Recovery from Serious Mental Illness: Examining Traditional Clinical and Psychosocial Factors

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Abstract

The aim of the current study was to advance the current understanding of recovery from serious mental illness (SMI) by examining the construct and some of the associated factors. The study used the consumer-driven notion of recovery describing a personal process of overcoming SMI. SMI was defined as an enduring psychiatric, emotional, or dual diagnosis that has a serious impact on a person’s quality of life, functioning ability, and health. The dependent variables were recovery and functional disability. An assessment of functioning is often used to assess outcomes, and was used in the study to compare findings with recovery. The current study examined a selection of psychosocial variables alongside some of the more traditional clinical variables used in the SMI research literature and treatment. Psychosocial factors were drawn from an attachment framework (i.e., attachment style, schemas, and coping style). Clinical predictors were selected from more traditional clinical outcome research in the SMI literature (i.e., medication adherence, substance use, severity of illness, and functional disability).

The study was a cross-sectional design using a quantitative measure of recovery (the Recovery Assessment Scale; Giffort, Schmook, Woody, Vollendorf, & Gervain, 1995). One hundred and fifty-four participants were recruited from Mind Australia, a non-government psychiatric rehabilitation service. Participants completed a questionnaire at the recruitment sites and relevant information was also collected from the participant’s case files and support staff.

Hierarchical regression found that an active coping style and low negative evaluations of self were the strongest unique predictors of recovery. Structural equation modeling showed a series of interactions between psychosocial variables and recovery involving attachment anxiety and avoidance, self-schemas, and active
coping. Of the clinical variables, the number of hospitalisations and degree of medication adherence had the strongest relationships with recovery, but demonstrated smaller magnitude associations relative to the psychosocial variables.

While research and clinical practice continually strive to maximise outcomes for those with an SMI, the current findings suggest that interventions targeting psychosocial variables (particularly those relating to active coping and self-views) would make a significant contribution to recovery, over and above the contribution of traditional clinical programs that target medication adherence and substance use. This in no way suggests that clinical variables are not important; rather, that an excessive focus on traditional clinical variables may occur at the expense of psychosocial variables which are amenable to psychosocial interventions. Furthermore, the use of subjective measures of recovery in research can provide unique information that is not always accessible using measures based solely on symptoms. The study’s findings have important implications for research, clinical practice, and policy.
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Declaration of Authorship

I certify that the attached material is my original work. To the best of my knowledge, it contains no material previously published or written by another person, without due acknowledgement and reference made in the text. Except where stated that I have used some of this material elsewhere, it has not been presