5%) 4 (12.5%)

Table 7: Demographic Characteristics of the Early and Late Onset Psychosis Groups			
Number of Participants		Early Onset Psychosis n= 28 (100%)	Late Onset Psychosis n= 16 (100%)
Gender	Female Male	6 (21.4%) 22 (78.6%)	10 (62.5%) 6 (37.5%)
Admission Status	Outpatients Outpatients community subject to MHA Inpatient detained under MHA Informal inpatients	19 (67.9%) 1 (3.6%) 5 (17.9%) 3 (10.7%)	11 (68.8%) 0 (0%) 2 (12.5%) 3 (18.8%)
Current Substance Misuse		10 (35.7%)	1 (6.3%)
Current Smoking Status	Current smoker Non-smoker Ex-smoker	17 (60.7%) 6 (21.4%) 5 (21.4%)	8 (50%) 7 (43.8%) 1 (6.3%)
Ethnicity	White Caucasian Asian/Asian British Black/Black British	20 (80.0%) 3 (12.0%) 2 (8.0%)	19 (100%) 0 (0%) 0 (0%)
Current Marital Status	Married/Cohabiting/civil partnership Divorced/separated Single	8 (28.6%) 6 (21.4%) 14 (50%)	4 (25%) 4 (25%) 8 (50%)
Current Employment Status	Full-time employment/self-employment Part-time employment/self-employment Unemployed Student/ retired/homemaker/carer	4 (14.3%) 7 (25%) 16 (57.7%) 1 (3.6%)	2 (12.5%) 1 (6.3%) 11 (68.8%) 2 (12.5%)
Current Accommodation Status	Home owner Rent Live with family Hostel/supported accommodation	2 (7.1%) 17 (60.7%) 6 (21.4%) 3 (10.75%)	4 (25%) 7 (43.8%) 2 (12.5%) 3 (18.8%)
DSM-IV Diagnosis:	Schizophrenia Schizoaffective disorder Delusional disorder	22 (78.6%) 5 (17.9%) 1 (3.6%)	11 (68.8%) 1 (6.3%) 4 (25.0%)

7.3.1 Gender

The gender distribution within the anxiety/stress sensitivity group and early/late onset sub-groups is displayed in table 6 and figures 4-5. Eighteen of the 28 men in the study (64.3%) were diagnosed with anxiety psychosis and 10 (35.7%) with stress sensitivity psychosis. The majority, 14, of females (87.5%) were diagnosed with anxiety psychosis and 2 (12.5%) diagnosed with stress sensitivity psychosis. The distribution of anxiety and stress sensitivity sub-groups between genders was found to be non-significant using the Fisher's exact test ($p = 0.96$).

Most the stress sensitivity group are male, 83.3% (n=10) and 16.7% (n=2) are female. The distribution within the anxiety psychosis is more evenly distributed with 56.3% male (n=18) and 43.8% (n=14) female. There was no significant difference found in the gender distribution between the SCIPS sub-groups (Fisher's exact test =-1.644, $p= 0.160$).

Twenty-two males (78.6%) had an early onset psychosis and 6 (21.6%) had a late onset psychosis. Of the sixteen females, more were late onset cases (n = 10 62.5%) than early onset cases (n=6 21.4%). As expected there is significant difference in the gender distribution between the early and late onset groups (chi- squared = 7.422, $p = 0.006$)

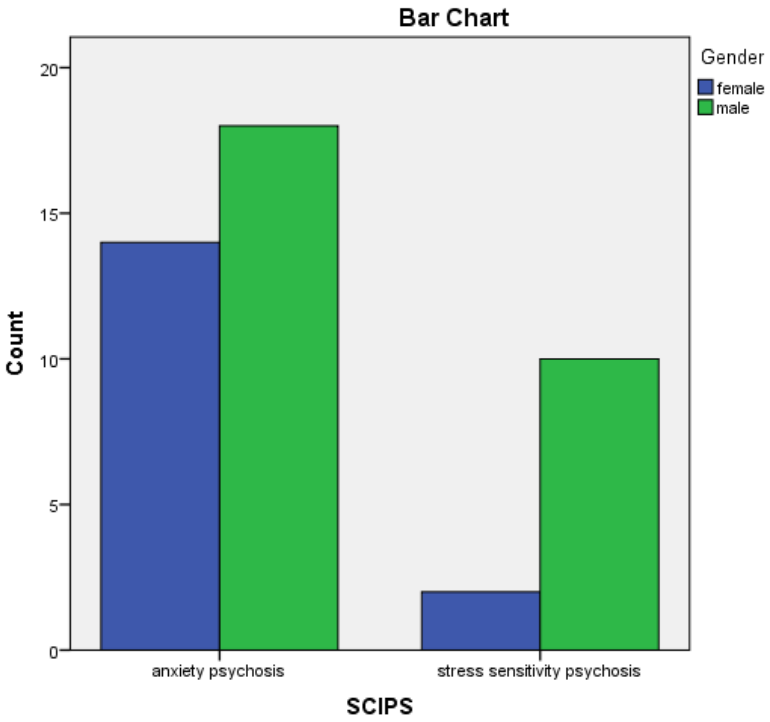

Figure 4: Gender distribution in anxiety and stress sensitivity groups

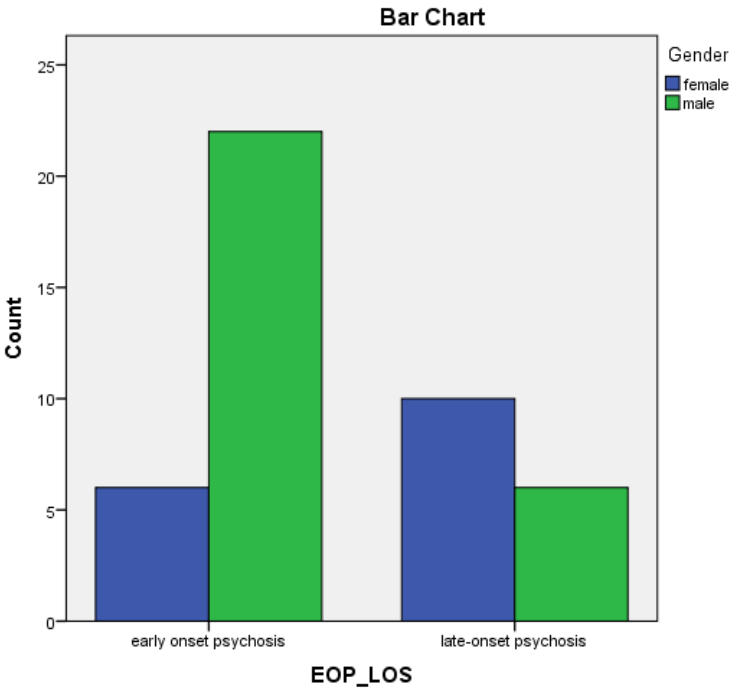

Figure 5: Gender distribution in early and late onset psychosis groups

7.3.2 Age of Onset

The mean age of onset in those with anxiety psychosis was 32 years old (SD = 12.85) and the mean age of onset in the stress sensitivity group was 30 years old (SD = 13.61). The age of onset is non-parametrically distributed and so Mann-Whitney U Test was used to analyse the results. No significant difference was found in the age of onset between these groups (Mann-Whitney U = 168.5, p = 0.535).

There is a significant difference in the age of onset in the early (Mean = 24, SD 7.31) and late onset groups (Mean = 46, SD = 7.66) (Mann-Whitney U = -10.00, p = <0.00).

7.3.3 Admission Status

The admission status of the participants at the time of participation in the study is displayed in table 7. Fisher's exact test did not show significant differences in the admission status of cases in the anxiety and stress sensitivity group (Fisher's exact test = 2.396, p = 0.587), nor between the early and late onset groups (Fisher's exact test = 1.321, p = **0.866**).

7.3.4 Substance Misuse

Illicit Drug use is recorded as part of the SCIPS and the demographic questionnaire. This relied on participant information and the Riot notes. There were significantly more cases of current substance misuse within the early onset group than the late onset group. 35.7% (n=10) in the early onset group use illicit substances compared to 6.3% (n=1) of the late onset group (Fisher's exact test = 2.146, p = 0.036). There was no significant difference in the number of participants using illicit substances in the anxiety and stress sensitivity groups with 25% of each group doing so (Fisher's exact test = 0.000, p = 1.00). The results are shown in figures 6 and 7.

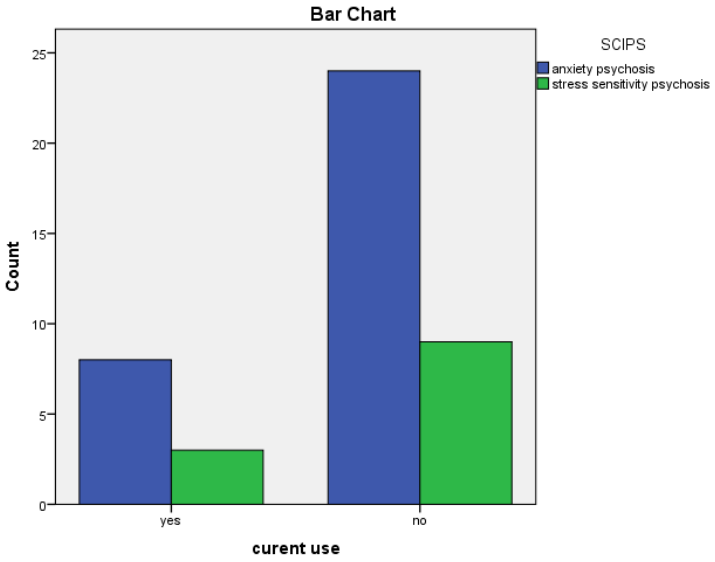

Figure 6: Current illicit substance use in anxiety and stress sensitivity sub-groups

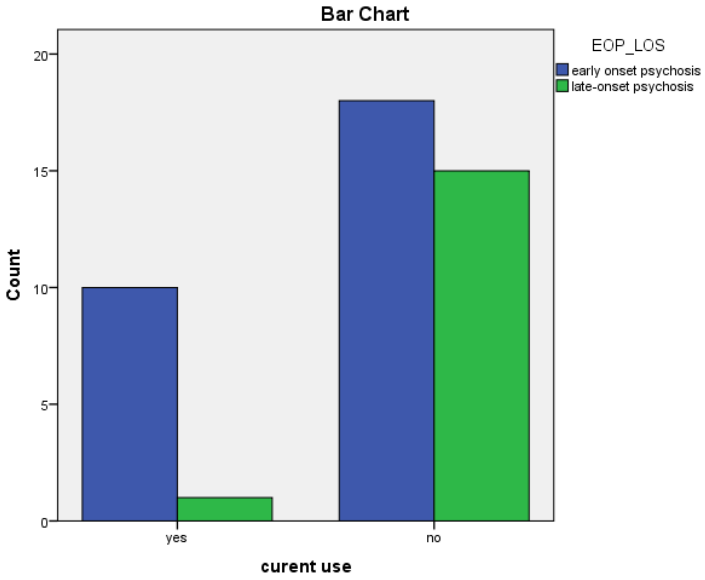

Figure 7: Current illicit substance use in early and late onset groups

The smoking status in the sub-groups is displayed in table 6 and 7.

There is no significant difference in the smoking status of subjects in the SCIPS sub-groups, (Fisher's exact test = 2.826, p = 0.251) or the early and late onset psychosis groups (Fisher's exact test = 2.704, p = -0.273).

7.3.5 Ethnicity

Table 6 and 7 displays the ethnicity of participants within the sub-groups. There is no significant difference in ethnicity of participants in the LOP and EOP group (Fisher's exact test = 2.385, p = 0.256), or between the stress sensitivity and anxiety groups (Fisher's exact test = 0.756, p = 1.00).

7.3.6 Marital Status

The marital status at time of onset of the disorder is displayed in tables 8 and 9 for the Stress Sensitivity/Anxiety subgroups and the early/late Onset Groups respectively

Using Fisher's exact test showed no significant difference in the current marital status of subjects in the stress sensitivity or anxiety psychosis group (Fisher's exact test = 4.272, p = 0.373) nor between the early and late onset group (Fisher's exact test = 2.342, p = 0.802). There is no significant difference between the marital status at onset between the SCIPS group (Fisher's exact test = 1.486, p= 0.554) nor between the early and late onset groups (Fisher's exact test = 1.430 p = 0.683).

Table 8: Changes in Marital Status in Stress Sensitivity and Anxiety psychosis groups		
	Age onset sub-group	
Marital status at Onset	**Stress Sensitivity Psychosis**	**Anxiety Psychosis**
Single	9 (75.0%)	19 (59.4%)
Married/cohabiting/civil partnership	2 (16.7%)	11 (34.3%)
Divorced/separated	1 (8.3%)	2 (6.3%)
Current Marital status		
Single	7 (58.3%)	15 (46.9%)
Married/cohabiting/civil partnership	3 (25.0%)	9 (28.1%)
Divorced/separated	2 (16.7%)	8 (25.0%)

Table 9: Changes in Marital Status Change Early and Late onset psychosis groups		
	Age onset sub-group	
Marital status at Onset	Early onset N= 28 (100%)	Late onset 16 (100%)
Single **Married/cohabiting/civil partnership** **Divorced/separated**	18 (64.3%) 9 (32.1%) 1 (3.6%)	10 (62.5%) 4 (25%) 2 (12.5%)
Current Marital status		
Single **Married/cohabiting/civil partnership** **Divorced/separated**	14 (50.0%) 8 (28.6%) 6 (21.4%)	8 (50%) 4 (25%) 4 (25%)

7.3.7 Employment Status

The employment status of participants at the time of onset of their disorder and current employment status are shown in tables 10 and 11 for the Stress Sensitivity/Anxiety subgroups and the early/late onset subgroups respectively.

There is no significant difference in the current employment status of subjects in the stress sensitivity and anxiety groups (Fisher's exact test = 2.107 p = 0.594) nor in the employment status at the onset of the disorder (Fisher's exact test = 4.377, p = 0.219).

No significant difference was found in the current employment status of participants in the early and late onset groups (Fisher's exact test = 3.368, p= 0.314) or in the employment status at time of the onset of the disorder (Fisher's exact test = 6.160, p = 0.87).

Table 10: Employment Status in Stress Sensitivity and Anxiety Psychosis groups		
	SCIPS sub-group	
Employment Status at Onset	Anxiety psychosis n=32 (100%)	Stress sensitivity psychosis n=12 (100%)
Full time employed/self employed	15 (46.9%)	6 (50%)
Part time employed/ self employed	7 (21.9%)	0 (0%)
Unemployed/ benefits/sick leave	6 (18.8%)	5 (41.7%)
Student/ retired /carer/ homemaker	4 (12.5%)	1 (8.3%)
Current Employment status		
Full time employed/self employed	4 (17.5%)	2 (16.7%)
Part time employed/self-employed.	7 (21.7%)	1 (8.3%)
Unemployed/benefits/sick leave.	18 (56.3%)	9 (75%)
Student/retired /carer/homemaker.	3 (9.4%)	0 (0%)

Table 11 Employment Status Early and Late Onset Psychosis groups		
	Age Onset Psychosis sub-group	
Employment Status at Onset	**Early onset n=28 (100%)**	**Late onset n= 16 (100%)**
Full time employed/self employed Part time employed/ self employed Unemployed/ benefits/sick leave Student/ retired /carer/homemaker	14 (50%) 5 (17.9%) 4 (14.3%) 5 (17.9%)	7 (43.8%) 2 (12.5%) 7 (43.8%) 0 (0%)
Current employment status		
Full time employed/self employed Part time employed/self-employed. Unemployed/benefits/sick leave. Student/retired /carer/homemaker.	4 (14.3%) 7 (25%) 16 (57.7%) 3 (10.75%)	2 (12.5%) 1 (6.3%) 11 (68.8%) 2 (12.5%)

7.3.8 Accommodation Status

The accommodation status of participants at time of onset of the disorder and currently are displayed in table 12 and 13 for the Stress Sensitivity /Anxiety subgroups and the Early/Late onset sub-groups. There was no significant difference found in the current accommodation status at onset of disorder in anxiety and stress sensitivity groups (Fisher's exact test = 3.962, p = 0.253) nor in the current accommodation status (Fisher's exact test = 3.412, p = 0.334). Likewise, the analysis does not demonstrate a significant difference in accommodation status either current or at onset of the disorder in the early and late onset groups (Fisher's exact test = 3.751, p = 0.316 and Fisher's exact test = 4.802, p = 0.176 respectively.

Table 12: Accommodation status of Stress Sensitivity and Anxiety Psychosis groups		
	SCIPS sub-group	
Current Accommodation status	Stress sensitivity psychosis n=12 (100%)	Anxiety psychosis n=32 (100%)
Home owner Rented accommodation Living with family Hostel/Supported Accommodation	1 (8.3%) 9 (75%) 2 (16%) 0 (0%)	5 (15.6%) 15 (46.9%) 6 (18.7%) 6 (18.8%)
Accommodation Status at Onset		
Home owner Rented accommodation Living with family Hostel/Supported Accommodation	1 (8.3%) 5 (41.7%) 5 (41.7%) 1 (8.3%)	6 (18.8%) 18(56.3%) 8 (25.0%) 0 (0%

Table 13: Accommodation status of Early Onset psychosis and Late Onset groups		
	Age Related Subgroups	
Current Accommodation status	Early Onset Psychosis	Late Onset psychosis
Home owner Rented accommodation Living with family Hostel/Supported Accommodation	2 (7.1%) 17 (60.7%) 6 (21.4%) 3 (10.75%)	4 (25%) 7 (43.8%) 2 (12.5%) 3 (18.8%)
Accommodation Status at Onset		
Home owner Rented accommodation Living with family Hostel/Supported Accommodation	3 (10.7%) 13 (46.4%) 11 (39.3%) 1 (3.6%)	4 (25%) 10 (62.5%) 2 (12.5%) 0 (0%)

7.3.9 Academic Qualifications

The highest academic qualification for participants in the sub-groups is displayed in figures 8 and 9. There was no statistical difference found between the level of education of subjects in the stress sensitivity and anxiety group (Fisher's exact test = 4.469, p = 0.665) or between educational level of subjects with late onset psychosis and early onset psychosis (Fisher's exact test = 5.343, p = 0.534).

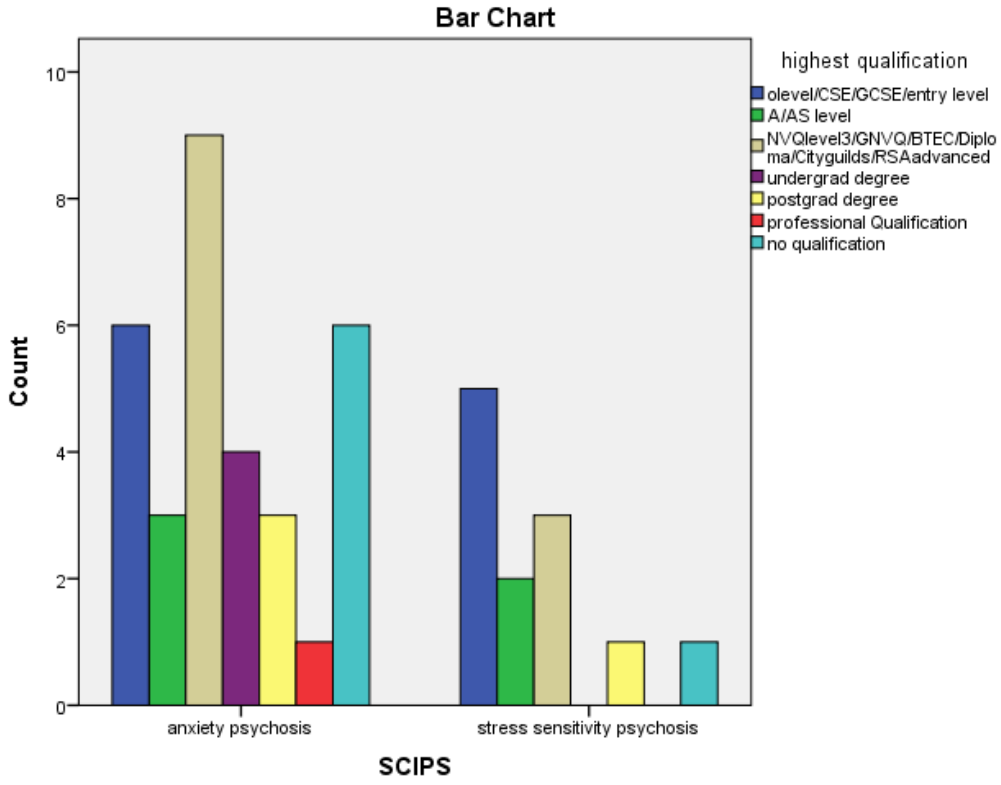

Figure 8: Academic achievement in anxiety and stress sensitivity sub-groups

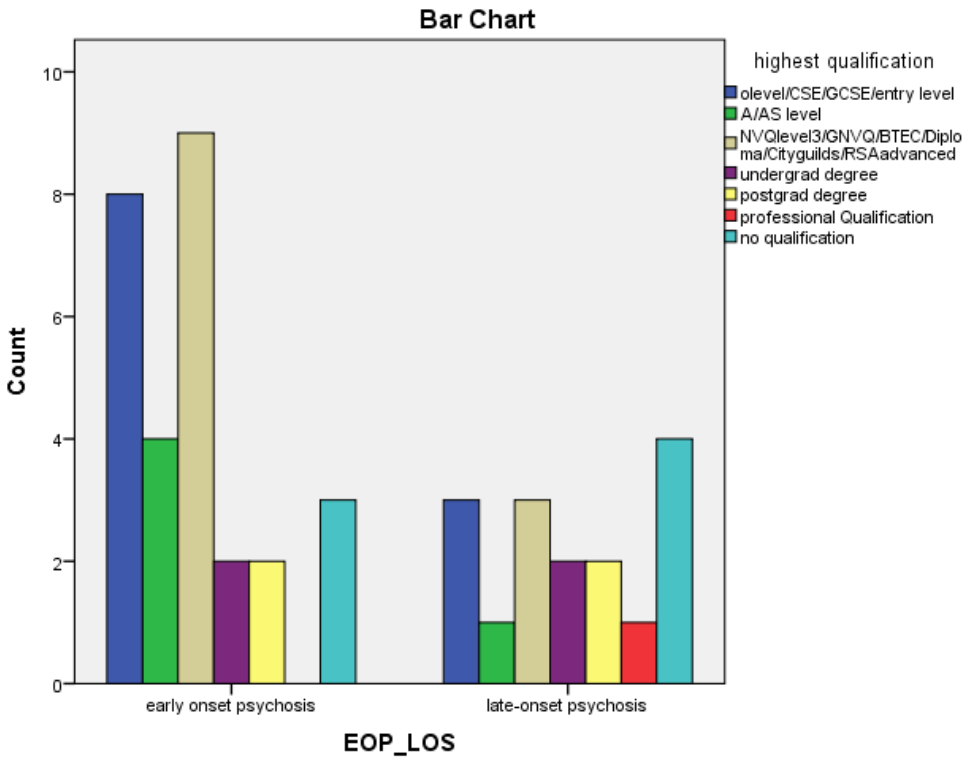

Figure 9: Academic achievement in early and late onset psychosis sub-groups

7.3.10 Family History

The family history within the sub-groups is displayed in tables 14 and 15. 12.5% (n=4) of those with anxiety psychosis reported having a first degree relative with psychosis compared to none of those with stress sensitivity psychosis. This was not statistically significant (Fisher's exact test = 1.270, p = 0.562).

A slightly greater proportion with late onset psychosis (12.5% n=2) had a first degree relative with psychosis compared to those with early onset psychosis (7.1% n = 2). This finding was also found to be non-significant (Fisher's exact test = 0.494, p = 0.738).

The number of persons with a second degree relative with a psychotic disorder was higher in the anxiety psychosis group (31.25%, n=10) compared to those with stress

sensitivity psychosis (25%, n=3). This difference is non-significant (Fisher's exact test = 0.400, p = 1.00). Twenty-five percent (n=2) of late onset psychosis group reported a second degree or more distant family member to have had a psychotic disorder, compared to 32.1% (n=9) of the early onset group. This was also found to be non-significant (Fisher's exact test = 0.494, p = 0.738).

Table 14: Family history of psychotic disorder within stress sensitivity and Anxiety sub-groups

	First degree relative with psychosis		**Second degree relative with Psychosis**	
	Yes	No	yes	NO
Anxiety n=32 (100%)	4 (12.5%)	28 (87.5%)	10 (31.3%)	22 (68.7%)
Stress sensitivity psychosis n= 12 (100%)	0 (0.0%)	12 (100%)	3 (25.0%)	9 (75.0%)
Late onset psychosis	2 (12.5%)	14 (87.5%)	16 (100%)	
Early onset psychosis	2 (7.1%)	26 (92.9%)	28 (100%)	

Table 15: Family history of relatives with psychotic disorder within Early and Late Psychosis Sub-Groups

	First degree relative with psychosis		**Second degree relative with Psychosis**	
	Yes	No	Yes	No
Late onset psychosis n= 16 (100%)	2 (12.5%)	14 (87.5%)	4 (25.0%)	12 (75.0%)
Early onset psychosis n=28 (100%)	2 (7.1%)	26 (92.9%)	9 (32.1%)	19 (67.9%)

7.4 Clinical Variables

7.4.1 Diagnosis

The distribution of the DSM diagnosis, within the SCIPS sub-group is displayed in table 16. There is no statistical difference between the DSM diagnosis within the stress sensitivity and anxiety sub-groups (Fisher's exact test = 1.032, p = 0.818). The distribution of DSM diagnosis within the late and early onset groups is also non-significant (Fisher's exact test = 4.685, p = 1.08).

7.4.2 Number of Admissions

The number of hospital admissions in the SCIPS groups and the early and late onset groups are displayed in figures 9 and 10. The Mann-Whitney U test was used to examine the number of admissions the patients within the sub-groups had had. Out of the 28 subjects in the early onset group, 42.9% (n = 12) had never been admitted to hospital compared to 12.5% (n = 2) out of the 16 late onset cases. There was no significant difference in the number of admissions of patients between the two groups; with early onset mean = 2.89 (SD = 3.70) and late onset group mean = 2.31 (SD = 1.89), (Mann-Whitney U = 209.00, p = 0.709).

Thirty one percent (n=10) of the anxiety psychosis group had never been admitted to hospital, similarly 33% (n=4) of the stress sensitivity psychosis group (n = 12) had never been admitted. There was no significant difference in the overall number of admissions in the anxiety and stress sensitivity groups (Mann-Whitney U = 188.500, p = 0.925).

There are no significant differences in the number of admissions under the Mental Health Act between the stress sensitivity and anxiety psychosis groups (Mann-

Whitney U = 181.00, p = 0.886) or the early and late onset groups (Mann-Whitney U = 189.00, p = 0.472).

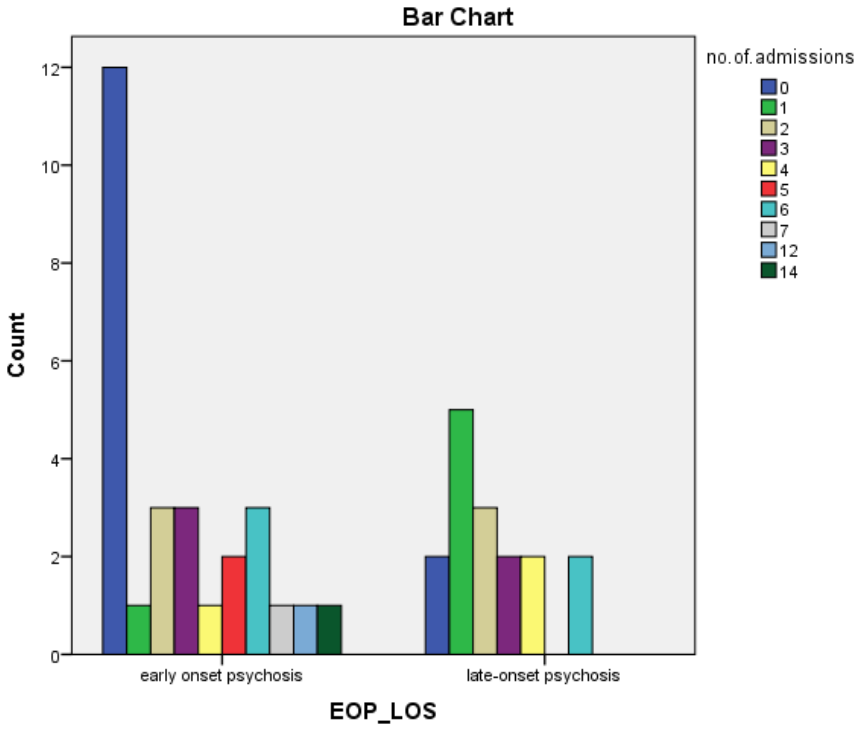

Figure 10: Number of hospital admissions in the early and late onset psychosis groups

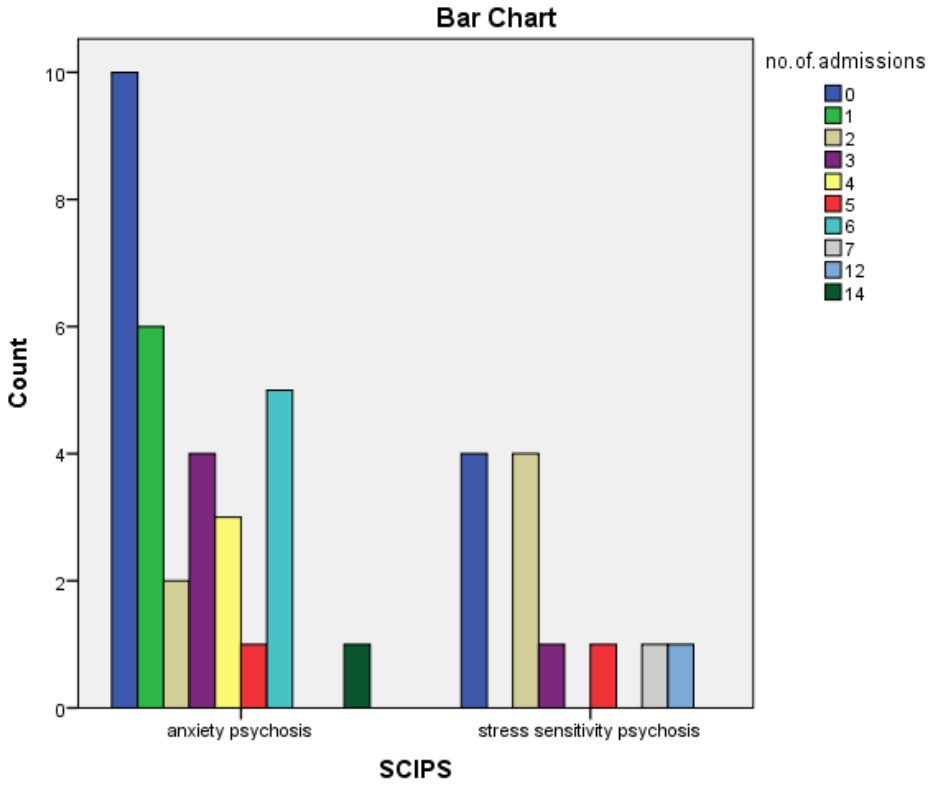

Figure 11: Number of hospital admissions in the anxiety and stress sensitivity group

7.4.3 Antipsychotic Medication

The doses of antipsychotic medication were converted into Chlorpromazine equivalents (Woods 2003) for standardisation and ease of comparison between groups. These doses are displayed in table 17.

There was no significant correlation between the Chlorpromazine equivalent dose of antipsychotic and the age of onset of the psychosis (Pearson's Correlation coefficient = 0.014, p = 0.927).

Table 16: Antipsychotic (Chlorpromazine equivalent) doses		
	Chlorpromazine equivalent Median (IQR)	**Mean (SE)**
SCIPS sub-group:		
Anxiety psychosis	300.00mg (200.00mg)	354.07 mg (53.24)
Stress sensitivity psychosis	225.00mg (291.75mg)	281.92 mg (61.02)
Early onset psychosis	316.50mg (266.92mg)	370.23mg (60.18)
Late onset psychosis	241.50mg (187.50mg)	271.69 mg (46.16)

Analyses using the Mann-Whitney U test did not show a significant difference in the Chlorpromazine equivalent dose of antipsychotic medications between the anxiety and stress sensitivity groups (Mann-Whitney U = 174.500, p= 0.643) or the early and late onset groups (Mann-Whitney U = 192.500, p = 0.440).

7.4.5 Assessment of Functioning

The GAF scores are parametrically distributed and so an independent t-test was used to assess for differences in GAF scores between the groups, as displayed in table 18. There is no significant difference in the GAF scores in the anxiety psychosis or stress sensitivity group (t =-1.02, p = 0.314) or between the late and early onset psychosis groups (t = 0.876, p = 0.386).

Table 18: Global Assessment of Functioning (GAF)			
	Global Assessment of functioning mean score (SE)	**Group total**	**Sample total**
Anxiety psychosis	60.25 (2.65)	32 (100%)	44 (100%)
Stress sensitivity psychosis	65.83 (5.53)	12 (100%)	
Early onset psychosis	63.39 (3.09)	28 (100%)	44 (100%)
Late onset psychosis	58.94 (4.02)	16 (100%)	

7.4.6 CPRS

A good inter-rater reliability for the CPRS (calculated from the four researchers collecting data) was demonstrated with an intra-class correlation coefficient = 0.836.

The MADRS, anxiety, schizophrenia change and negative symptoms and suicidality subscales of the CPRS were used to compare clinical features between groups. (Details of these subscales can found in chapter 6.) The mean scores of the variables are shown in figures 11 and 12.

If the data met parametric assumptions the independent two sample t-test has been used, the Mann-Whitney U test has been used for data which does not meet parametric assumptions.

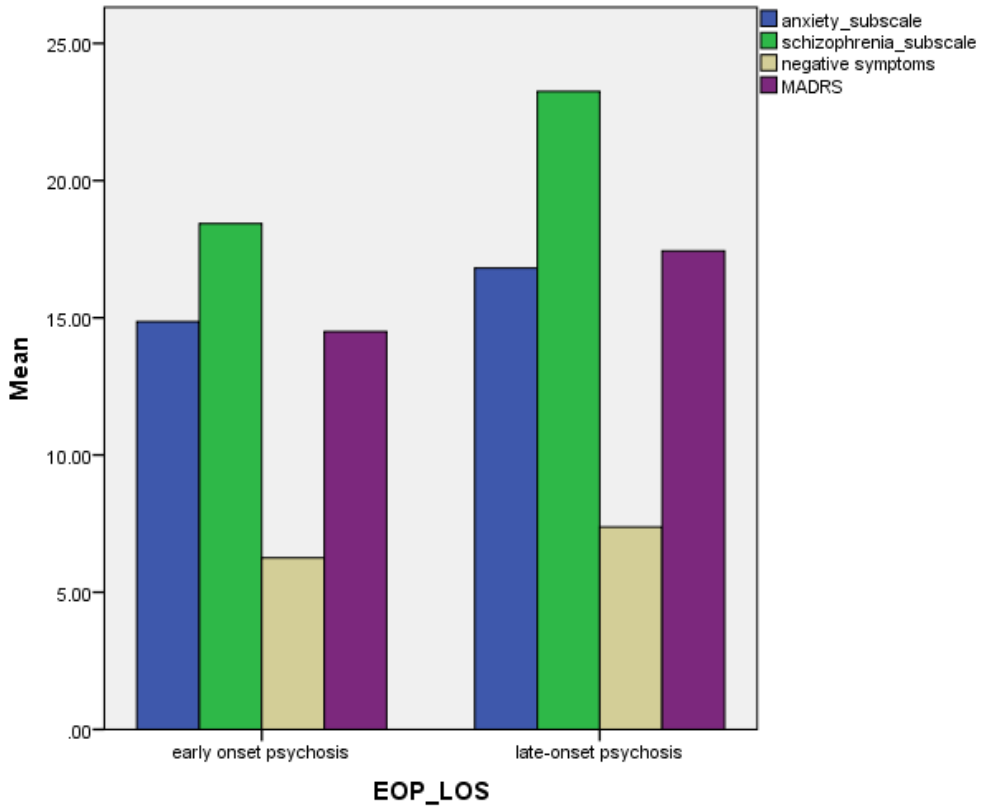

Figure 12: Sub-scales scores of CPRS in early and late onset psychosis sub-groups

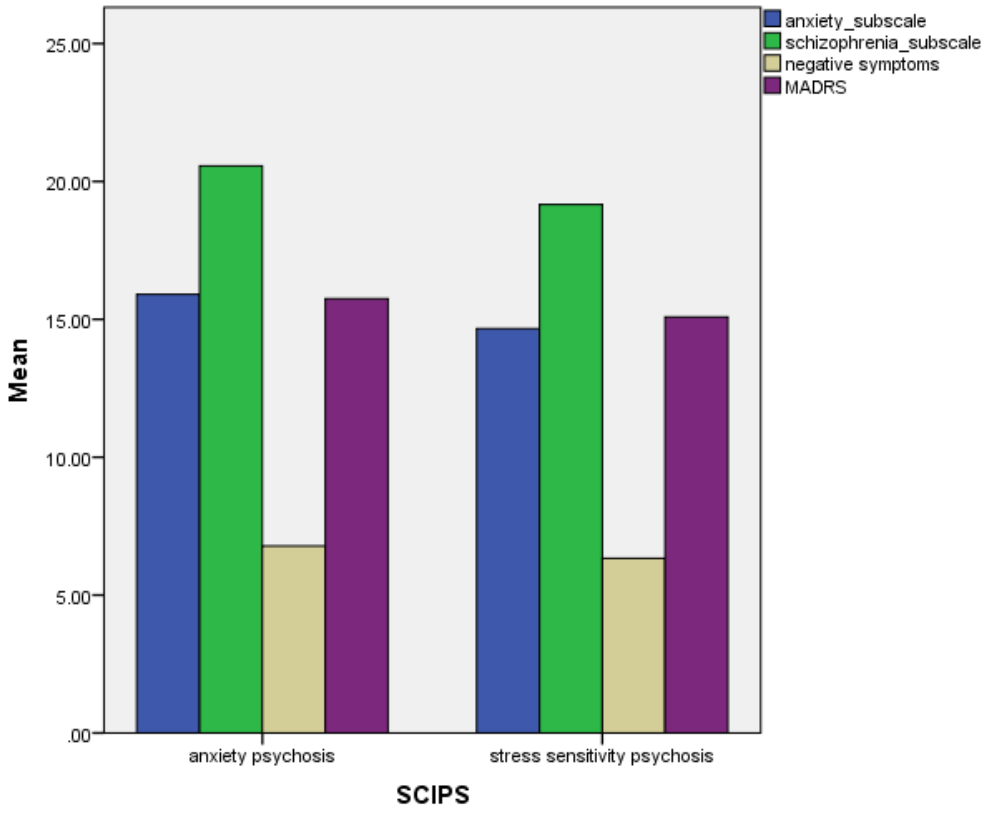

Figure 13: Sub-scales scores of CPRS in anxiety and stress sensitivity sub-groups

7.4.7 Depression

Depression was measured using the MADRS subscale of the CPRS. The Mann-Whitney U test was used to compare means in the early onset group (mean = 14.50, SD=4.74) and late onset group (mean = 17.44, SD = 4.74). The late onset group were found to have significantly higher levels of depression than the early onset group (Mann-Whitney U test = 145.50, p = 0.050).

The difference in the depression scores in those with stress sensitivity psychosis (mean = 15.08, SD = 3.44) and anxiety psychosis (mean = 15.75, SD = 5.08) is non-significant (Mann-Whitney U test = 188.000, p = 0.916).

7.4.8 Anxiety

The Spearman's rho correlation coefficient test showed a small positive correlation between the age of onset of psychosis and the level of anxiety (rho = 0.200, p = 0.192). The anxiety psychosis group had slightly higher levels of anxiety (mean = 15.902, SD = 4.881) than the stress sensitivity group (mean = 14.663, SD = 3.524). This data does not meet parametric assumptions and so Mann-Whitney U test has been used to analyse the results, this has shown the difference between the mean scores is non-significant (Mann-Whitney U = 178.002 p = 0.711).

There was no significant difference (Mann-Whitney U = 149.50, p = 0.076) between the levels of anxiety in the late onset (mean = 16.811, SD = 3.613) and early onset group (mean = 14.852, SD = 4.931).

7.4.9 Schizophrenia

There is a moderate positive correlation between the scores on schizophrenia subscale and the age of onset of the psychotic disorder (rho = 0.367, p = 0.014).

The late onset group had a significantly higher mean score on the schizophrenia subscale (mean = 23.252, SD = 6.137) than the early onset group (mean = 18.424, SD = 6.517) with Mann-Whitney U score = 119.50 and p = 0.011)

There was no significant difference between the schizophrenia scale scores of the stress sensitivity group (mean = 19.17 SD = 5.61) and the anxiety psychosis group (mean = 20.56, SD 7.15) with Mann-Whitney U = 182.00, p = 0.791.

7.4.10 Delusions

Spearman rho has been used to assess correlations with non-parametrically distributed age of onset. There is a significant moderate positive correlation between the level of systematisation of delusions and the age of onset of psychosis (rho = 0.344, p = 0.022) and a moderate positive correlation between thoughts of persecution and increasing age of onset (rho = 0.350, p = 0.028).

The systemisation of delusions scores approximate to the normal distribution and so a t-test of independent sample was used to compare the means between the groups. The t-test found the mean score for systemisation of delusions is significantly higher (t = -3.278, df = 42, p = 0.002) for the late onset group (mean = 2.750, SE = 0.194) than the early onset group (mean = 1.930, SE = 0.154).

There is no significant difference between the extent of systematisation of delusions between the stress sensitivity and anxiety psychosis groups using the two sample t-test as distribution to the norm is approximately met (t = 0.656, df = 42, p = 0.516)

The late onset group also scored significantly higher scores on CPRS item thoughts of persecution than the early onset group (Mann-Whitney U = 114.000, p = 0.032).

There is no significant difference in the CPRS item of thoughts of persecution score between the anxiety psychosis and stress sensitivity psychosis groups (Mann-Whitney U = 157.501, p = 0.311).

7.4.11 Assumed Reliability of the Rating of CPRS items

The assumed reliability of the rating given (item 67) is shown in table 19 for all the sub groups. Parametric assumptions are met and so and 2 sample t-test is appropriate to use. There is no significant difference between the reliability of ratings and the anxiety and stress sensitivity groups. (Fisher's exact test = 1.761, p = 0.672) or between the early and late onset psychosis groups (Fisher's exact test = 5.153, p = 0.147).

Table 19: Assumed reliability rating of CPRS items

	Reliability of Rating of CPRS				Total
	Very poor	**Fair**	**Good**	**Very good**	
Anxiety psychosis	3 (9.4%)	11 (34.4%)	11 (34.4%)	7 (21.9%)	32 (100%)
Stress sensitivity psychosis	2 (16.7%)	2 (16.7%)	5 (41.7%)	3 (25%)	12 (100%)
Early onset psychosis	5 (17.9%)	8 (28.6%)	11 (39.3%)	4 (14.3%)	28 (100%)
Late onset psychosis	0 (0%)	5 (31.3%)	5 (31.3%)	6 (37.5%)	16 (100%)

7.4.12 Negative Symptoms

Spearman's rank correlation test showed a small positive trend between negative symptoms and age of onset of the psychotic disorder, however this is non-significant at the 0.05% level (rho = 0.252, p = 0.099).

There is no significant difference (Mann-Whitney U = 1.673, p = 0.427) in the negative symptoms between the early (mean = 6.250, SE = 0.275) and late onset group (mean = 7.375, SE = 0.584) as scored by the CPRS sub-scale.

There is no significant difference (Mann-Whitney U-test = 163.00, p = 0.42) between the negative symptom subscale score in the stress sensitivity group (mean = 6.333, SE = 0.582) and anxiety groups (mean = 6.781, SE = 0.327).

7.4.13 Suicidality

There was no significant difference (Mann-Whitney U = 177.00, p = 0.171) in the CPRS suicidality scores between the early (mean = 1.321, SE = 0.104) and late onset groups (mean = 1.750, SE = 0.250).

There was no significant difference (Mann-Whitney U = 190.00, p = 0.950) in the CPRS suicidality scores between the stress sensitivity (mean = 1.500, SE = 0.230) and anxiety psychosis groups (mean = 1.469, SE = 0.134).

7.4.14 Hallucinations

The data from the CPRS ordinal scales are non-parametric and so Mann-Whitney U test was used analyse the significance of the results. This analyses found no significant difference in the level of auditory hallucinations as measure as commenting voices item in the stress sensitivity and anxiety sub-groups (Mann-Whitney U = 190.500, p = 0.966) or between the late and early onset groups (Mann-Whitney U = 223.000, p = 0.979). There was no significant difference in the CPRS visual hallucinations score between the stress sensitivity and anxiety group (Mann-Whitney U = 185.00 p = 0.835) or the late and early onset group (Mann-Whitney U = 216.500 p = 0.836).

7.5 Attribution Style

The scores from the attributional style questionnaire are displayed in table 22. A self-serving bias was calculated as the negative mean minus the positive mean, this indicated the extent to which people blame others for negative outcomes and hold themselves responsible for positive ones (Jolley, Garety et al. 2006). The self-serving bias scores are normally distributed and so independent two sample t-test analyses have been carried out. This showed that the late onset group had a significantly higher self-serving bias score than the early onset group ($t = -2.048$, $df = 40$, $p = 0.047$). There was no significant difference in self-serving bias between the stress sensitivity or anxiety groups ($t = 0.897$, $df = 40$, $p = 0.375$)

There is a small positive, but non-significant, correlation between the age of onset of the disorder and the extent of self-serving attribution score (rho = 0.226, p = 0.151).

Table 20: Self-serving bias score in sub-groups

	Anxiety psychosis	**Stress sensitivity psychosis**	**Early onset psychosis**	**Late onset psychosis**
Mean self-serving bias (SE)	0.331 (0.677)	-0.768 (0.938)	-0.838 (0.650)	1.405 (0.914)

There were no significant differences between early and late onset groups in the positive, negative or composite attributional style scores. There were no significant differences between these variables between the stress sensitivity and anxiety groups (Mann-Whitney U = 163.500, p = 0.646)

7.6 Self-esteem

The Rosenberg self-esteem scores are normally distributed; therefore an independent samples t-test was carried out to compare the levels of self-esteem between the sub-groups.

The self-esteem scores in the anxiety psychosis (n=32) and stress sensitivity group (n = 12) are very similar with means of 19.94 and 19.17 respectively. The difference between the groups is non-significant (t = 0.337, p = 0.738).

The late onset group had a slightly higher self-esteem score (mean = 21.63, df = 7.44) than the early onset group (mean = 18.64, df = 6.09) but this difference is non-significant (t = -1.44, p = 0.167).

7.7 The Beads Task: Jumping to Conclusions (JTC) Bias

Results from the beads task are shown in tables 23 and 24. For analyses the results have been grouped into positive responses – less than two beads chosen before making a decision and negative JTC response when three or more beads were seen before the participant made a decision.

A greater proportion of participants in both the stress sensitivity and the anxiety psychosis groups displayed a positive JTC bias than a negative JTC bias. When analysed using Fisher's exact test this difference was non-significant between the groups (Fisher's exact test = 0.607, p = 1.00).

The late onset psychosis group displayed a higher proportion of positive JTC responses than negative responses. The early onset group had equal numbers of positive and negative JTC responses. There is no significant difference in the number of participants displaying a positive JTC bias between the LOP and EOP groups (chi-squared = 2.63, p = 0.105).

There is no significant difference in the level of negative attribution scores between those giving positive JTC responses and negative ones (t = 1.973, p = 0.055).

Table 21: Jumping to conclusions bias in anxiety and stress sensitivity psychosis sub-groups			
	Anxiety Psychosis	**Stress Sensitivity Psychosis**	**Total**
Positive* JTC response	19 (59%)	7 (58%)	26
Negative JTC responses	13 (41%)	5 (42%)	18
Total	32 (100%)	12 (100%)	44 (100%)

*positive JTC response is rated when decision is made after seeing two or fewer beads.

Table 22: Jumping to conclusion bias in early and late onset psychosis sub-groups			
	Early Onset Psychosis	**Late Onset Psychosis**	**Total**
Positive* JTC response (%)	14 (50%)	12 (75%)	26
Negative JTC responses (%)	14 (50%)	4 (25%)	18
Total	28 (100%)	16 (100%)	44 (100%)

*positive JTC response is rated when decision is made after seeing two or fewer beads.

Chapter 8: Summary of Results

8.1 Sample Characteristics

Forty-four participants were recruited. Twenty-eight were cases of early onset psychosis, 16 were late onset psychosis. Of the 44 participants, 32 were classified with anxiety psychosis and 12 with stress sensitivity psychosis.

8.2 Sub-groups

Sixty-four percent of early onset psychosis were diagnosed with anxiety psychosis, 87% of late onset were diagnosed with anxiety psychosis. There is no significant difference in the number of anxiety and stress sensitivity cases in the early and late onset psychosis. This suggests the stress sensitivity and anxiety psychosis do not correlate with the diagnosis and therefore are not equivalent of early and late onset psychosis.

8.3 Demographics

In the late and early onset psychosis there is no significant difference in admission status, smoking of participants. Nor is there any significant difference in the ethnicity, marital status, employment status, accommodation status or educational level of persons with late and early psychosis. There is statistically more illicit drug use in the late onset group than early onset group. There is a statistically significant difference between gender distribution in the early and late onset groups with a higher proportion of females in the late onset group and higher proportion of men in the early onset group.

There is no significant difference in any of the above demographic variables in the stress sensitivity or anxiety sub-group.

There is no significant difference in the number of hospital admissions or the number of admissions under the Mental Health Act between the stress sensitivity and anxiety group or between the late and early onset group.

8.4 Clinical Variables

There is no significant difference in the dose of antipsychotic (Chlorpromazine equivalent) between the early and late onset and the anxiety and stress sensitivity groups.

The CPRS scores showed the late onset group had significantly higher levels of depression than the early onset group.

There was no significant difference in levels of depression between the stress sensitivity and anxiety psychosis sub-groups.

No significant difference was found in levels of anxiety between the early and late onset group or between the stress sensitivity and anxiety psychosis groups.

The late onset group had significantly higher score on the CPRS schizophrenia sub-scale than the early onset group. There is no significant difference in this score between the stress sensitivity and anxiety psychosis sub-groups.

There is a significant difference in the level of systematisation of delusions in the late onset compared to the early onset group and in the thoughts of persecution score between these groups with late onset having more persecutory thoughts than early onset patients. There was no significant difference for either of these variables between the stress sensitivity and anxiety sub groups.

There is no significant difference in the negative symptom score, suicidality or visual or auditory hallucinations in the early and late onset groups or the stress sensitivity and anxiety groups.

8.5 Psychological Variables

There was a small positive correlation between self-serving bias and age of onset of psychotic disorder. There was a significantly higher self-serving attribution bias in the late onset compared to the early onset group but no difference between the anxiety and stress sensitivity sub-groups**.**

There is no significant difference in measure of self-esteem between early and late onset groups or between the stress sensitivity and anxiety psychosis groups. There is no significant difference in the jumping to conclusions bias in either the late onset and early onset groups or the stress sensitivity and anxiety psychosis groups.

Chapter 9: Discussion

The discussion starts with an overview of the main findings of the study. The results need to be interpreted in context of methodological limitations. The strengths and weaknesses of this study will be discussed and the key results will then be reviewed in the context of the current literature and methodological factors.

9.1 Overview of Study and Results

In this study patients with a diagnosis of schizophrenia, delusional disorder or schizoaffective disorder were recruited. They were classified into early onset schizophrenia and late onset schizophrenia as per the International Consensus guidelines(Howard, Rabins et al. 2000). They have been referred to as late and early onset psychosis throughout the thesis rather than late and early onset schizophrenia as the inclusion and exclusion criteria mean the sample are not reflective of a population solely with schizophrenia.

The SCIPS, a tool developed to classify patients with schizophrenia into four sub-groups, was then used to classify the participants into the anxiety or stress sensitivity psychosis groups. The inclusion and exclusion criteria meant persons with drug related or traumatic psychosis were not recruited to the study.

A mixture of self-rated and interviewer rated scales and questionnaires were used to explore and differentiate the anxiety and stress sensitivity sub-groups and the early and late onset psychosis groups. The relationship between anxiety and stress sensitivity sub-groups and the age of onset of the disorder was explored (and hence none excluded after SCIPS classification).

An anxiety psychosis is proposed to be a psychosis that develops in later life and stress sensitivity psychosis an early onset disorder (Kingdon 2005, Kingdon, Gibson et

al. 2008). The results of this study do not support this distinction. In this study the majority of participants within the early onset and late onset groups met a diagnosis of anxiety psychosis. There was no statistical difference found in the age of onset between anxiety and stress sensitivity psychosis.

The scores on the demographic variables, clinical characteristics and psychological variables were compared between the anxiety and stress sensitivity groups but no statistically supported differentiation could be made between the two groups.

The late onset group were found to have significantly more females than males compared to the early onset group, consistent with published literature (Pearlson, Kreger et al. 1989, Castle and Murray 1993, Riecher-Rossler, Hafner et al. 2003, Vahia, Palmer et al. 2010). The late onset group were also found to have significantly more persecutory delusions than the early onset group and greater systematisation of delusions which is in keeping with the literature (Wynn Owen and Castle 1999, Jeste 2000, Cohen, Vahia et al. 2008). The late onset group scored significantly higher than the early onset group on the CPRS schizophrenia subscale. No other clinical characteristics were found to differentiate the early and late onset groups.

A significantly higher self-serving attribution bias in the late onset group than the early onset group was found. This was the only significant difference identified in the psychological variables between the early and late onset groups.

Positive correlations and trends were found between age of onset and self-serving bias, systematisation of delusions and thoughts of persecution. Small positive correlations were also found between age of onset and global assessment of functioning score, and age of onset and anxiety levels.

9.2 Strengths and Weaknesses

This study is exploratory, looking at both the anxiety and stress sensitivity sub-groups alongside the early and late onset psychosis groups. The results primarily serve to generate further hypotheses and direct future areas of research with respect to the psychosis sub-groups. It also explores the differences and similarities between early and late onset psychosis using the internationally agreed age classification of late onset schizophrenia, with participants with onset of psychotic symptoms between 40 and 60 years.

9.2.1 Participant Recruitment, Sampling Bias and Generalizability of Results

Selection bias is always a risk in studies. Convenience sampling was used in this study. The most obvious criticism of this sampling technique is of sampling bias and that the sample may not be representative of the entire population. Participant recruitment was restricted by time and resources. Recruitment of those with late onset psychosis was difficult; partly due to the low prevalence of this disorder. The recruitment pool was therefore limited. The second difficulty was in recruiting the eligible participants with late onset psychosis. It appeared many of those identified were functioning well and had recovered from their acute psychotic disorder to the extent they did not wish to participate and "go over the difficulties" they had experienced again. If those who were functioning well were less likely to take part then this would contribute to a sampling bias and skew the results. It is also likely individuals that were functioning relatively well would be identified by practitioners and chosen over those with overt difficulties such as extreme paranoia, depression or anxiety which may limit their ability or willingness to participate in the study. Such persons therefore may not have been approached. This is particularly relevant to the early onset group where a large pool of potential participants allowed for greater discrimination and bias when identifying and selecting eligible participants for the study. Whereas the late onset group, as it was much more limited, did not allow for

such preferential selection to take place to such an extent. However it was particularly noted that some patients with late onset psychosis were quite paranoid and hence did not wish to participate in exploratory study such as this. This again may have skewed the results, reducing the influence of late onset paranoid patients taking part in particular given the small numbers.

The classification of late onset schizophrenia, with onset of symptoms aged between 40 to 60 years is used, consistent with the aforementioned international consensus statement by the International Late-Onset Schizophrenia Group. However when considering the exploration and differentiation of early and late onset psychosis arm of this study (as opposed to the SCIPS arm) it is limited by the exclusion of those with drug related psychosis (using hallucinogens and stimulants two weeks prior to the onset of the disorder), and those who met the classification of trauma induced psychosis including a comorbid borderline personality disorder. This would have excluded a significant proportion of the population of patients with schizophrenia and related psychotic disorders – it has been estimated up to 40% of people with psychosis will misuse substances, and that this may be as high as 50% in young males with schizophrenia (Dixon 1999). A study by Kingdon et al reported 17% of patients with schizophrenia also meeting a diagnosis of comorbid borderline personality disorder (Kingdon, Ashcroft et al. 2010). This limits the generalizability of results of early and late onset psychosis groups and limits comparisons that can be made with other studies.

In particular if drug related psychosis are more likely to be an early onset psychosis then the omission of this group in the sample may confound results.

The inclusion criteria require those taking part to be well enough to be able to give informed consent and tolerate a couple of hours of answering questionnaires. This requirement is necessary for ethical consideration; however it excludes acutely or severely unwell individuals who may have different clinical characteristics to those that are more stable. However this is the case for most studies of this nature and should not impact greatly on the comparability of the study.

The subjects were recruited from a range of psychiatric outpatient units and psychiatric inpatient units in adult mental health services in Hampshire. A variety of clinical teams were approached and subjects were recruited from a variety of services including early intervention services and rehabilitation units. It did not recruit from forensic services. The participants were at varying stages of their disorder. Some individuals, for example those in inpatient units, may have had different psychotic symptoms than those in the community. Participants from the early intervention service would be in the early stages of disorder compared to others with chronic course, from rehabilitation services for example. The results therefore are generalizable to a general population with psychosis, but is not representative of the population as a whole due to the exclusion of those with drug related and traumatic psychosis.

The sample was limited in its ethnicity of participants. The sample was predominantly Caucasian (89%). This limits the ability to generalize and compare with studies that use larger samples drawn from more diverse ethnic populations, but is generalizable to populations with similar ethnic demographic as Hampshire.

The study may have a low external validity due to the limited generalizability and ability to make inferences about the whole population of those with schizophrenia.

9.2.2 Sample Size

A central limitation of this study is the small sample size. A total of 44 participants were recruited. There were unequal numbers in each group which limits the validity of the intergroup comparisons. The groups may have been too small to detect any true differences between the groups, resulting in type 2 errors. The methodology required recruitment based initially on age of onset of psychosis – equal numbers in the early and late onset psychosis group were aimed for but due to difficulties with recruitment, as previously discussed, unequal sample sizes were obtained; 28 participants with early onset psychosis and 16 with late onset psychosis.

Once recruited, on the basis of early or late onset psychosis classification, the subjects were then assessed using SCIPS to classify them into anxiety or stress sensitivity psychosis sub-group. This classification again led to unequal group sizes, with 32 being classified with anxiety psychosis and 12 with stress sensitivity psychosis. The difference in these group sizes however is an important result to consider as a predetermined distribution was not required for this exploratory study as the distribution of these sub-groups within the early and late onset groups was a central part of the investigation.

A power calculation was not carried out, partly as it was recognised that time and resource constraints would reduce the feasibility of recruiting large numbers of participants. Other reasons a sample size with adequate power was not calculated include the exploratory nature of this study which meant an absence of published literature with respect to the SCIPS classification. Studies examining early and late onset psychosis with consistent and comparable methodology would have allowed comparison to be carried out but this was not available. The time limitations did not allow for a pilot study to establish preliminary data.

The small sample will influence the statistical power i.e. the probability a statistical test will identify a significance difference when there really is one. The study therefore may not be powerful, or sensitive enough to detect any true differences between the groups.

9.2.3 Classification Tools - SCIPS & SCID I and II

The SCIPS tool has not been used clinically or in research. The construct validity of the assessment tool has not been established in previous research (Kinoshita, Kingdon et al. 2012). The reliability of SCIPS could be improved as it is reported the inter-rater reliability of some items of the tool are comparatively low and there may be ambiguity between what is being asked and rated (Kingdon, Gibson et al. 2008). This is particularly relevant to questions exploring the chronology of the disorder.

Questions 1-2 ask the participant “how long did it take from when you first noticed that something was wrong with you until the peak of your first episode?” This question along with others may be subject to ambiguity and recall bias. This may be particularly evident if the disorder started insidiously (as expected in stress sensitivity psychosis) and some participants in later stages of their disorder may have to recall events 10 or 20 years ago. Identification of the onset of the psychosis may also be difficult for the participant to recall. This is often difficult as the onset of psychotic symptoms may be quite subtle and difficult to identify, especially when prodromal symptoms may have been present. The individual experiencing them may not be aware at the time or in retrospect that this was the start of the psychosis, and there is often no clear cut onset of the disorder. This may especially be the case as psychotic disorders are often preceded by, or initially diagnosed as affective disorders.

Other problems with the SCIPS questionnaire may reduce the validity of the SCIPS diagnosis. The respondent is required to identify particular stressors using the Social Readjustment Rating Scale. This scale itself has limitations; it doesn’t include all life events and may not be sufficiently specific. Certain life experiences that could have been stressful to the individual are not listed. The omission of such stressful life events from the Social Readjustment Rating Scale in the SCIPS may result in the person being wrongly classified. This would have led to more misdiagnosing of anxiety psychosis as stress sensitivity psychosis, and so the proportion of anxiety to stress sensitivity psychosis would increase even more.

Recall bias may have led to some cases of drug related psychosis being misclassified. A quite strict criterion is used in SCIPS to classify drug related psychosis - the use of illicit substances two weeks prior to onset of symptoms. This is subject to recall bias as the subject may have been using substances before or after the onset of psychosis but would only meet the criteria for drug related psychosis if they used substances within this two week time frame.

The SCID-I was used to diagnose the current psychotic disorder. The inclusion criteria allowed participants to have a diagnosis of schizophrenia, schizoaffective disorder or delusional disorder. Since the start of the study the DSM criteria have been revised and DSM-5 published. The results from this study can be compared with the current literature which is pre-publication of DSM-5. The changes in the criterion for schizophrenia in DSM-5 are slight with removal of the need for the attribution for the delusions to be bizarre and two or more voices conversing. Schizoaffective disorder has changed slightly, meaning the major mood disorder must be present in the majority of the disorders duration. Delusional disorder no longer requires the criterion that the delusions must be non-bizarre. These changes may have altered the numbers diagnosed with each slightly but it unlikely to have clinical or significance or relevance in relation to this study. The clinical diagnoses are not particularly relevant or considered in depth.

9.2.4 Rating Scales

A mixture of interviewer-rated and self-rated scales and questionnaires were used. The rating scales have been chosen as they have established reliability and validity ratings and have been widely used in published literature allowing for comparison with existing studies.

Comprehensive Psychopathological Rating Scale (CPRS)

The CPRS required training and clinical judgement and the scale used in this study had the most potential for rater subjectivity and bias. In this study a good inter-rater reliability for the CPRS has been demonstrated, with an intra-class correlation coefficient of 0.836.

The CPRS subscales for suicidality, negative symptoms, depression and anxiety all have proven validity (Faravelli, Albanesi et al. 1986, Lindstrom and Lindstrom 1996, Hansen and Kingdon 2006). Scores from individual items 31, 37, 38 and 39 - thoughts

of persecution, auditory and visual hallucinations were compared between the groups. Caution is required when interpreting these results - as the validity of these items as indicators of these symptoms has not been established. They are however quite straightforward items with little apparent potential for subjective ambiguity on ratings.

The CPRS, although reported as a highly sensitive tool (Asberg, Montgomery et al. 1978, Montgomery, Taylor et al. 1978), it does not allow detection of subtle changes in a person's presentation as it only allows the presence of a symptom to be classified on a four point scale 0 to 3 (indicating symptom absent, a variant of normal, clearly pathological or extreme degree of pathology). Often in this study participants were rated as zero or 1. The tool may have benefited from a more sensitive battery of items allowing greater differentiation of the type and severity of symptoms experienced.

Another difficulty with the CPRS is that it is designed to measure changes in psychopathology over a comparatively short period. It provides only a snapshot of the participant's mental state in the last week and may not reflect the more long term picture. Often participants previously noted to be very delusional or with other significant symptoms when first in contact with mental health services presented well at the time of the assessment, as participants needed to be relatively well to participate in the study. This suggests the tool may not have been sensitive enough for detecting subtle changes in mental state that may have been present. However this is the case with most rating scales of mental state and the only way of accurately combating this is by using repeated measures or measures at a standardised time – e.g. on first contact with services.

A single item from the Peters et al Delusional inventory (Peters, Joseph et al. 1999) rating the systematization of delusions was used. This item has not been validated as a single item to assess systematization and so the significant positive correlation found with age should be considered with caution and used to direct future research to confirm this finding.

Rosenberg's Self Esteem Scale (RSE) and Attributional Bias Scale (ASQ)

Two self-rated scales, the Rosenberg Self Esteem Scale and the Attributional Style Questionnaire have been used. Self-report scales avoid researcher bias but present other limitations with the validity. As with all self-report scales a degree of social desirability bias may have been present. The Likert type scale of ordered continuum used in both questionnaires may mean subjects merged towards the middle when making their rating. This is particularly relevant for the ASQ which requires participants to make ratings on an ordinal 1 – 7 scale, whereas the RSE is 4-point scale avoiding a tendency for mid-point responses.

Many subjects reported finding the ASQ difficult to complete. The American wording of scenarios and the fact some of the situations they were asked to imagine were quite alien to some subjects. For example, one situation a person is asked to imagine is giving a presentation that is badly received by the audience; this may be a situation the participant has never encountered nor has any familiarity with. Participants sometimes requested guidance or clarification of items such as this. When required to rate the causes of the scenarios there may have been a tendency to rate centrally.

Cognitive impairment in schizophrenia is common (O'Carroll 2000) and may have influenced the ability of some to accurately complete questionnaires. In particular the ASQ required the subject to rate 12 scenarios, which took approximately 15 minutes, longer for some, and required a certain amount of cognitive ability. If cognitive impairment or lack of introspective ability is limited in one group more than another would have been an unidentified confounding factor.

The Attributional Style Questionnaire has been shown to be a predictor of depression, physical health, and achievement in various domains (Peterson 1982, Krstev, Jackson et al. 1999). Its use and validity within a population with psychosis is unclear. Although widely used in clinical and normal populations including studies of psychosis it may not have been the most suitable for this population. The decision to use this questionnaire in this study was so it could be comparable to other published

studies, although studies have noted results of the ASQ require interpreting with caution (Lyon, Kaney et al. 1994, Krstev, Jackson et al. 1999).

Details of cognitive impairment and cognitive introspective limitations between the sub-groups would be informative. This would highlight areas where responses may have been limited and hence contribute to bias or confounding of results.

Beads Task

The beads test data gathering paradigm is used in the majority of studies investigating jumping to conclusions bias. The use of it in this study allows therefore for comparison with such studies. Evidence supports this test detects a jumping to conclusions bias present in those with in remission from delusions, which is important in this study as some participants may not have been delusional at the time the assessment took place. The verbal instructions to be given to the participant and the order the beads were to be shown (although the participant was to believe they were random) were standardised avoiding researcher bias or error when administering and rating the task.

Demographic Data

The demographic questionnaire collected information relevant to the aetiology and clinical presentation of the sub-groups. The data collected was comparable with demographic data used in similar studies. The demographic questionnaire may have benefited from more detail and specificity. For example, the current employment status may be too oblique and not reflect the underlying situation which is of interest and relevant. For example, the person may be unemployed as a direct result of the psychotic disorder or it may be a long-term redundancy and it may have been the stress and pressure of this that contributed to the development and maintenance of the disorder. The demographic information collected at participant interview was corroborated with review of the medical notes if the participant was uncertain. As

previously stated in the literature review there is potential for recall bias or lack of accurate documentation of family history in the notes. This study used both interview alongside a review of psychiatric notes which reduces the potential for this inaccuracy and potential bias.

General Points

A further limitation to this study may have been the number of scales used. Although participants were offered breaks or the opportunity to continue on another day, participant fatigue may have been an issue for some participants. Data collection could sometimes take up to three hours. This fatigue may have impacted upon responses to scales in the later stages of data collection.

The participants' consent and the availability of computerised notes to supplement or confirm any answers create more reliable data collection. Any concerns could be clarified with the notes, for example if the patient expressed uncertainty about clinical symptoms or chronology.

The participants in this study, in particular those that were more unwell, may have had cognitive impairment and for this or other reasons such as personality, may have lacked the introspective ability to provide an accurate response to some questions. This may influence understanding or interpretation of particular questions, especially in the Attributional Style Questionnaire (ASQ).

9.2.5 Statistical Analysis

The statistical analysis used two tailed tests giving more conservative findings but less likely to find significance.

Fisher's exact test was used when numbers were small as it gives a better approximation to the correct probability than the use of a chi-squared test.

There is strong possibility of a type 2 statistical error, a false negative result meaning a true difference is not identified. Type 2 errors could account for many of the non-significant findings which are inconsistent with the current literature. A more powerful study with a larger sample size would be less likely to yield false negative results. Larger samples would be required to confirm if this error had occurred in this study

9.2.6 Improvements to Methodology

The study would have benefited from a larger sample. A control group of subjects without psychosis would have been informative for comparisons, especially with regard to the cognitive and demographic variables. A control group would provide a baseline to compare the results to. In particular the demographic variables and psychological variables such as self-esteem which may vary within a normal population. A control group would allow for identification of any trends within the subgroups may vary from the norm and may also have helped identify additional areas where the sub-groups may benefit from further exploration. A control group may also have increased the reliability of the results.

Given the limitations of the CPRS, alternative scales may have been suitable. In particular a clinical rating scale specific for delusions such as The Peters et al Delusions Inventory (Peters, Joseph et al. 1999, Peters, Joseph et al. 2004). This information would be particularly relevant as, based on the formulations of the sub groups (Kingdon 2005) delusions were expected to be a differentiating factor between the sub-groups. The Peters et al Delusions Inventory incorporates the multidimensionality of delusions by including measures of distress, preoccupation, and conviction. The Positive and Negative Symptom Scale (Kay, Flszbein et al. 1987) or the Present State Examination (Wing 1974) may also have been suitable tools to use to assess for specific psychotic symptoms.

Standardising the patient group recruited, for example comparing patients in first episode of psychosis, may have increased the validity of comparisons between groups. However this may also have restricted potential participants and limited sample size further in the late onset group in this study.

As with all studies the balance must be struck between the burden on the participants to answer numerous and potentially detailed questionnaires and the need to collect sufficient data to allow for reliable analysis of the study question. In this study more details on the demographic questionnaire may have been of benefit to inform of aetiology factors differentiating the anxiety and stress sensitivity sub-groups.

A larger sample with a greater range of severity of illness and without the exclusion of a specific sub-group of schizophrenia and psychosis would have enhanced the generalizability of the study. It would be beneficial to compare to a general population of individuals with schizophrenia, delusional disorder and schizoaffective disorder.

9.2.7 Summary

The main limitation of this study is the small sample size which may result in type 2 errors arising in the analyses of the data. The exclusion criteria of drug related and traumatic psychosis also limits the generalizability of the results regarding the early and late onset groups. However, a range of reliable and valid questionnaires were used and participants were recruited from a variety services and so were not limited in this respect. The fact participants were at different stages of their disorder could be a limiting factor given small numbers used but also increases generalizability. Limitations with the SCIPS tool have been identified which may limit its validity in correctly classifying participants into the sub-groups.

Improvements in methodology have been identified including a larger sample size, standardising the participant criteria and using assessment tools to assess symptoms-delusions in particular, in more detail.

9.3 Anxiety and Stress Sensitivity Sub-groups: Key Findings and Relationship with Current Literature

SCIPS has been developed as a way of grouping participants into four subcategories of schizophrenia. Determination of SCIPS diagnosis is based equally on age and mode of onset, pre-morbid adjustment and aetiology (such as drug misuse and traumatic experience). Anxiety psychoses are proposed to be a psychosis that develops in later life and stress sensitivity psychosis an early onset psychosis. The results do not support this distinction. The majority of participants within the early and late onset groups (68% and 79% respectively) met a diagnosis of anxiety psychosis. Consistent with the core characteristics and descriptions of the sub-groups, considerably more (seven times more) cases in late onset psychosis group were classified as anxiety psychosis than stress sensitivity cases.

To meet an anxiety psychosis diagnosis the participant must rate three or more of the following criteria under mode of onset:

- Onset over 30 years' old
- Less than one month from when they noticed something wrong until peak of first episode
- A stressful life event rated <40 by the social readjustment scale
- Moderate or good social relationships since adolescence
- Pre-morbid close relationships

Therefore having onset less than 30 years old does not preclude the person from a classification of anxiety psychosis, as long as they meet three or more of the other criteria. Anxiety psychosis is not specific to those over 30-year-old, which the results support, despite the inter changeable use of this term within the published literature.

Explanations for these findings could firstly be methodological problems. This could include limitations with SCIPS in accurately classifying participants, or recruitment issues and sampling bias as previously discussed. Secondly a type 2 error (a false negative result) in the statistical analysis could have occurred due to the small

sample size. Thirdly the finding that anxiety and stress sensitivity do not equate to late and early onset disorders may be a true result; age of onset may be relevant but may not be a defining feature of the groups. It may be that the proposed sub-groups definitions may lack validity and reliability.

Incorrect sub-grouping when using SCIPS may have occurred due to limitations in the validity of SCIPS classifications. The cut-off point for making a distinction between the stress sensitivity and anxiety group may need revising, as it may not accurately reflect the age distribution of the sub-groups.

Other limitations of SCIPS may explain the result. Some participants did not easily understand or recall how long it took from first onset until peak of the first episode. This question may be too vague and subject to recall bias. A subsequent underestimation by participants could have contributed to the high numbers of anxiety psychosis cases.

The recall of social relationships and pre-morbid close relationships is a more stable factor and may not be so prone to recall bias. Many will recall if they were social or withdrawn and isolated in childhood and if they had pre-morbid close relationships. This item, compared to others appeared more reliable and easier for participants to give a confident answer. It is possible therefore the identification of age of onset in SCIPS is the crucial limiting factor in the misdiagnosis of sub-groups.

As previously mentioned, methodological weakness may have influenced the results. One such limitation could be age classifications used for the sub-groups. The cut off age for early and late onset groups is 40 years old but is 30 for the stress sensitivity and anxiety psychosis. Therefore early onset psychosis is defined by onset under 40 years whereas the stress sensitivity requires an onset less than 30 years old – presenting a 10 year age gap which may have contributed to the unexpected higher numbers of anxiety psychosis in the early onset group i.e. if lots of cases for anxiety psychosis fell into this 30 to 40 range, they would still a relatively late onset but not meet the international classification criteria of 40 years old to be placed in the late

onset psychosis group. If this was the case it would explain the higher than expected numbers of anxiety psychosis in the early onset group. However, reanalyses of the data using an age of onset of 30 for late onset psychosis and not 40 years old did not identify a difference suggesting this explanation is unlikely.

9.3.1 Demographic Variables

The present study did not find any significant differences in any of the demographic, clinical or psychological variables assessed in the anxiety and stress sensitivity groups. Of course the possibility of a type 2 error must be borne in mind when considering these findings. Another possibility is that SCIPS may not be valid tool to differentiate these sub-groups. Differences in the variables between the groups may exist but not have been detected in this study. Alternatively the failure of the tests to delineate the anxiety and stress sensitivity sub-groups results could reflect a true lack of practical and clinical differentiation of the groups.

However despite the tests failing to find a statistical significant difference between the groups, significant clinical differences may be present and other reasons for the similarities are worth consideration.

Gender Distribution

The majority (87%) of the stress sensitivity group were male whereas the distribution within the anxiety group as more evenly spread with 56% male and 43% female. This variation in gender may be worth exploring in future studies to see if gender is of relevance to the SCIPS classification.

Functioning

A better pre-morbid and current functioning was expected in the anxiety psychosis group compared to the stress sensitivity group. Pre-morbid and current levels of daily functioning were assessed using questions on pre-morbid and current

accommodation, occupational status, and marital status along with academic achievements and the current global assessment of functioning.

The recall of social relationships and pre-morbid close relationships is more stable factor and may not be so prone to recall bias. A sampling bias may have meant only those functioning relatively well and able and willing to take part were recruited to the study. Nearly half of individuals in both anxiety and stress sensitivity groups were in full time employment at the start of their disorder. This had fallen in similar proportions to 17% of each group currently being in full time employment.

The number of individuals with anxiety psychosis in hostel or supported accommodation increased from none at onset to six at the time of assessment. One individual with stress sensitivity psychosis was in hostel or supported accommodation at time of onset but none were currently in such accommodation. If the sub-grouping classifications are valid it would be expected that fewer individuals with anxiety psychosis would have been in hostel or supported accommodation at the onset of their disorder, as by definition they would have better premorbid functioning.

As with all variables in this study a larger sample and further details are required to fully understand the relationship between the variables. For example although no statistical difference was found between accommodation statuses in the sub-groups, it may be that marital breakdown or stressful life events resulted in hostel accommodation. The stress that the person may have been under as a result of being in the hostel may have precipitated the onset of the disorder and prior to this they may have been functioning very well. Further exploration of this aetiology is required.

9.3.2 Clinical Variables

The majority, 75%, of those with anxiety psychosis met the DSM classification of schizophrenia, 12.5% met schizoaffective disorder diagnosis and 12.5% had delusional disorder diagnosis. Only 8.5% of those with stress sensitivity psychosis met

the delusional criteria. Similarly to the anxiety group, the majority of stress sensitivity group met a schizophrenia diagnosis and 16.7% a schizoaffective disorder.

Delusional disorder is an uncommon disorder with circumscribed delusions of non-bizarre delusions (this DSM diagnoses has since been revised in DSM5 removing the requirement of non-bizarreness), hallucinations are not prominent nor is flattening of affect. It has a mean onset of 40-49 years, with good pre-morbid functioning (American Psychiatric (Association 2000) . This diagnosis has many similarities to the proposed characteristics of anxiety psychosis and it was expected that the anxiety psychosis cases would also meet a diagnosis of delusional disorder (Kingdon 2005). Although more individuals with anxiety disorder met criteria for delusional disorder than those with stress sensitivity psychosis, this was not statistically significant. This suggests if anxiety disorder is a sub-group it is not as clinically similar to delusional disorder as proposed.

This study has not identified any clinical characteristics that are specific to either of the sub-groups. This failure to differentiate the sub-groups by clinical symptoms may be due to small sample size and limitations of study previously discussed; however it may also suggest the sub-groups are more homogenous with respect to clinical presentation than previously thought.

However it is worth noting that trends and correlations have been identified that are consistent with the proposed characteristics of the anxiety and stress sensitivity sub-groups. A small trend in increasing level of anxiety with increasing age is consistent with the formulation provided for anxiety psychosis. The statistically significant moderate positive correlation between systematisation of delusions and increasing age of onset of disorder and between thoughts of persecution and age of onset are also consistent with the proposed clinical presentation of anxiety psychosis.

The level of systematisation was not found to be statistically different in those with anxiety and stress sensitivity psychosis. Along with the limitations previously discussed of small sample size, low validity of SCIPS, the assessment of the

systematisation of delusional used a single unvalidated item from the Present State Examination Inventory (Wing 1974. This may not have been accurate and sensitive enough to detect subtle but significant differences in the content and nature of delusions.

The level of systematisation of delusions was assessed by psychiatrists who in most cases did not have prior contact with the participant and ratings were based on one interview, and some case note review. The patient may not have been floridly unwell and delusional beliefs may have been quite subtle and not accurately detected by the researcher. The reliability of this rating was generally good and there was no significant difference between the rated reliability of the CPRS items including the systemisation of delusional items.

The systematisation of delusions however is a core characteristic of the groups based on the cognitive model, with anxiety psychosis having this predominant factor. The content and extent of the delusions system requires further exploration to see if delusions can be identified as discriminant symptoms. Future studies using rating scales specific for delusions such as Peters et al Delusional Inventory (Peters, Joseph et al. 1999, Peters, Joseph et al. 2004) may allow for this.

A core characteristic of stress sensitivity psychosis is the prominent negative symptoms in the early stages. This may not have been detected as each participant was recruited at different stages of their disorder. Exploration of the clinical characteristics of the sub-groups at comparable stages of the disorder, for example at first onset, could provide information on the progression of the disorder which may aid differentiation of sub-groups.

9.3.3 Psychological Variables

A greater proportion of participants in both the stress sensitivity and the anxiety psychosis groups displayed a positive JTC bias than a negative JTC, this finding was statistically non-significant. It requires further exploration in relation to the delusions experienced and the relationship with other psychological variables. The findings overall suggest there is no significant difference in the underlying cognitive processes involved in the development and maintenance of psychosis between the anxiety and stress sensitivity sub-groups. The small sample size may contribute to this finding and further research specific to cognitive processes including neuropsychological testing is required. This may establish a more comprehensive and accurate picture of similarities and differences in the cognitive variables between the sub-groups.

9.3.4 Summary

The statistical tests failed to confirm the hypothesis that stress sensitivity psychosis is an early onset psychosis and anxiety psychosis is a late onset psychosis. The majority of individuals in both early and late onset psychoses were classified as anxiety psychosis. This study did not find significant difference in the age of onset between the groups.

However the higher proportion of anxiety psychosis in late onset than in early psychosis group suggests the age of onset does have some relevance. The results did not identify any statistically significant differences in demographic, clinical or psychological variables. This suggests the sub-groups are more homogenous than previously thought and does not support the classification criteria used for these sub-groups based on the stress–vulnerability model. The lack of statistical significance could be partly due to the small sample size resulting in type 2 error, low validity of SCIPS or selection bias.

9.3.5 Clinical Implications and Future Direction

The SCIPS requires further exploration of the construct validity and refinement of the diagnostic sub-groups may be required. Although some characteristics are stable, such as pre-morbid functioning, individuals may have difficulty accurately identifying or recalling some items such as the mode of onset of their disorder. If the sub-group classifications and SCIPS are refined they may be able to contribute to the future development of these or alternative classifications for psychosis sub-groups. Identification of new sub-groups will help delineate disorders under the umbrella of schizophrenia and in turn may create improved assessment care pathways and treatment, whilst alternative terminology may reduce stigma. The information gathered in SCIPS may be useful for developing CBT formulations and directing future research based on such. The results from this study do not support its use in its current form in a clinical context. It may of interest to explore the sub-groups in more depth, for example, service usage and prescribing practices for individuals in each group may inform future care pathways.

Further research is required with a larger sample size. More specific ratings scales could be used differentiate the clinical presentation of the sub-groups in more detail. Alternatives to the CPRS such as the Present State Exam (Wing 1974) and in particular a detailed delusion inventory such as the Peters et al Delusions Inventory (Peters, Joseph et al. 1999) could be used in future research. Neurocognitive tests may also be informative. This study only explored the difference between anxiety and stress sensitivity psychosis, exploration of the characteristics of the drug related and traumatic psychosis may also be of value to compare to these sub-groups and assess any overlap they may have with the proposed anxiety and stress sensitivity psychosis groups.

9.4 Early and Late Onset Groups: Key Findings and Relationship with Current Literature

In this sample of 44 participants, 28 had early onset psychosis and 16 had late onset psychosis. In order to achieve as much consistency and comparability with other studies in this area the recommendations from the international late onset schizophrenia group consensus statement (Howard, Rabins et al. 2000) were adopted. Therefore, the late onset group in this study were defined by ages of onset between 40 and 60 years. However, the sample in this study included not only those with a diagnosis of late onset schizophrenia but also delusional disorder and schizoaffective disorder, and have therefore the term late-onset psychoses has been used instead of late onset schizophrenia.

The findings from this study are limited in the extent they can be compared to other research in this area as the participants have been restricted to those that met the SCIPS classification of anxiety and stress sensitivity psychosis. The resultant exclusion of those with drug related psychosis and traumatic psychosis means a significant proportion of the schizophrenia population were not included, which may have influenced the results. This limits comparability with other studies in this field and generalizability to the population as a whole. This is particularly relevant to the early onset population; disorders relating to trauma in childhood in particular borderline personality disorder are more likely to experience the onset of difficulties and come into contact with services in early adulthood, similarly for drug related psychosis.

9.4.1 Demographics

Consistent with other studies the results show women predominate in the later onset group, with the late onset psychosis group having 62% females compared to only 21.4% of the early onset group being female. The predominance of females in the late onset psychosis is the most consistent aspect of late onset psychosis that is reported in the literature. Consistency with the well-established findings adds weight

to the results from this study, informing of the differences and similarities of the early and late onset groups. However selection bias must still be considered. This study used a convenience sample which may have impacted on the risk of sampling bias. Older females may have been more likely to be approached to participate in the study or more inclined to participate than older men, but this is speculative.

The gender difference in the group may influence the other demographic and clinical variables as a potential confounding factor. For example, it is reported that females have higher levels of paranoia (Riecher-Rossler, Hafner et al. 2003) and this study has found greater levels of paranoia in the late onset group, which may be specific to the female population. Further studies are required to evaluate this.

No other differences were found in demographic variables between the early and late onset groups. In contrast to current literature, this study did not find a significantly larger proportion of patients with late onset psychosis, compared to early onset psychosis, having successful marital or occupational histories. However like Jeste et al (Jeste 2000) the results show no significant difference in educational level between the groups.

The exclusion of the traumatic and drug related psychosis groups may account for this inconsistent result. By the nature of the disorder patients with drug related psychoses or borderline personality disorder are less likely to have a stable marital history and occupational histories than other individuals with psychosis. Exclusion of this population may therefore skew the results for the early onset group, the group the excluded cases would be most likely to fall into.

Both the early and late onset groups had high numbers (50%) of individuals who were single at the onset of the disorder. Unmarried status is a known risk factor for schizophrenia. The literature suggests the late onset group are more likely to be married or cohabiting. Married individuals have later age of onset of psychosis (Nyer, Kasckow et al. 2010). It may be expected therefore to see a higher number of married subjects in the late onset groups. The finding in this study that twice as

many participants in the late onset group were single rather than married/cohabiting/civil partnership is therefore of interest (Nyer, Kasckow et al. 2010). Marriage is believed to be a protective factor against onset of psychosis which may account for the later age of onset in married persons as the individual has been buffered by the protective nature of marriage. The direction of the relationship between marriage and later onset of psychosis may not be this unidirectional. As stated a protective factor element of financial and emotional support that marriage presents may buffer against the development of a psychotic disorder. However, it may be that the individuals that are most likely to develop psychosis are less likely to marry. For example, elements of a person's character or situation (such as schizoid personality traits, social isolation) that makes such persons less likely to marry and, independent of marital status, more vulnerable to developing psychotic disorders. This bidirectional argument can be applied to most demographic variables.

The number of divorced individuals doubled in both groups from 3.6% (n=3) to 21.4% (n=6) in early onset psychosis and from 12.5% (n= 2) to 25% (n=4) in the late onset group. As participants are at different stages of their disorder and life course it is difficult to draw conclusion from this.

Considerably more of the late onset group were unemployed at the onset of the disorder (43.8%) compared to the early onset group (14.3%). Considering the literature which reports more successful occupational histories in individuals with late onset psychosis, this result is unexpected. Unemployment could be associated with the start of the disorder, either as a result of a decline in ability to function in workplace as a result of behavioural and prodromal changes or a subsequent loss of occupational functioning. The loss of employment may have been the stress that precipitated the onset of the disorder. It would be interesting to evaluate the social readjustment scale results used in the SCIPS classification to identify the nature of the stresses reported by individuals in the early and late onset groups to inform future studies exploring the extent to which employment issues are aetiological or maintaining factors in each group.

Further exploration of changes of demographic variables from the onset and throughout the disorder would benefit from a large prospective study. Although the drug related psychosis group have been excluded from this study (meaning anyone who had used stimulant or hallucinogen two weeks prior to onset of their psychotic symptoms), the use of illicit substances (which could have been before or after this two-week window) was recorded. The finding that significantly more illicit drug use in the early onset groups than late onset group adds weight to the proposition the exclusion of the drug related psychosis group may exclude a greater proportion, and a significant sized one, of the early onset group compared to the late onset group thus skewing the results.

9.4.2 Functioning

The mean GAF scores, reflecting current functioning, are quite similar between the two groups, with early onset having a mean score 63.390 (SE 3.087) and late onset group mean of 58.940 (SE 4.016). This could be a type 2 error. There is no significant difference between the scores in the late and early onset groups. Given the potential rater bias and subjective nature of the GAF scale, the difference in mean shows these results also do not appear to be of clinical significance. Previous large sample studies exploring patients with a variety of mental disorder, with the predominance of schizophrenia, have shown mean GAF scores of 53 (SD 14.6) indicating a moderate level of disturbance (Jones, Thornicroft et al. 1995). As previously mentioned the sample used in this study is small and participants had to have a certain level of functioning to be able to participate which may skew the results and limit generalizability to a psychotic population. Further research using GAF with a larger sample and without the required level of function that was required for this study will help determine if the non-significant scores found in this study is truly reflective of the late and early populations.

The demographic results discussed in section 9.4.1 also show there is no significance difference of pre-morbid functioning between those with early and late onset psychosis, with similar mean results for marital status and full time employment. More of the early onset group than late onset are living with family, as would be expected. 39.3% of early onset group compared to 12.5% of those with LOP were living with family at onset of the disorder, reducing to 21.4% in EOP and but remaining at 12.5% late onset psychosis.

A significant small positive trend was found of increasing functioning (GAF score) with increasing current age. This is consistent with the literature but is not specific to the age of onset of the disorder. The finding of a small but significant negative correlation (Pearson correlation coefficient -0.342 p=0.23) between age of onset and GAF Score, is the inverse to the correlation that would be expected. The late onset group are reported to have had a better pre-morbid functioning than the early onset group and if this is maintained throughout the disorder any correlation between GAF score and the onset would be a positive one.

9.4.3 Family History

Family history was collected by patient interview and case-note review. More individuals with LOP (12.5%) had a first degree relative with psychosis than those with EOP (7.1%) although this difference is statistically non-significant. The trend displayed is contradictory with literature that states individuals with first degree relatives is more common in the early than late onset psychosis. This trend although statistically non-significant has been shown in this study for second degree relatives.

9.4.4 Clinical Characteristics

This study found late onset psychosis group have significantly higher levels of thoughts of persecution than those with the early onset psychosis and a significant moderate correlation with thoughts of persecution and age of onset. These findings are consistent with the current literature (Pearlson, Kreger et al. 1989, Jeste, Harris et al. 1995, Wynn Owen and Castle 1999). Similarly, this study reports a significantly higher level of systematisation of delusions in late onset than early onset psychosis. Again, this finding is consistent with published studies investigating both the symptom of paranoid delusions and studies comparing early and late onset psychosis (Pearlson, Kreger et al. 1989, Jeste, Harris et al. 1995, Hafner, Hambrecht et al. 1998, Wynn Owen and Castle 1999, Cohen, Vahia et al. 2008).

Moderate positive correlations have been found between the age of onset and increasing score of schizophrenia subscale, systematisation of delusions and increasing thoughts of persecution. These findings are consistent with the strong body of evidence in the literature that reports paranoid delusions and systematised delusions are distinguishing features of late onset psychosis (Harris, Cullum et al. 1988, Howard, Castle et al. 1993, Vahia, Palmer et al. 2010).

At variance with current literature, this study did not find individuals with LOP to be more likely to have visual, auditory or hallucination in other modalities. It should be recognised that the CPRS items used in this study to evaluate the presence of these hallucinations have not been validated as individual items. The assessment of clinical symptoms of the drug related psychosis and traumatic psychosis groups is required to ascertain the extent their exclusion from this study may have influenced this, along with all other results.

A significant higher mean score on CPRS schizophrenia subscale suggests more severe disorder in LOP compared to EOP. This may be because those with a later onset experience a greater range of symptoms with a more varied psychotic

symptoms profile, as the literature suggests, thus accounting for this difference on the CPRS schizophrenia subscale score.

The late onset group had significantly higher levels of depression and psychosis score than those with early onset psychosis, inconsistent with current literature. Although, as in other studies no significant difference in anxiety was found but a small statistically insignificant correlation with anxiety and increasing age has been found.

The literature is varied in findings regarding the severity of negative symptoms in the early and late onset groups. This study has found no differences in the severity of negative symptoms between the two groups. Similarly, this study has found no significant difference in suicidality scores between the groups. However, the CPRS scale only assesses the extent of current suicidal ideation and does not rate suicide attempts or self-harm which could be worth exploring in future studies as a potential differentiating factor between the groups.

Antipsychotics

A lower dose of Chlorpromazine equivalent antipsychotic dose was seen in the late onset group compared to the early onset group. The mean chlorpromazine equivalent antipsychotic dose is 233mg in the late onset group compared to 317mg in the early onset group. This may have clinical significance and relevance to treatment guidelines but the difference is not statistically significant. There is very little literature to compare this to due to paucity of research looking at pharmacotherapy specifically in the late onset group.

The exclusion of participants with drug related psychosis may skew this result in particular as neurobiology may differ with those using stimulants and hallucinogenic substances. If drug use is more prevalent in the overall population of early onset than late onset psychosis then the exclusion of this group may have particularly skewed the results. Indeed these results have found this sample to have significant

more cases of substance misuse in the early onset group than late. This supports the suggestion the exclusion of the drug related psychosis sub-group may skew the data by excluding a significant proportion of the early onset group.

Summary

The findings are limited in generalizability due to the exclusion of the drug related and trauma psychosis sub-groups. The small sample size may have resulted in type 2 errors during the statistical analysis. With these points in mind the study consistent with the well-established preponderance of females in the late onset group. This gender difference may have confounded the results, for example increased levels of paranoia in the late onset group. The late onset group did not show difference in their premorbid or current level of functioning. This result could be a result of limitations with the sample size but also due to various confounding factors and in particular the exclusion of the drug related and anxiety sub-groups is likely to have a large impact on these findings.

The results do however confirm other previously well-established results such as the increased paranoia and systematisation of delusions with increasing age. This places more faith in the results of this study as being reflective of the true picture, and places the limited methodological limitations of the study in context. Although not statistically significant are of note and may present clinically relevant information, such as the lower antipsychotic dose in the LOP group. These results need confirming and further exploration of these variables using a larger less limited study is required.

9.4.5 Psychological Variables

Self-esteem

The self-esteem scores were similar in the late and early onset groups. The late onset group had a mean RSE score 21.63 (SD = 7.44) and the early onset group mean score 18.64 (SD = 6.087). These scores reflect self-esteem scores slightly below the RSE mid-point of 25. The maximum possible score is 40 and the lowest possible score is 10. There was no statistical significant difference in the RSE scores between the two groups. The similarity and mid-point scores could, as with all other results, be due to sample bias. It appears however that age of onset does not affect the levels of self-esteem. The literature is inconclusive regarding relationship between psychosis and self-esteem. These results suggest age of onset and gender do not influence self-esteem but without an overt difference in the results and because there are so many other variables that may have an interacting role, it is very hard to make conclusions.

The level of systematisation of delusions is significantly greater in the late onset group however as there is no significant difference in self-esteem scores, which lie slightly below the mid-point, it does not appear the systematisation has any direct effect on self-esteem. This could support the theory by Lyons et al (Lyon, Kaney et al. 1994)that the delusions act as defence to maintain self-esteem, however this is assuming pre-morbid levels of self-esteem are similar to the ones found in the study.

If the gender difference in self-esteem exists, with females having lower self-esteem than males, then the late onset group, which has significantly more females, would be expected to have lower self-esteem levels but this is not the case. Similarly other studies report females having higher self-esteem (Kendler, Gardner et al. 1998) and others have no difference (Jones 2010) which these results appear to support.

If persecutory delusions are related to lower levels of self-esteem then the late onset group, which has significantly higher levels of thought of persecution, would be expected to have significantly lower levels of self-esteem which has not been found in this study.

The theory that delusions act to maintain self-esteem could hold true, if this is the case it may be the same mechanism irrespective of the age of onset. It is difficult to assess this and other theories of self-esteem without knowing the pre-morbid self-esteem levels. More detail of the nature of the delusions may also allow for more in depth analysis of the relationship between self-esteem and the psychotic disorder in the early and late onset groups.

The RSE assesses global self-esteem; however it may be that more specific aspects of self-esteem are relevant to this population. The RSE may not be sensitive enough to find differences; the scale was initially developed to assess self-esteem in a normal population of adolescents. Self-esteem may be implicated in psychosis in a more complex manner than the RSE allows assessment of. For example, low self-esteem may result in social exclusion and isolation of the individual which may contribute to the development of psychosis. A pre-morbid low self-esteem may make a persecutory delusional belief seem more acceptable to the person. Self-esteem is a very dynamic concept and requires further study with additional data to allow differentiation of differences between the late and early sub-groups.

Attributional Bias

The self-serving bias appears to be influenced by the age of onset. The results demonstrate a significantly higher self-serving attribution bias score in the late onset group compared to the early onset group. A small positive, but not statistically significant, correlation between self-serving bias and age of onset of disorder has also been found. This finding could be related to the increased levels of thought of persecution in the late onset group. This would be consistent with Krstev et al's findings that paranoid delusions endorse the self-serving bias (Krstev, Jackson et al. 1999) and endorse the literature that reports a greater self-serving bias in suspicious and paranoid individuals. As the self-esteem levels do not vary significantly between the groups it is difficult to assess any relationship between self-serving attribution

bias and self-esteem. Given the complex multidimensional nature of these variables their interrelationship is potentially a very complex, dynamic relationship.

Jumping to Conclusions Reasoning Bias

Seventy five percent (n = 12) of the late onset group gave positive jumping to conclusions (JTC) responses compared to only 25% (n = 4) of the early onset group which appears consistent with the literature which states the severity of delusional beliefs are related to the JTC bias (Bowins and Shugar 1998). However this difference was found to be statistically non-significant. A larger study is required to ascertain if there is any evidence of an underlying significant difference in the JTC style in the early and late onset groups.

Summary

The levels of self-esteem are very similar, lying just below the mid-point on the RSE scale in both groups. The literature regarding self-esteem and its relationship with clinical symptoms such as paranoia and delusions is inconclusive. The literature on the relationship between age of onset and levels of self-esteem is also uncertain. Without knowledge of pre-morbid levels of self-esteem and any changes that have occurred as a result of the psychosis it is difficult to make any conclusions. The late onset group have shown significantly higher levels of the self-serving attributional bias. This may be related to the late onset group being more paranoid (with significant greater level of thoughts of persecution paranoia). Seventy five percent of the sample of late onset cases displayed a positive JTC bias compared to 25 % of the early onset cases, this was found to non-significant. This could be a statistical type 2 error. These results need confirming with a larger study exploring cognitive variables in greater depth.

The results are suggestive of underlying differences. Further exploratory studies are required to elucidate inter-relationships between all the psychological variables and

clinical symptoms and inform cognitive theories in relationship and specificities to the age of onset of the disorder.

9.4.6 Clinical Implications and Future Direction

Further knowledge of the underlying cognitive mechanisms underlying the onset and maintenance of psychotic disorders and any influence that the onset may have will inform psychological therapies, cognitive therapy in particular. It may also inform care pathways and early onset services and prevention strategies.

9.5 Final Conclusion

The SCIPS tool has been designed to identify four sub-groups within the heterogeneous population of schizophrenia and the psychoses. The sub-groups, based on the stress vulnerability model, had been developed through cognitive therapy, clinical experience and discussion with colleagues and service users. Only two of the sub-groups have been examined in this study; the anxiety and stress sensitivity groups. Age of onset has been proposed as a core distinguishing feature of these groups, with stress sensitivity psychosis having an early age of onset and anxiety psychosis a later onset, after 30 years old. The results from this study do not support the age of onset as a defining feature of the anxiety and stress sensitivity groups. There were no other significant differences found between demographic, clinical or psychological variables that appear to differentiate the two groups. This could be a reflection that SCIPS does not have the content or discriminant validity required to diagnose these sub-groups. Another possibility is that the anxiety and stress sensitivity sub-group classifications are homogenous and not discrete sub-groups in the current form.

Although the anxiety psychosis and stress sensitivity psychosis sub-groups do not appear to be discrete as classified by the SCIPS tool, there may be some relationship of the sub-groups with the age of onset. A significant moderate positive correlation between systematised delusions and age of onset of psychosis has been determined. The presence of systematised delusions is a core feature of anxiety psychosis; further research into this relationship is required.

It is difficult to make any firm conclusions based on the study results due to the methodological limitations - in particular false negative (type 2 statistical error) findings could have occurred due to the small sample sizes. The results require repeating with a larger study before any definite conclusions can be made. It would be advantageous to explore all four of the sub-groups to further determine the validity of the classification system and the SCIPS tool. This study identified aspects within the SCIPS tool (e.g. the identification of the chronology of the disorder) and

the anxiety and stress sensitivity sub-group classifications (e.g. acute or insidious onset) where further exploration is merited.

Further exploration of other factors such as clinical course, co-morbidity and response to psychological therapy may identify other factors which delineate the sub-groups.

The current literature regarding early and late onset schizophrenia is very inconsistent. This study is limited by the number of participants and the exclusion of the drug related and trauma psychosis sub-groups. This makes any comparison with the general population of schizophrenia difficult. The results support some of the well-established differences reported in the literature: greater proportion of females, more paranoia and persecutory systematised delusions in the late onset group. These findings in part support the differentiation of schizophrenia into early and late onset sub-groups but further research with a broader spectrum of patients is required to elucidate other clinical, psychological and epidemiological factors which distinguish the sub-groups.

The psychological variables involved in the generation and maintenance of psychotic symptoms are likely to be multi-factorial and may be unique to the individual. The observed greater attributional self-serving bias in the late onset group may be worth exploring in future studies to inform cognitive models of the disorder and the development of psychosocial interventions.

The focus of this study and the results is to explore the differences and similarities between the subgroups and generate hypothesis to inform future research within this domain. The results have raised issues regarding further research. There needs to be a reconsideration of the subgroups proposed by Kingdon et al. The results from this study do not support the reclassification of psychosis using subgroups defined by SCIPs. Further work refining and assessing the validity of the SCIPS tool is required as if further research in this area is to be considered the use of the SCIPS tool needs to be reassessed. Although the current subgroups proposed have not been supported

by this study the results contribute to the discussion on reclassification of the psychoses. A better understanding of the range of psychotic disorders will allow for potential improvements in clinical pathways, pharmacotherapy and psychological interventions. It may also inform neurobiological research into the disorder.

Appendix

A SCIPS

- SCIPS interview
- Social Readjustment Rating Scale and Questionnaire
- Diagnostic Criteria for Borderline Personality Disorder (DSM-IV)
- Structured Clinical Interview for DSM IV - Personality Disorders
- Rating sheet for the SCIPS
- Diagnostic criteria for SCIPS sub-groups
- Diagnostic guidelines for psychosis sub-types

B Participant Information Sheet and Consent form

C Rating Scales

- Demographics
- Comprehensive Psychopathological Rating Scale and Systematisation of Delusions from Present State Exam
- Rosenberg Self-Esteem Scale
- Attributional Style Questionnaire
- Beads Task
- Global Assessment of Functioning Scale
- Structured Clinical Interview for DSM IV - Psychotic Disorders

D RiO screen strategy

E Literature search strategy

Appendix A

SCIPS

- Descriptions of subgroups
- SCIPS interview
- Social Readjustment Rating Scale and Questionnaire
- Diagnostic Criteria for Borderline Personality Disorder (DSM-IV)
- Structured Clinical Interview for DSM IV - Personality Disorders
- Rating sheet for the SCIPS
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Descriptions of Subgroup used in Pilot Study (Kingdon, Gibson Kinoshita et al 2007)

Schizophrenia: I have a serious mental disorder, which affects thinking, emotions and behaviour. It is the most common form of severe mental illness and affects 1 person in every 100. It is rare before puberty and is most likely to start between the ages of 15 and 35 years. The illness often last for a long time and can be very disabling. It tends to run in families. A child who has an affected parent has a 1 in 10 chance of developing the illness. Viral infections during pregnancy, birth complications, growing up in inner cities and drug misuse also seem to play a part in the development of the illness. The structure and chemistry of the brain may be affected, but there ae o simple diagnostic tests for this at the present time. Families do not cause the illness (as some people used to believe) Evidence from research suggests that stressful events, or difficult relationships in the family, ca sometimes trigger an episode of this illness in someone who is already likely to develop it because of genetic ad other factors.

Stress Sensitivity Psychosis: My problem began over a period of months or even a year or two. I became quite sensitive to stress, which gradually led to interference with what I was doing. This led to increasing confusion and worry and eventually I received treatment. It was or has been difficult to get going again properly – however hard I try.

Drug-related Psychosis: My problem started after I had taken speed, LSD, Cocaine or a lot of cannabis. After that I started to get some problems and received some treatment. The problems continued, or came back after settling after the first time this happened. Eventually these problems were happening even when I did not take drugs.

Anxiety Psychosis: When I first received treatment for my problems I had been having some hassle, stresses and so on, but had become convinced that there as particular reason behind it all. Unfortunately, other people did not agree with me.

Traumatic Psychosis: My problems go back quite a way- maybe even as far as my childhood or soon after – and seem to have something to do with some very unpleasant experiences that I had. Now I seem to get unpleasant voices and maybe visions – sometimes to do with those experiences.

SCIPS Interview

1. Onset of psychosis

Identify the initial psychotic symptom(s) experienced in the first psychotic episode and when they occurred:

.....

.....

1-1 Age at 1st episode

Ask:
*How old were you when you first experienced psychotic symptoms (e.g., voices, paranoia)? .....***yrs**

RATE: 0 Under 30 / 1 30 or over

1-2 Mode of onset

Ask:
How long did it take from when you first noticed that something was wrong with you to the peak of your first episode? **…….yrs…….mths**

(Prompt: *Did your first psychotic episode develop quickly - within 1 month, or did it build up gradually, taking more than 1 month?*)

RATE: 0 Equal to or more than 1 mth / 1 less than 1 mth

1-3 Triggers

Show the Social Readjustment Rating Scale and Questionnaire (Appendix 1) to the
patient.

Ask:
Was there any particular event that made you upset or stressed in the 3 months before the
symptoms started? Please identify the event(s) in the list, if any.

• If no event was experienced, or the life change unit of the life event (which is shown in the list) is less than 40:

RATE: 0 No, or minor, life event, and go to item 2-1.

• If the life change unit of the life event is equal to or more than 40:

Ask:
Did it happen within 3 months of the onset of your psychotic symptoms? **(Yes / No)**
Was there any change in your sleeping pattern just after the event? **(Yes / No)**

If No to either or both of above, RATE: 0 No, or minor, life event
If Yes to both of above, RATE: 1 Stressful life event

[3] Use information from clinical records or family interviews if available and necessary.

2. Social Functioning

2-1 Change in work or school performance before the first episode

Prompt:
I would like to ask about your performance change during the period before you developed symptoms/problems.

Ask:
During this period did your work or school performance change?
Did you find that you could do less work than before? **(Yes / No)**
Did you find that you did your work slower than before? **(Yes / No)**

If No to both of above, RATE: 2 No performance change and go to item 2-2

If Yes to any of above, **Ask:**
When did the change in your school/work performance start? Did it start within 6 months, or was it more than 6 months before you first experienced the [psychotic] symptoms you have described

RATE: 0 change started within 6 mths of onset of first episode
1. The change started at or more than 6 mths before onset of first episode

2-2 Social relationships since early adolescence

Prompt:
Now I would like to ask you about your early teens, meaning when you were aged between 12 and 15.

Ask:
i) Did you stay by yourself almost every day, or did you often get together with friends at,
or after, school? Were you withdrawn or isolated, or did you get together with friends frequently?

1. Withdrawn or isolated
2. Getting together with friends frequently
If rating is 2, RATE: 1 Moderate or good social relationships and go to item 2-3.

Ask:
ii) After that period in your later teens/early 20s, did you become more sociable? Were you still withdrawn or isolated, or did you start to get together with friends frequently?

1. Still withdrawn or isolated

2. Becoming sociable and getting together with friends frequently

If rating is 1, RATE: 0 Poor social relationships
If rating is 2, RATE: 1 Moderate or good social relationships
2-3 Pre-morbid close relationships

Ask:
*What was your marital status when you first became ill?*4

Single ·

Married ·

4Divorced ·

Widowed ·

If answer is other than single, RATE: Pre-morbid close relationship: 1 Yes and go to item 3-1.

Ask:
Had you ever had someone you would describe as a boy or girlfriend? **(Yes / No)**
If No, RATE: Pre-morbid close relationship: 0 No and go to item 3-1.

Ask:
Had you dated a girl/boyfriend constantly (more than once a week on average) for more than 6 months? **(Yes / No)**
Had you ever lived with a partner for more than 1 month? **(Yes / No)**

If Yes to either question, RATE: Pre-morbid close relationship: 1 Yes
If No to both, RATE: Pre-morbid close relationship: 0 No

3. Factors Related to Psychosis

3-1 Usage of illicit drugs and their association with psychotic Symptoms

Ask:
Have you ever used any kinds of illegal drugs? **(Yes / No)**
If No (confirmed by other information sources, if possible),
RATE: Precipitating use of stimulants/hallucinogens: 0 No and go to item 3-2.

Ask:
What kind of drugs have you used?
Stimulants/Hallucinogens:

Amphetamine **(Yes / No)**

Cocaine **(Yes / No)**

LSD **(Yes / No)**

Ecstasy **(Yes / No)**

Cannabis **(Yes / No)**

Others[5] **(Yes: Name of the drug(s)? /No)**

If a patient has not used any of the stimulants/hallucinogens listed above,
RATE: Precipitating use of hallucinogens: 1 No, and go to item 3-2.

Ask:
Were you taking them in the 2 weeks before the psychotic symptoms started?
(Yes / No)
If No, RATE: Precipitating use of hallucinogens: 0 No
If Yes, RATE: Precipitating use of hallucinogens: 1 Yes

3-2 Existence of early traumatic experience

Prompt:
Childhood traumatic experiences are often associated with mental health problems.

Ask:
Is it alright for me to ask you if you have had any such experiences?_ **(Yes / No)**
If No, RATE: Traumatic experience: 0 Not discussed.
If Yes, proceed:

Ask:
Do you believe that you were emotionally or sexually abused in your childhood (under 18)? **(Yes/ No)**
If No, RATE: Traumatic experience: 1 No, and go to item 3-3.
5 If the patient has used any other kind of drugs which are proved to cause psychotic symptoms (e.g.diethylpropion), record their names here.
If Yes, RATE: Traumatic experience: 2 Yes

Ask:
Have you discussed it with your care manager/psychiatrist/therapist?
If Yes, no action necessary.
If No, ask:
Would you like me to pass what you have said onto your care manager/psychiatrist/therapist?

3-3 Borderline personality disorder
Diagnose according to whether patient meets DSM-IV criteria (See Appendix 2)

RATE: Diagnosis of borderline personality disorder: 0 No / 1 Yes

The Social Readjustment Rating Scale and Questionnaire (Life Change Unit >= 40).

Life Experience	**Life Change Units**
Death of spouse	100
Divorce	73
Marital separation	65
Jail term	63
Death of close family member	63
Personal injury or illness	53
Marriage	50
Fired at work	47
Marital reconciliation	45
Retirement	45
Change in health of family member	44
Pregnancy	40
Sex difficulties	39
Gain of new family member	39
Business readjustment	39
Change in financial state	38

Death of close friend	37
Change to different line of work	36
Change in number of arguments with spouse	35
Large mortgage	31
Foreclosure of mortgage or loan	30
Change in responsibilities at work	29
Son or daughter leaving home	29
Trouble with in-laws	29
Outstanding personal achievement	28
Wife begins or stops work	26
Begin or end school	26
Change in living conditions	25
Revision of personal habits	24
Trouble with boss	23
Change in work hours or conditions	20
Change in residence	20
Change in schools	20
Change in recreation	19
Change in church activities	19

Change in social activities	18
Small loan	17
Change in sleeping habit	16
Change in number of family get-togethers	15
Change in eating habits	15
Vacation	13

Diagnostic Criteria for Borderline Personality Disorder in DSM-IV

A pervasive pattern of instability of interpersonal relationships, self-image, and affect and more marked impulsivity beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:

(1) Frantic Efforts to avoid real or imagined abandonment. Note: do not include suicidal or self-mutilating behaviour covered in Criterion 5.
(2) Pattern of unstable and intense interpersonal relationships characterised by alternating between extremes of idealization and devaluation.
(3) Identity disturbance: markedly and persistently unstable self-image or sense of self.
(4) Impulsivity in at least two areas that are potentially self-damaging (e.g. spending, sex, substance abuse, reckless driving, binge eating). Note: do not include suicidal or self-mutilating behaviour covered in criterion 5.
(5) Recurrent suicidal behaviour, gestures, or threats, or self-mutilating behaviour.
(6) Affective instability due to marked reactivity of moo (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days.
(7) Chronic feelings of emptiness.
(8) Inappropriate, intense anger or difficulty controlling anger (e.g. frequent displays of temper, constant anger, recurrent physical fights)
(9) Transient, stress related paranoid ideation or severe dissociative symptoms.

92. You've said that you have *[Have you]* all of a sudden changed your sense of who you are and where you are headed.

Give me some examples of this.

93. You've said that your sense of who you are often changes *[Does your sense of who you are often change]* dramatically.

Tell me more about that.

94. You've said that you are *[Are you]* different with different people or in different situations so that you sometimes don't know who you really are.

Give me some examples of this. (Do you feel this way a lot?)

95. You've said that there have been *[Have there been]* lots of sudden changes in your goals, career plans, religious beliefs, and so on.

Tell me more about that.

(3) identity disturbance: markedly and persistently unstable self-image or sense of self

[Note: Do not include normal adolescent uncertainty.]

3 = acknowledges trait

? 1 2 3

114

96. You've said that you've *[Have you]* often done things impulsively.

What kinds of things?

(How about . . .
. . . buying things you really couldn't afford?
. . . having sex with people you hardly know, or "unsafe sex"?
. . . drinking too much or taking drugs?
. . . driving recklessly?
. . . uncontrollable eating?)

(4) impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating). (**Note:** Do not include suicidal or self-mutilating behavior covered in item (5).)

3 = several examples indicating a pattern of impulsive behavior (not necessarily limited to examples given above)

? 1 2 3

115

? = inadequate information **1 = absent or false** **2 = subthreshold** **3 = threshold or true**

	IF YES TO ANY OF ABOVE: Tell me about that. How often does it happen? What kinds of problems has it caused?			
97.	You've said that you have *[Have you]* tried to hurt or kill yourself or threatened to do so.	(5) recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior 3 = two or more events (when not in a Major Depressive Episode)	? 1 2 3	116
98.	You've said that you have *[Have you ever]* cut, burned, or scratched yourself on purpose. Tell me about that.			
99.	You've said that *[Do]* you have a lot of sudden mood changes. Tell me about that. (How long do your "bad" moods last? How often do these mood changes happen? How suddenly do your moods change?)	(6) affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days) 3 = acknowledges trait	? 1 2 3	117
100.	You've said that *[Do]* you often feel empty inside. Tell me more about this.	(7) chronic feelings of emptiness 3 = acknowledges trait	? 1 2 3	118
101.	You've said that *[Do]* you often have temper outbursts or get so angry that you lose control. Tell me about this.	(8) inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights) 3 = acknowledges trait and at least one example	? 1 2 3	119

? = inadequate information 1 = absent or false 2 = subthreshold 3 = threshold or true

102. You've said that *[Do]* you hit people or throw things when you get angry.

Tell me about this.

(Does this happen often?)

103. You've said that *[Do]* even little things get you very angry.

When does this happen?

(Does this happen often?)

104. You've said that when you are under a lot of stress, you *[When you are under a lot of stress, do you]* get suspicious of other people or feel especially spaced out.

Tell me about that.

(9) transient, stress-related paranoid ideation or severe dissociative symptoms

3 = several examples that do not occur exclusively during a Psychotic Disorder or a Mood Disorder With Psychotic Features

? 1 2 3 120

AT LEAST FIVE ITEMS ARE CODED "3"

1 3 121

↓

BORDERLINE PERSONALITY DISORDER

? = inadequate information 1 = absent or false 2 = subthreshold 3 = threshold or true

Rating Sheet for the SCIPS

1-1. Age at 1st episode?

0. Under 30

1. 30 or over

1-2. Mode of onset?

0. Equal to or more than 1 month

1. Less than 1 month

1-3. Triggers?

0. No, or minor, life event

1. Stressful life event

2-2. Social relationships since early adolescence?

0. Poor

1. Moderate or good

2-3. Pre-morbid close relationships?

0. No

1. Yes

Scores for differentiation between the anxiety and the stress sensitivity sub-groups

(A) Number of items which are rated as '1' (in items 1-1, 1-2, 1-3, 2-2 and 2-3) (0-5)

(B) Number of items which are rated as '0' (in items 1-1, 1-2, 1-3, 2-2 and 2-3) (0-5)

3-1. Precipitating use of hallucinogens?

0. No

1. Yes

3-2. Traumatic experience?

0. Not discussed

1. No

2. Yes

3-3. Borderline personality disorder? (Diagnosed with DSM-IV)

0. No

1. Yes

Diagnostic Criteria for SCIPS Sub-groups

• Diagnostic criteria for the drug related and traumatic sub-groups

If Yes for 3-1: precipitating use of hallucinogens,

SUB-GROUP: 1. Drug related;

If Yes for both 3-2: traumatic experience and 3-3: borderline personality disorder,

SUB-GROUP: 2. Traumatic;

If the patient is sub-grouped as being drug related and/ or traumatic, stop here.

If No for 3-1 and either of 3-2 or 3-3,

go to "Diagnostic criteria for the anxiety and the stress sensitivity sub-groups".

• Diagnostic criteria for the anxiety and the stress sensitivity sub-groups

If (A) Number of items which are rated as '1' shown in the table: " Scores for the

Differentiation between the anxiety and the stress sensitivity sub-groups " is equal to or more than 3,

SUB-GROUP: 3. Anxiety;

If (B) Number of items which are rated as '0' shown in the table: " Scores for

Differentiation between the anxiety sub-group and the stress sensitivity sub-group" is

equal to or more than 3,

SUB-GROUP: 4. Stress sensitivity.

[Note: where items cannot be scored, or adequate information is not available, it may not be possible to determine sub-types.]

Diagnostic Guidelines for Psychosis Sub-types (Kinoshita, Y, Kingdon, Kinoshita, S. et al 2012)

Drug Related Psychosis

Core characteristics
The person has used at least 1 of the stimulants/ hallucinogens which are listed below in the 2 weeks before the onset of psychotic symptoms.
List of hallucinogens:
Amphetamine, cocaine, LSD, ecstasy, cannabis, others

Supporting characteristics
Age of onset:
• Usually in their teens or 20s.
Mode of onset:
• Either acute or insidious.
Lifetime pattern of social interaction:
• Individuals with this sub-type are relatively sociable, having many friends at school and may have partners or spouses.
Symptom pattern:
• Symptom patterns tend to be diverse.
• Negative symptoms tend to be less prominent with this sub-type.

Traumatic Psychosis

Core Characteristics
The person meets the criteria for co-morbid borderline personality disorder and has experienced childhood sexual or emotional abuse.

Supporting characteristics
Age of onset:
• Usually in their teens or 20s.
Mode of onset:
• Either acute or insidious.
Lifetime pattern of social interaction:
• Individuals with this sub-type have chaotic relationships with others (e.g., severe conflict with their families, unstable sexual relationships with many boy/girlfriends).
6 Any other kinds of drugs which are proved to cause psychotic symptoms (e.g., diethylpropion) can be included.
7 Mode of onset is defined as the period between the first reported symptom or noticeable behavioural change and the patient's subjective peak of the first episode.

In this case, ‘acute’ onset means less than 1 month, while ‘insidious’ onset means equal to or more than 1 month.
Symptom pattern:

• Abusive hallucinations (auditory or visual) are frequent.

Anxiety Psychosis

Core characteristics
The person has had good peer relationships in early adolescence and usually developed
close relationships with a partner or spouse.
Supporting characteristics
Age of onset:
• Usually in their 30s or older.
Mode of onset:
• Acute.
• Individuals have experienced stressful life events which have immediately preceded psychotic symptoms within 3 months.
• Lifetime pattern of social interaction:
• Individuals with this sub-type are relatively sociable, having friends at school and partners or spouses in adulthood.
Symptom pattern:
• Delusions, especially systematized (well organized) delusions, are generally prominent.
• Hallucinations (auditory, visual, or with other modals) can occur but are less prominent.
• Negative symptoms tend to be less prominent with this sub-type.

Stress Sensitivity Psychosis

Core characteristics
The person is more stress sensitive8 and less sociable.
Supporting characteristics
Age of onset:
• Usually in their teens or early 20s.
Mode of onset:
• Insidious.
Lifetime pattern of social interaction:
• Individuals with this sub-type are less sociable, having few friends in their childhood and adolescence, and they do not have partners or spouses prior to developing symptoms.
Symptom pattern:
‘Stress sensitive’ means that emotional reactivity is high to daily life stress, or ‘daily hassles’

- Negative symptoms are prominent, even in the first episode.
- A diverse range of positive symptoms occur

Appendix B

Participant Information Sheet (Version 3 and Version 2)

and Consent form

Southern Health NHS
NHS Foundation Trust

Participant Information Sheet

(May 2014)

Exploration and Differentiation of Early and Late-Onset Psychosis

Researcher: Dr Lisa Taylor
Ethics number: 12/SC/0300
Version 3

1. **Invitation Paragraph**

You are being asked if you would agree to take part in a research study. This is an educational project being undertaken as part of Dr Taylor's Postgraduate Research Degree with the University of Southampton. Before you decide about taking part it is important for you to understand why the research is being done and what it would involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like any more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

2. **What is the purpose of the study?**

People may develop a psychotic illness (such as schizophrenia, schizoaffective disorder and delusional disorder) at various stages of their life. This study aims to investigate and explore differences and similarities between the illnesses that develop in early adulthood and in later adulthood.

A better understanding of these conditions will help you and mental health practitioners make choices about treatment and it may help guide the development of further treatments and in particular cognitive behavioural therapy.

3. **What will I be asked about?**

You will be asked about symptoms you experience now and in the past, feelings about yourself and the type of person you are.

You will also be asked to carry out a simple test called the Beads Task; you will be shown 2 jars with different coloured beads. The jars will then be hidden from view. A bead will be taken from a jar and you will be asked to judge

which jar the coloured bead has been drawn from. This will be repeated until you are confident in your decision.

You do not have to answer any questions if you don't want to and you can stop the interview any time

4. **Why have I been chosen?**

Your consultant has selected you as being suitable for this study, as at some time you have been diagnosed with a psychotic illness. We are now asking whether you would be happy to take part in the research.

5. **Do I have to agree?**

It is up to you decide whether or not to take part. If you do decide to, you will be given an information sheet to keep and you will be asked to sign the consent form. You are still free to withdraw your consent at any time without giving a reason.
If you do wish to withdraw you will be asked if you consent to the information already supplied being included in the study or not.

A decision to withdraw at any time or a decision not to take part will not affect the standard of care you receive.

6. **What will happen to me if I take part?**

The researcher will meet with you to ask a number of questions and help you complete some questionnaires. This meeting will take place at a convenient location for you, either a local Community Mental Health Team Base or Hospital. The first set of questionnaires to confirm the diagnosis of your illness, this will take around 30 minutes. This will determine if you are eligible to continue with the rest of the study; the second half will probably take around 1 hour. You have the choice to complete this at the first meeting or meet for a second time with the researcher. During the second part of the study you will be offered a break halfway through, and you will be free to request a break or to stop at any time.

As courtesy we will inform your GP and mental health team of your involvement but not require any direct involvement from them. The questionnaires and information collected will be anonymous and kept in a locked filing cabinet in the Research and Development Department at College Keep, Southampton.

You will be offered a payment of £20 and travel expenses to compensate for your time for participating in this study.

7

. **What will I have to do?**

You will be answering some questionnaires and completing the simple beads task. If you don't want to answer any question, or complete the task, you do not have to do so. Your care would not be affected in anyway by this decision.

8. **What are possible disadvantages and risks of taking part?**

This is a questionnaire study so there are no significant risks or disadvantages of participating. In the unlikely event you should get distressed the researcher, a senior trainee psychiatrist, will assist in reducing your distress and with your consent will contact your care coordinator, consultant and GP so they can assist you further.

9. What if something goes wrong?

Should you have any complaints about the study this will be documented by the researcher and passed on to the Complaints Officer, Southern Health Foundation Trust, or you can write to them directly yourself.

10. **What are the possible benefits of taking part?**

We hope the study will help you, however this cannot be guaranteed. The information we get from the study may help us to treat future patients with psychotic illness such as schizophrenia, schizoaffective disorder and delusional disorder.

11 **Will my taking part in the study be kept confidential?**

All information is collected about you during the course of the research will be kept strictly confidential. Your name and address will be removed from any documentation so that you cannot be recognised from it.

12. **What will happen to the results of the research study?**

The results of this research will be submitted as part of Dr Taylor's Postgraduate Research Degree with the University of Southampton. The results will also be submitted for publication in scientific journals and may be presented at conferences.

A copy of the published results will be available from Dr Taylor. You will not be identified in any report or publication.

13. **Who is organising and funding the research?**

This research is being undertaken as part of Dr Taylor's Postgraduate Research Degree with the Faculty of Medicine, University of Southampton.

14. **Who has reviewed this study?**

This research has been reviewed and approved by the Southampton B Ethics Committee. The reference for this study is 12/SC/0300

15. Contact of further information

If you would like more information now or in the future please contact Dr Taylor via her secretary on (023) 8071 8532, Academic Centre, College Keep, Terminus Terrace, Southampton SO14 3DT

Thank you for your help.
You will be given a copy of the information sheet and signed consent form to keep

Southern Health NHS
NHS Foundation Trust

Study: An exploration and differentiation between early and late-onset psychosis.

Researcher: Dr Lisa Taylor MRCPsych
Version 2: June 2012
Ethics number: 12/SC/0300

Please initial the box:

1. I confirm that I have read and understand information sheet (dated June 2012) for the above study. I have had the opportunity to ask questions. ☐
2. I understand my participation voluntary and that I am free to withdraw at any time, without giving reason and without my Medical care or rights being affected. ☐
3. I understand the sections of any of my medical notes may be looked at by the researcher or responsible individuals from regulatory authorities where it is relevant to my taking part in the research. I give my permission to these individuals to have access to my records. ☐
4. I agree to take part in the above study. ☐

Name of patient Date Signature

Researcher Date Signature

1 copy for patients, 1 for researcher, 1 for hospital notes PIN for this study:

Appendix C

Rating Scales

- Demographics
- Comprehensive Psychopathological Rating Scale and Systematisation of Delusions from Present State Exam
- Rosenberg Self-Esteem Scale
- Attributional Style Questionnaire
- Beads Task
- Global Assessment of Functioning Scale
- Structured Clinical Interview for DSM IV

Demographics

Gender M/F

Status:

- Community
- Community under section/CCT
- in patient - informal
- inpatient - section

Date of admission:

Ethnicity:

- White/White British/White Irish
- Black /Black British
- Asian /Asian British
- Chinese
- other

DOB/season of birth/ Age

Marital status at Onset

- single
- married/civil partnership/co-habiting
- divorced/separated/ civil partnership dissolved
- widowed

Current Marital status

- single
- married/civil partnership/co-habiting
- divorced/separated/ civil partnership dissolved

- widowed

sexual orientation

Heterosexual/Homosexual/Bisexual

Age of onset

- When did you first experience difficulties?
- Age of First contact with psych services
- Date of first hospital admission
- Duration of first hospital admission
- 1st admission under MHA or informal?
- Number of admission under MHA
- Number of hospital admissions to date:

Current Medication:

Employment status at time of onset

- self-employed/employed - Full time/part time
- unemployed/statutory sick pay/receiving benefits
- full time student/retired/homemaker/carer

Current Employment status

- self-employed/employed - Full time/part time
- unemployed/statutory sick pay/receiving benefits
- full time student/retired/homemaker/carer

Accommodation at time of onset;

- Home owner
- Rent
- live with family
- hostel or supported accommodation

Accommodation at time of onset;

- Home owner
- Rent
- live with family
- hostel or supported accommodation

Highest qualification;

- OLevel/CSE/GCSE/Entry level
- Alevel/AS level
- NVQ level3/GNVQ/BTEC/Diploma/city &guilds/RSA Advanced/
- Undergraduate Degree
- Postgraduate degree
- Professional qualification
- No qualification

Medical History

Current weight and Height

Family Psychiatric History

Perinatal/obstetric complications

Substance use

- substance; how often; first use
- Smoking – current/ex-smoker, number per day.

Comprehensive

Psychopathological

Rating Scale

1. Sadness

Representing subjectively experienced mood, regardless of whether it is reflected in appearance or not. Includes depressed mood, low spirits, despondency, and the feeling of being beyond help and without hope. Rate according to intensity, duration and the extent to which the mood is influenced by events. Elated mood is scored zero on this item.

0 Occasional sadness may occur in the circumstances.

1 Predominant feelings of sadness, but brighter moments occur.

2 Pervasive feelings of sadness or gloominess. The mood is hardly influenced by external

circumstances.

3 Continuous experience of misery or extreme despondency.

2. Elation

Representing subjectively experienced mood - regardless of whether it is reflected in demeanour or not. Includes reports of well-being, high spirits and unvarying exuberance. Rate according to intensity, duration and the extent to which the mood is influenced by external circumstances. Distinguish from ecstatic experiences **(34).** Depressed mood is scored zero.

0 Occasional cheerfulness may occur in the circumstances.

1 Predominant feelings of well-being and high-spirits but lower moods occur.

2 Pervasive feeling of well-being and high spirits. The mood is hardly influenced by the

circumstances. Longer periods of abundant good humour.

3 Unvarying exuberance, supreme well-being, intense exhilaration.

3. Inner tension

Representing feelings of ill-defined discomfort, edginess, inner turmoil, mental tension mounting to panic, dread and anguish. Rate according to intensity, frequency, duration and the extent of reassurance called for. Distinguish from sadness **(1),** worrying **(9**), and muscular tension **(25).**

0 Placid. Only fleeting inner tension

1 Occasional feelings of edginess and ill-defined discomfort.

2 Continuous feelings of inner tension or intermittent panic, which the patient can only master with some difficulty.

3 Unrelenting dread or anguish. Overwhelming panic.

4. Hostile feelings

Representing anger, hostility and aggressive feelings regardless of whether they are acted on or not. Rate according to intensity, frequency and the amount of provocation tolerated. Inability to feel angry is scored zero on this item. Cf. Inability to feel, (**5).**

0 Not easily angered.

1 Easily angered. Reports hostile feelings, which are easily dissipated.

2 Reacts to provocation with excessive anger or hostility.

3 Persistent anger, rage, or intense hatred, which is difficult or impossible to control.

5. Inability to feel

Representing the subjective experience of reduced interest in the surroundings, or activities that normally give pleasure. The ability to react with adequate emotion to circumstances-or people is reduced. Distinguish from lassitude **(14).**

0 Normal interest in the surroundings and in other people.

1 Reduced ability to enjoy usual interests. Reduced ability to feel anger.

2 Loss of interest in the surroundings. Loss of feelings for friends and acquaintances.

3 The experience of being emotionally paralysed, inability to feel anger or grief, and a complete or even painful failure to feel for close relatives and friends.

6. Pessimistic thoughts

Representing feelings of guilt, inferiority, self-reproach, sinfulness, remorse and ruin.

0 No pessimistic thoughts.

1 Fluctuating ideas of failure, self-reproach or self-depreciation.

2 Persistent self-accusations or definite but still rational ideas of guilt or sin. Increasingly

pessimistic about the future.

3 Delusions of ruin, remorse and unredeemable sin. Absurd self-accusations.

7. Suicidal thoughts

Representing the feeling that life is not worth living, that a natural death would be welcome, suicidal thoughts, and preparations for suicide. Suicidal attempts should not in themselves influence the rating.

0 Enjoys life or takes it as it comes.

1 Weary of life. Only fleeting suicidal thoughts.

2 Much better off dead. Suicidal thoughts are common, and suicide is considered as a possible

solution, but without specific plans or intentions.

3 Explicit plans for suicide when there is an opportunity. Active preparations for suicide.

8. Hypochondriasis

Representing exaggerated preoccupation or unrealistic worrying about ill health or disease. Distinguish from worrying over trifles **(9),** aches and pains (**24).** and loss of sensation or movement **(26).**

0 No particular preoccupation with ill health.

1 Reacting to minor bodily dysfunction with foreboding. Exaggerated fear of disease.

2 Convinced that there is some disease but can be reassured, if only briefly.

3 Incapacitating or absurd hypochodriacal convictions (body rotting away, bowels have not

worked for months).

9. Worrying over trifles

Representing apprehension and undue concern over trifles, which is difficult to stop and out of proportion to the circumstances. Distinguish from inner tension **(3)**, pessimistic thoughts **(6**), hypochodriasis **(8),** compulsive thoughts (**10),** phobias **(11),** and indecision **(13).**

0 No particular worries.

1 Undue concern, worrying that can be shaken off.

2 Apprehensive and bothered about trifles or minor daily routines.

3 Unrelenting and often painful worrying. Reassurance is ineffective.

10. Compulsive thoughts

Representing disturbing or frightening thoughts or doubts which are experienced as silly or irrational, but keep coming back against one's will. Distinguish from hypochodriasis (8), worrying over trifles (9), and disrupted thoughts (30).

0 No repetitive thoughts.

1 Occasional compulsive thoughts, which are not disturbing.

2 Frequent disturbing compulsive thoughts.

3 Incapacitating or obnoxious obsessions, occupying one's entire mind.

11. Phobias

Representing feelings of unreasonable fear in specific situations (such as buses. supermarkets. crowds, feeling enclosed, being alone), which are avoided if possible.

0 No phobias.

1 Feelings of vague discomfort in particular situations which can be mastered without help or

by taking simple precautions like avoiding rush hours when possible.

2 Certain situations consistently provoke marked discomfort, and are avoided without

impairing social performance.

3 Incapacitating phobias which severely restrict activities, for example completely unable to

leave home.

12. Rituals

Representing a compulsive repeating of particular acts or rituals that are regarded as

unnecessary or absurd and resisted initially but cannot be suppressed without discomfort. The rating is based on the time spent on the rituals and the degree of social incapacity.

0 No compulsive behaviour.

1 Slight or occasional compulsive checking.

2 Clear-cut compulsive rituals, which do not interfere with social performance.

3 Extensive rituals or checking habits that are time-consuming and incapacitating.

13. Indecision

Representing vacillation and difficulty in choosing between simple alternatives. Distinguish from worrying over trifles **(9)**, and compulsive thoughts **(10)**.

0 No indecisiveness.

1 Some vacillation but can still make a decision when necessary.

2 Indecisiveness or vacillation that restricts or prevents action, makes it difficult to answer

simple questions or make simple choices.

3 Extreme indecisiveness even in situations where conscious deliberation is not normally

required, such as whether to sit or stand, enter or stay outside.

14. Lassitude

Representing a difficulty getting started or slowness initiating and performing everyday activities. Distinguish from indecision **(13)** and fatigability **(15).**

0 Hardly any difficulty in getting started. No sluggishness.

1 Difficulties in starting activities.

2 Difficulties in starting simple routine activities which are carried out only with effort.

3 Complete inertia. Unable to start activity without help.

15. Fatiguability

Representing the experience of tiring more easily than usual. When lassitude **(14)** is extreme,

this item is difficult to evaluate. If impossible do not rate. Distinguish from lassitude **(14).**

0 Ordinary staying power. Not easily fatigued.

1 Tires easily but does not have to take a break more often than usua1.

2 Easily wearied. Frequently forced to pause and rest.

3 Exhaustion interrupts almost all activities or even makes them impossible.

16. Concentration difficulties

Representing difficulties in collecting one's thoughts mounting to incapacitating lack of concentration. Rate according to intensity, frequency, and degree of incapacity produced. Distinguish from failing memory **(17),** and disrupted thoughts **(30).**

0 No difficulties in concentrating.

1 Occasional difficulties in collecting one's thoughts.

2 Difficulties in concentrating and sustaining thought, which interfere with reading or

conversation.

3 Incapacitating lack of concentration.

17. Failing memory

Representing subjective disturbances of recall compared with previous ability. Distinguish from concentration difficulties **(16).**

0 Memory as usual.

1 Occasional increased lapses of memory.

2 Reports of socially inconvenient or disturbing loss of memory.

3 Complaints of complete inability to remember.

18. Reduced appetite

Representing the feeling of a loss of appetite compared with when well.

0 Normal or increased appetite.

1 Slightly reduced appetite.

2 No appetite. Food is tasteless. Need to force oneself to eat.

3 Must be forced to eat. Food refusal.

19. Reduced sleep

Representing a subjective experience of reduced duration or depth of sleep compared to the subject's own normal pattern when well.

0 Sleeps as usual.

1 Slight difficulty dropping off to sleep or slightly reduced, light or fitful sleep.

2 Sleep reduced or broken by at least two hours.

3 Less than two or three hours' sleep.

20. Increased sleep

Representing a subjective experience of increased duration or depth of sleep, compared to the subject's own normal pattern when well.

0 No extra sleep.

1 Sleeps deeper or longer than usual.

2 Several hours extra sleep.

3 Spends a great deal of the day asleep in spite of normal or increased sleep at night.

21. Reduced sexual interest

Representing descriptions of a reduced sexual interest or a reduction of sexual activity (this should always be judged against the subject's usual sexual habits when weJl). Habitual impotence or frigidity should be ignored when assessing interest. Distinguish from inability to feel (S). Increased sexual interest is rated 0.

0 No reduction of sexual interest.

1 Sexual interest is admitted to be reduced, but activity is unimpaired.

2 Definite reduction of sexual interest. Ordinary sexual activities are reduced or non-existent.

2 Complete sexual indifference.

22. Increased sexual interest

Representing descriptions of a stronger sexual interest than usual, which may be reflected in an increase in sexual activities or fantasies. (This should always be judged against the subject's usual sexual habits when well).

0 No increase in sexual activities.

1 Increase in sexual interest or fantasies not reflected in activities.

2 Definite increase in sexual interest or activities, or intrusive sexual fantasies.

3 Totally preoccupied with sexual fantasies. Very marked increase in sexual activities.

23. Autonomic disturbances

Representing descriptions of palpitations, breathing difficulties, dizziness, increased sweating, cold hands and feet, dry mouth, indigestion, diarrhoea, frequent micturition. Distinguish from inner tension **(3),** aches and pains **(24),** and loss of sensation or movement **(26)**.

0 No autonomic disturbances.

1 Occasional autonomic symptoms, which occur under emotional stress.

2 Frequent or intense autonomic disturbances which are experienced as discomforting or

socially inconvenient.

3 Very frequent autonomic disturbances, which interrupt other activities.

24. Aches and pains

Representing reports of bodily discomfort aches and pains. Rate according to intensity, frequency and duration, and also request for relief. Disregard any opinion of organic cause. Distinguish from hypochondriasis **(8),** autonomic disturbance **(23),** and muscular tension **(25).**

0 Absent or transient aches.

1 Occasional definite aches and pains.

2 Prolonged and inconvenient aches and pains. Requests for effective analgesics.

3 Severely interfering or crippling pains.

25. Muscular tension

Representing the description of increased tension in the muscles and a difficulty in relaxing physically. Distinguish from aches and pains **(24).**

0 No increase in muscular tension.

1 Some occasional increase in muscular tension, more evident in demanding situations.

2 Considerable difficulty in finding a comfortable position when sitting or laying. Disturbing

muscular tension.

3 Painful muscular tension. Completely incapable of relaxing physically.

26. Loss of sensation or movement

Representing impairment or loss of particular motor or sensory functions. Disregard any organic basis. Distinguish from hypochondriasis (8), autonomic disturbances **(23),** and aches and pains **(24).**

0 No impairment of sensory or motor functions.

1 Slight, and transient impairment which does not disturb ordinary activities.

2 Clear-cut impairment or loss of some function, but manages daily activities without help.

3 Severely incapacitating and persistent sensorimotor loss which necessitates help, such

as blindness, inability to walk or speak.

27. Derealisation

Representing a change in the quality of awareness of the surroundings, which may appear artificial. Also includes deja-vu, deja-vecu, and changed intensity of perceptions. Distinguish from depersonalisation (28).

0 No change in awareness.

1 Occasional episodes of deja-vu phenomena or derealisation.

2 Frequent episodes of derealisation.

3 Very frequent or persistent derealisation.

28. Depersonalisation

Representing a change in the quality of awareness of oneself combined with the feelings of unreality, bodily change, detachment, or radical change of person. Distinguish from inability to feel **(5),** derealisation **(27**), feeling controlled **(29).**

0 No experience of change.

1 Occasional or vague feelings of change in oneself

2 Feelings of change of person which are intrusive.

3 Continuous experience of a radical change of one's person.

29. Feeling controlled

Representing the experience of being in the literal sense influenced or controlled from without, and the experience that feelings, impulses or volitions are imposed from without. Also rated under this heading is the experience of being able to control others in a similar manner. Distinguish from disrupted thoughts **(30),** and ideas of persecution **(31).**

0 Ordinary influence from social forces.

1 Vague or unconvincing report of being unnaturally influenced from without.

2 Occasional but clear experiences of being controlled from without, e.g. by means of

hypnosis.

3 Continuous experiences that feelings or impulses do not derive from oneself but are

forced into one, say by means of rays.

30. Disrupted thoughts

Representing the experience of a sudden stoppage of thoughts (thought blocking), or thoughts being put into one's head (insertion), or being taken out (withdrawal), or listened to or broadcast. Distinguish from compulsive thoughts **(10)**, and concentration difficulties **(16).**

0 No thought interruptions.

1 Vague or unconvincing reports of episodes of interruptions to thought.

2 Occasional but clear thought blocking or occasional episodes of thought insertion or withdrawal. Feeling that thoughts are being read.

3 Disturbing or disabling thought interruptions. Thought broadcasting.

31. Thoughts of persecution

Representing suspiciousness, exaggerated self-consciousness, the conviction of being talked about or watched or persecuted with malicious intent.

0 No undue suspiciousness or self-consciousness.

1 Vague feelings of being observed. Occasional suspicions of malice.

2 Pervasive feelings of being talked about threatened or persecuted.

3 Unalterable conviction of being the victim of systematic persecution. Delusional misinterpretation of ordinary events or "cues". Conviction of being referred to beyond the realm of likelihood (for example on television or in newspapers).

32. Ideas of grandeur

Representing exaggerated opinion of self-importance, capabilities or good health. Distinguish from elation (2), and ecstatic experiences **(34)**.

0 No ideas of grandeur.

1 Self assured with an inflated sense of one's own importance.

2 Clearly exaggerated opinion of self-importance and capabilities. Grandiose, facile and unrealistic plans for the future.

3 Absurd, delusional ideas of grandeur

33. Delusional mood

Representing strong, unreasonable premonitions, the feeling of sudden conviction that trivial events of things have a profound and bizarre significance. Distinguish from derealisation **(27)** and ecstatic experiences **(34)**.

0 Vague ordinary superstitions. No delusional mood.

1 Vague premonitions that something personal and unknown is about to happen.

2 A strong feeling that generally trivial events have a special significance (delusional mood).

3 The sudden unshakeable conviction, appearing out of the blue, that a particular set of events has a profound and often bizarre meaning. (Autochronous delusions).

34 Ecstatic experiences

Representing experiences of mystic rapture. bliss or ecstatic happiness which may involve sudden illumination, insight into religious matters or union with God. Distinguish from elation (2) and ideas of grandeur **(32).**

0 No ecstatic experiences.

1 Occasional inexplicable feelings of happiness with metaphysical overtones.

2 Frequent experiences of bliss rapture connected with feelings of sudden insight into metaphysical matters.

3 Marked, or continuous feelings of bliss or mystic rapture, "oceanic feelings", mystical union with God.

35. Morbid jealousy

Representing an absorbing preoccupation with the possible unfaithfulness of a sexual partner.

0 No undue suspicions towards the partner.

1 Vague feelings of insecurity and suspicions about the partner's faithfulness.

2 Searches for and misinterprets "evidence" of unfaithfulness.

3 Morbid ideas of jealousy dominate life and actions. Threatens the partner and

tries to extract "confessions".

36. Other delusions

Representing any other delusions than those above. (Pessimistic thoughts **(6)**, hypochondriasis **(8),** feeling controlled (**29),** ideas of persecution **(31),** ideas of grandeur (**32**), delusional mood **(33)**, morbid jealousy **(35)**.

0 No other delusions.

1 Vague and unconvincing descriptions.

2 Definitely pathological ideas, approaching delusional strength.

3 Absurd delusions which may be reflected in behaviour.

37. Commenting voices

Representing the experience of hearing one's own thoughts spoken or repeated aloud, or hearing voices, commenting or arguing about one in the third person. Distinguish from other auditory hallucinations (38).

0 No hallucinated commenting voices.

1 Vague, or unconvincing report of commenting voices.

2 Definite, but not disabling hallucinated voices.

3 Frequent, disabling hallucinated voices.

38. Other auditory hallucinations

Representing all hallucinated sounds or voices except commenting voices **(37)**. Also includes auditory hallucinations in keeping with the predominant mood such as depression or elation.

0 No auditory hallucinations, except for hypnagogic phenomena (on going to sleep).

1 Misinterpretations of auditory stimuli. Vague or unconvincing reports of auditory hallucinations.

2 Definite hallucinations, which may be persistent but not intrusive.

3 Loud, or unpleasant hallucinations. Forceful commands.

39. Visual hallucinations

Representing a misinterpretation of a visual stimulus (illusion) or a false visual perception without any actual outside stimulus (hallucination),

0 No false visual experiences, except for possible hypnagogic phenomena.

1 Occasional illusions.

2 Frequent illusions, or occasional visual hallucinations.

3 Clear, frequent or persistent hallucinations.

40. Other hallucinations

Representing hallucinations of taste, smell or bodily sensation. Specify the senses and base the rating on the most severe.

0 No hallucinations.

1 Vague or unconvincing reports of hallucinations.

2 Occasional but definite hallucinations.

3 Clear, frequent or persistent hallucinations.

OBSERVED PSYCHOPATHOLOGY

41. Apparent sadness

Representing despondency, gloom and despair, (more than just ordinary transient low spirits) reflected in speech, facial expression and posture. Rate by depth and inability to brighten up.

0 No sadness.

1 Looks dispirited but brightens up occasionally.

2 Appears sad and unhappy all the time.

3 Extreme and continuous gloom and despondency.

42. Elated mood

Representing an elated and exuberant state (excludes ordinary transient high spirits). Includes evident increased well-being, self-confidence, elation and hilarity shown in speech, choice of subject, facial expression, posture and activity. Rate according to intensity and inability to respond seriously when demanded.

0 Normal cheerfulness.

1 Self-confident and somewhat expansive but can change to seriousness when demanded.

2 Expansive hilarity with exaggerated self-confidence and mirth that is out of tune. Unable to respond seriously.

3 Displays persistent extreme exuberance, exhilaration and absurd hilarity.

43. Hostility

Representing irritability, angry looks, words or actions. Rate by intensity and frequency and the small amount of provocation that elicits the response and the time taken to quieten.

0 No evident hostility.

1 Querulous, touchy and irritable on provocation. Occasional angry glances.

2 Pugnacious, quarrelsome, very aggressive gestures, but can be calmed down.

3 Threatening behaviour or actual physical violence.

44. Labile emotional responses

Representing rapidly changing moods to sudden elation or sadness with a tendency to display intense emotional responses. Should not be confused with the preponderant mood. Rate by speed and frequency of change.

0 No sudden mood change.

1 Occasional and understandable rapid mood changes.

2 Frequent sudden or exaggerated mood changes.

3 Very rapid changes between intense opposite moods.

45. Lack of appropriate emotion

Representing blunting of affects as shown by lack of emotional expression, or the occurrence of incongruous emotional displays, which are clearly out of keeping with the situation. Distinguish from apparent sadness **(41)** and elated mood **(42).**

0 Appropriate affects in keeping with mood.

1 Apparent lack of concern, slightly odd displays of emotion.

2 Responds in a clearly inappropriate way on sensitive issues, or appears not to respond at all.

3 Only clearly bizarre emotional response, or total emotional indifference.

46. Autonomic disturbances

Representing signs of autonomic dysfunction, hyperventilation or frequent sighing, blushing, sweating, cold hands, enlarged pupils and dry mouth, fainting.

0 No observed autonomic disturbances.

1 Occasional or slight autonomic disturbances such as blushing or blanching, or sweating under stress.

2 Obvious autonomic disturbance on several occasions even when not under stress.

3 Autonomic disturbances which disrupt the interview.

47. Sleepiness

Representing evident diminished ability to stay awake as seen in facial expression, speech and posture. Distinguish from withdrawal **(49),** perplexity **(50)** and slowness of movement **(60**),

0 Fully awake.

1 looks sleepy. Yawns occasionally.

2 Tends to fall asleep when left in peace.

3 Falls asleep during interview or 1s difficult to wake.

48. Distractibility

Representing attention easily diverted by irrelevant external stimuli. Distinguish from withdrawal **(49),** perplexity (**50)**, blank spells **(51**), flight of ideas **(56)** and hallucinatory behaviour **(65),**

0 Adequately sustained attention.

1 Attention occasionally distracted by irrelevant stimuli (such as background Noises)

2 Easily distracted.

3 Continually distracted by incidental events and objects which makes interviewing difficult or impossible.

49. Withdrawal

Representing grossly restricted attention and apparent unawareness of people or surroundings, Distinguish from sleepiness **(47)**, perplexity **(50)**, blank spells **(51)**, and reduced speech **(54)**.

0 Apparently well aware of the surroundings,

1 Occasional withdrawal, but attention can be brought back without difficulty.

2 Appears absent and withdrawn and is only brought back to the interview with difficulty.

3 Completely withdrawn. Appears not to react to words or touch.

50. Perplexity

Representing bewilderment, a difficulty in comprehending any situation and interpreting the context. Distinguish from sleepiness **(47),** distractibility **(48)** and withdrawal **(49).**

0 No perplexity.

1 Puzzled. Occasional difficulty understanding what should be simple questions.

2 Appears bewildered. Simple questions must be repeated to be understood. Occasional answers unrelated to the question.

3 Obviously perplexed and bewildered. Speech and behaviour clearly inappropriate, as if in a dream.

51. Blank spells

Representing sudden stoppages and inattention while speaking, which last for a few seconds or longer. It is often accompanied by immobility and apparent thought blocking. Distinguish from reduced speech (**54)**, specific speech defects **(55),** incoherent speech **(57).**

0 No blank spells.

1 Occasional lapses which could be interpreted as wandering of the mind.

2 Obvious blank spells even when not under particular stress.

3 Frequent or long blank spells which interfere with conversation.

52. Disorientation

Representing failure of orientation in time and place.

0 Fully orientated.

1 Minimal disorientation as to day or date.

2 Marked disorientation for date or some disorientation in time.

3 Markedly disoriented for time and place.

53. Pressure of speech

Representing pressure to talk, increased flow of speech and value loquaciousness. Reduced speech is scored zero on this item. Distinguish from flight of ideas **(56)** and incoherent speech **(57).**

0 Ordinary speech without undue loquaciousness.

1 Rapid verbose speech. Gives detailed answers.

2 Garrulous and very difficult to interrupt.

3 Leads the interview. Words come tumbling out. Cannot be interrupted.

54. Reduced speech

Representing reticent or slowed speech with long delays or pauses. Pressure of speech is scored zero on this item. Distinguish from withdrawal (**49)**, perplexity **(50)**, blank spells **(51)**, specific speech defects **(55)**.

0 Ordinary speech without undue pauses.

1 Takes time to produce brief answers.

2 Extremely brief monosyllabic answers with long delays. Hardly any spontaneous comments and when they occur they are slow.

3 Monosyllabic answers are only produced with great effort. Almost or completely mute.

55. Specific speech defects

Representing for example stuttering. dysarthria and aphasia - specify the type and any obvious reason.

0 No specific difficulties with speech.

1 Occasional speech defects, especia1Jy when upset.

2 Very evident speech defects which are intrusive but do not interfere with communication.

3 Persistent and disturbing speech defects which markedly interfere with communication.

56. Flight of ideas

Representing a rapid flow of ideas shown in speech. There is a continuity of thought, even if it is difficult or even impossible to catch up, in contrast to incoherent speech **(57**).

0 Ordinary flow of ideas.

1 Free and lively associations with tendency to drift in the discussion.

2 Rapid flow of ideas which can be followed. Frequent changes of subject, which interfere with conversation.

4 The rapid changes of subject and the richness and speed of associations make conversation extremely difficult or impossible.

57. Incoherent speech

Representing circumlocutory disorganised or apparently illogical speech with inexplicable shifts from topic to topic, distortion and fragmenting of syntax and words. Distinguish from

flight of ideas **(56).**

0 Coherent and understandable speech.

1 Pedantic and slightly circumlocutory speech. Some idiosyncratic but comprehensible use of words or phrases, especially under stress.

2 Illogical association between words or phrases even when not under stress, "Knights move" shifts.

3 Obviously disjointed and illogical speech. Fragmentation of phrases or words or bizarre neologisms, which seriously interfere with communication.

58. Perseveration

Representing a tendency to get stuck, to repeat sentences or actions such as repeating the answer to a previous question to subsequent questions and to constantly return to the same topic, or being unable to interrupt a thought or action.

0 No perseveration.

1 The same phrase is occasionally repeated. Returns to the same question several times.

2 Repeats the same phrase, but can be persuaded to give more adequate answers. Difficulties in interrupting a line of thought or an action once started.

3 Perseverating phrases or behaviour makes communication difficult or impossible.

59. Overactivity

Representing an increase in frequency and extent of voluntary movement (facial movements, gait, accompanying movements and gestures) and an increased speed in their initiation and completion. Distinguish from agitation **(61**), and involuntary movements **(62).**

0 Change between activity and rest.

1 Lively gestures and hurried gait, but can rest.

2 Obviously expansive and rapid movements and gestures. Abrupt reactions.

Leaves the chair occasionally during the interview.

3 Continuous wildly exaggerated motor activity. Cannot be persuaded to sit or lie down.

60. Slowness of movement

Representing a decrease in frequency and extent of voluntary movements. Facial movements, gait, accompanying movements and gestures retarded and sluggish.

0 Ordinary change between rest and activity.

1 Minimal gestured and facial movements.

2 Almost no spontaneous motor activity. Slow and laboured movement.

3 Has to be led to the interview. No spontaneous movements. Immobile face, Stupor.

61. Agitation

Representing "purposeless" motor activity such as hand-wringing, picking at objects and clothes, inability to sit still. Distinguish from over activity (59), involuntary movements **(62)** and mannerisms **(64).**

0 No agitation.

1 Difficult to keep hands still. Changes position several times during the interview. Fiddles with objects.

2 Obviously restless. Vacant and obtrusive picking up objects. Half-rises occasionally.

3 Cannot be persuaded to sit except for brief periods. Incessant purposeless wandering.

62. Involuntary movements

Representing the following involuntary movements – tics, tremor, choreoathetotic movements, dyskinesias, dystonias and torticollis. Specify the type.
Distinguish from over activity (59), agitation (61) and mannerisms (64).

0 No involuntary movements

1 Occasional involuntary movements when under stress

2 Obvious and frequent involuntary movements, accentuated hen under stress. Manages not to let them interfere with ordinary motor activity

3 Continuous involuntary movements which seriously interfere with ordinary activities.

63. Muscular tension

Represents observed muscular tension as shown in facial expression, posture and movements:

0 Appears relaxed

1 Slightly tense face and posture

2 Moderately tense posture and face (easily seen in jaw and neck muscles). Does not seem to find a relaxed position when sitting. Stiff and awkward movements.

3 Strikingly tense. Often sits hunched and crouched, or tense and rigidly upright at the edge of the chair

64. Mannerisms and postures

Representing repeated or stereotypic complex movements or postures, such as grimacing, stylized movements, odd postures, catalepsy. The rating is based on frequency, and degree of interference with other activities.

Distinguish from perseveration (**58**), agitation (**61**) and involuntary movements (**62**), especially tics.

0 No mannerisms

1 Occasional or doubtful grimaces or stylized movement

2 Mannerisms, grimaces or postures which are obvious but do not interfere.

3 Pronounced mannerisms or postures which take over from ordinary motor activity

65. Hallucinatory behaviour

Representing odd behaviour suggestive of hallucinations, for example turning around suddenly, shouting or apparently answering voices, retreating from presumed visual hallucinations. Should be rated regardless of whether hallucinations are admitted or not. Distinguish from involuntary movements (**62**), and mannerisms and posturing (**64**)

0 No hallucinatory behaviour

1 Odd behaviour like talking to oneself which might represent hallucinatory behaviour but is thought not to be

2 Convincing hallucinatory behaviour

3 Bizarre or frequent hallucinatory behaviour which interferes with the interview

66. Global rating of illness

0 None. Absence of illness

1 Minimal or doubtful illness which does not interfere

2 Moderate and definite illness

3 Severe or incapacitating illness

67 Assumed reliability of the rating

0 Very poor

1 Fair

2 Good

3 Very Good

Systematisation of Delusions from Present State Examination:

0= no delusions

1=delusions and hallucinations not elaborated into a general system affecting much of the subjects experience. Include encapsulated delusions or isolated hallucinations

2=Some systematic elaboration, but substantial areas of the subjects experience are not affected

3=subject interprets all his experience in delusional terms

Rosenberg Self-Esteem Scale (Rosenberg, 1965)

The scale is a ten item Likert scale with items answered on a four point scale - from strongly agree to strongly disagree. The original sample for which the scale was developed consisted of 5,024 High School Juniors and seniors from 10 randomly selected schools in New York State.

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.*	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.*	I feel I do not have much to be proud of.	SA	A	D	SD
6.*	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8.*	I wish I could have more respect for myself.	SA	A	D	SD
9.*	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

Scoring: SA=3, A=2, D=1, SD=0. Items with an asterisk are reverse scored, that is, SA=0, A=1, D=2, SD=3. Sum the scores for the 10 items. The higher the score, the higher the self-esteem. 2,5,6,,8,9

RSE SCORING

Scoring: SA=3, A=2, D=1, SD=0.

Items with an asterisk (2,5,6,8,9) are reverse scored, that is, SA=0, A=1, D=2, SD=3. Sum the scores for the 10 items.

The higher the score, the higher the self-esteem.

ATTRIBUTIONAL STYLE QUESTIONNAIRE

Directions:
1) Read each situation and vividly imagine it happening to you.
2) Decide what you believe to be the one major cause of the situation if it happened to you.
3) Write this cause in the blank provided.
4) Answer the two questions about the cause by circling one number per question. Do not circle the words.
5) Go on to the next situation.

SITUATIONS

YOU MEET A FRIEND WHO COMPLIMENTS YOU ON YOUR APPEARANCE.

1. Write down the one major cause: _____

2. Is the cause of your friend's compliment due to something about you or something about other people or circumstances?

   Totally due to other people or circumstances — 1 2 3 4 5 6 7 — Totally due to me

3. In the future, when you are with your friend, will this cause again be present?

   Will never again be present — 1 2 3 4 5 6 7 — Will always be present

4. Is the cause something that just affects interacting with friends, or does it also influence other areas of your life?

   Influences just this particular situation — 1 2 3 4 5 6 7 — Influences all situations in my life.

YOU HAVE BEEN LOOKING FOR A JOB UNSUCCESSFULLY FOR SOME TIME.

5. Write down the one major cause: _____

6. Is the cause of your unsuccessful job search due to something about you or something about other people or circumstances?

   Totally due to other people or circumstances — 1 2 3 4 5 6 7 — Totally due to me

7. In the future, when looking for a job, will this cause again be present?

   Will never again be present — 1 2 3 4 5 6 7 — Will always be present

8. Is the cause something that just influences looking for a job, or does it also influence other areas of your life?

   Influences just this particular situation — 1 2 3 4 5 6 7 — Influences all situations in my life.

YOU BECOME VERY RICH.

9. Write down the one major cause:_____

10. Is the cause of your becoming rich due to something about you or something about other people or circumstances?

	1	2	3	4	5	6	7	
Totally due to other people or circumstances								Totally due to me

11. In the future, will this cause again be present?

	1	2	3	4	5	6	7	
Will never again be present								Will always be present

12. Is the cause something that just affects obtaining money, or does it also influence other areas of your life?

	1	2	3	4	5	6	7	
Influences just this particular situation								Influences all situations in my life

A FRIEND COMES TO YOU WITH A PROBLEM AND YOU DON'T TRY TO HELP HIM/HER.

13. Write down the one major cause:_____

14. Is the cause of your not helping your friend due to something about you or something about other people or circumstances?

	1	2	3	4	5	6	7	
Totally due to other people or circumstances								Totally due to me

15. In the future, when a friend comes to you with a problem, will this cause again be present?

	1	2	3	4	5	6	7	
Will never again be present								Will always be present

16. Is the cause something that just effects what happens when a friend comes to you with a problem, or does it also influence other areas of your life?

	1	2	3	4	5	6	7	
Influences just this particular situation								Influences all situations in my life

YOU GIVE AN IMPORTANT TALK IN FRONT OF A GROUP AND THE AUDIENCE REACTS NEGATIVELY.

17. Write down the one major cause: _____

18. Is the cause of audience's negative reaction due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me

19. In the future when you give talks, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present

20. Is the cause something that just influences giving talks, or does it also influence other areas of your life?

Influences just this particular situation	1 2 3 4 5 6 7	Influences all situations in my life

YOU DO A PROJECT WHICH IS HIGHLY PRAISED.

21. Write down the one major cause: _____

22. Is the cause of your being praised due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me

23. In the future when you do a project, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present

24. Is the cause something that just affects doing projects, or does it also influence other areas of your life?

Influences just this particular situation	1 2 3 4 5 6 7	Influences all situations in my life

YOU MEET A FRIEND WHO ACTS HOSTILELY TOWARDS YOU.

25. Write down the one major cause!_____

_____

26. Is the cause of your friend acting hostile due to something about you or something about other people or circumstances?

Totally due to other people or circumstances — 1 2 3 4 5 6 7 — Totally due to me

27. In the future when interacting with friends, will this cause again be present?

Will never again be present — 1 2 3 4 5 6 7 — Will always be present

28. Is the cause something that just influences interacting with friends, or does it also influence other areas of your life?

Influences just this particular situation — 1 2 3 4 5 6 7 — Influences all situations in my life

YOU CAN'T GET ALL THE WORK DONE THAT OTHERS EXPECT OF YOU.

29. Write down the one major cause!_____

_____

30. Is the cause of your not getting the work done due to something about you or something about other people or circumstances?

Totally due to other people or circumstances — 1 2 3 4 5 6 7 — Totally due to me

31. In the future when doing work that others expect, will this cause again be present?

Will never again be present — 1 2 3 4 5 6 7 — Will always be present

32. Is the cause something that just affects doing work that others expect of you, or does it also influence other areas of your life?

Influences just this particular situation — 1 2 3 4 5 6 7 — Influences all situations in my life

YOUR SPOUSE (BOYFRIEND/GIRLFRIEND) HAS BEEN TREATING YOU MORE LOVINGLY.

33. Write down the one major cause: _____

_____

34. Is the cause of your spouse (boyfriend/girlfriend) treating you more lovingly due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

35. In future interactions with your spouse (boyfriend/girlfriend), will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present

36. Is the cause something that just affects how your spouse (boyfriend/girlfriend) treats you, or does it also influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

~~*YOU APPLY FOR A POSITION THAT YOU WANT VERY BADLY (E.G., IMPORTANT JOB, GRADUATE SCHOOL ADMISSION, ETC.) AND YOU GET IT.*~~

37. Write down the one major cause: _____

_____

38. Is the cause of your getting the position due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

39. In the future when you apply for a position, will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present

40. Is the cause something that just influences applying for a position, or does it also influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

YOU GO OUT ON A DATE AND IT GOES BADLY.

41. Write down the one major cause: _____

_____

42. Is the cause of the date going badly due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

43. In the future when you are dating, will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present

44. Is the cause something that just influences dating, or does it also influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

YOU GET A RAISE.

45. Write down the one major cause: _____

_____

46. Is the cause of your getting a raise due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me

47. In the future on your job, will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present

48. Is the cause something that just affects getting a raise, or does it also influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life

The Attributional Style Questionnaire Scoring Key

The Attributional Style Questionnaire is composed of 12 different hypothetical situations, consisting of 6 good events and 6 bad events. Each of these situations is followed by a series of 4 questions. The first question following each situation asks for the one major cause of the situation. This question is not used in scoring and simply serves as an aid to better answer the remaining questions. The remaining three questions are arranged in the same order for each situation and measure three different dimensions. The second question following each situation measures whether the subject's response is *internal* or *external*. The third question following each situation measures whether the subject's response is *stable* or *unstable*. The fourth question following each situation measures whether the subject's response is *global* or *specific*.

For each response, subjects marked an answer in the range of 1 to 7. For good events, a score of 1 is the lowest, or worst possible score, whereas a score of 7 is the highest, or best possible score. Conversely, for bad events, a score of 1 is the highest, or best possible score, and a score of 7 is the lowest, or worst possible score. Because of the reverse order of scoring for good and bad situations, scores for good events must be separated from scores for bad events.

Composite Negative Attributional Style (CoNeg): _____
(sum the total of all bad event scores and divide by the total number of bad events, 6. The best score is 3, the worst score is 21)

Composite Positive Attributional Style (CoPos): _____
(sum the total of all good event scores and divide by the total number of good events, 6. The best score is 21, the worst score is 3)

Composite Positive minus Composite Negative (CPCN): _____
(The best score is +18; the worst score is -18)

CPCN, Composite Negative (CoNeg), and to a lesser extent, Composite Positive (CoPos) scores are the most valid and reliable in the prediction of depression and various other outcomes. The individual dimension scores (internal, stable, and global), because they are based on only a few questions, have much lower reliability and validity. We therefore recommend that you concentrate all or most of your efforts on the composite scores (CPCN, CoNeg, and CoPos), unless you have a strong theoretical reason for investigating the individual dimension scores.

Following is a list of the individual dimension measures:

Internal Negative: ____
(sum the answers to the second question under each bad event and divide by the total number of bad events, 6)

Stable Negative: _____
(sum the answers to the third question under each bad event and divide by the total number of bad events, 6)

Global Negative: _____
(sum the answers to the fourth question under each bad event and divide by the total number of bad events, 6)

Internal Positive: ___ ____
(sum the answers to the second question under each good event and divide by the total number of good events, 6)

Stable Positive: _____ __
(sum the answers to the third question under each good event and divide by the total number of good events, 6)

Global Positive: __ _____
(sum the answers to the fourth question under each good event and divide by the total number of good events, 6)

Hopelessness: _____ ___
(Sum the Stable Negative and Global Negative scores and divide by 2)

Hopefulness: _____ __
(Sum the Stable Positive and Global Positive scores and divide by 2)

Beads Task Instructions - to be given verbally to Participant:

- there are two jars: A mainly white jar containing 85 white and 15 black beads and a mainly black jar containing 85 black and 15 white beads
- One of the jars has been chosen at random. Jars will be hidden from your view.
- Beads will be drawn from the selected jar and shown. The beads will always come from the same jar and will be replaced afterwards so that the proportions stay the same.
- It is your job to decide from which jar the beads have come. You may see as many beads as you like before making a decision. After a bead has been shown to you, you can ask for another bead or you can tell me that you know which jar has been chosen, and you can tell me whether it is the **mainly black Jar** or the **mainly white Jar**.

  Remember you can see as many beads as you like before you decide from which jar the beads are from. Only decide when you are certain.
- You will now see the first bead.
- Would you like to see any more beads or have you decided now?

(Pseudorandom order to be used)

B W B B B W B B W B B W B B B B W **YOU MUST CHOOSE NOW**

Number of Beads viewed:

Global Assessment of Functioning (GAF) Scale

(From DSM-IV-TR, p. 34.)

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.

Code	(Note: Use intermediate codes when appropriate, e.g., 45, 68, 72.)
100 | 91	**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.**
90 | 81	**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 or concerns** (e.g. an occasional argument with family members).
80 | 71	**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 failing behind in schoolwork).
70 | 61	**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.**
60 | 51	**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).
50 | 41	**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).
40 | 31	**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, judgment, 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 at school).
30 | 21	**Behavior is considerably influenced by delusions or hallucinations** **OR serious impairment in communication or judgment** (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).
20 | 11	**Some danger of hurting 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 feces) **OR gross impairment in communication** (e.g., largely incoherent or mute).
10 | 1	**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 D

RiO screen strategy

RiO Screen for Eligible Participants

The Southern Health NHS Foundation Trust Research department has an agreement allowing the information team to screen caseloads for potentially eligible patients for studies, provided the clinical care team is informed. Consent was therefore obtained from the Adult Mental Health Divisional Director for this.

A screen of the electronic record system (RiO) for potentially eligible participants with late onset psychosis was carried out by the Information Department. The information team screened using year of birth prior to 1970 and the following diagnosis and ICD-10 codes;

- F20 schizophrenia coded F20.0 to F20.6
- F21 Schizotypal disorder
- F22.0 Delusional disorders,
- F22.8 Other Persistent delusional disorders
- F25.0 to F25.2 Schizoaffective disorder.
- F28.0 Other non-organic psychotic disorders
- F29.0 Unspecified non organic psychosis.

This provided a record of all current patients who were potentially eligible to participate in the research. The search was restricted to Southampton Mental Health Services due to the large number of hits expected.

The electronic notes of individuals identified by this screen were further assessed by the researcher to ascertain if they met the inclusion/exclusion criteria. If they met the criteria the care coordinator or psychiatrist were approached. If they felt it appropriate they then sought the permission of the service user for the researcher to contact them to discuss the study and request their participation.

Appendix E

Literature search strategy

Literature Search Strategy

Extensive literature reviews were carried out throughout the period of the study with electronic alerts from data bases to new relevant publications. Assistance was sought from librarians within Hampshire Healthcare Library Service.

Restrictions were made for inclusion criteria of adult population and a language restriction to English. No restriction was placed on publication date. References from published papers were also retrieved. A comprehensive Oxford Textbook of Psychiatry was used to gain further information regarding classification and the historical context. Relevant literature was also provided by Professor Kingdon.

The following search words, with variant spellings, (e.g. late-onset, late onset, psychosis psychoses) were used:

Late onset AND psychosis

Late onset AND schizophrenia

Schizophrenia AND sub-groups

Early onset AND psychosis

Early Onset AND schizophrenia

The following key words were used with AND psychosis or AND schizophrenia.

Attributional AND Style / Attribution AND Bias

Reasoning AND Bias

Jumping AND Conclusions

Beads AND task

Self-Esteem

NHS Evidence, Medline, Embase, PsychInfo, Psychlit PubMed, were used to carry out the search.

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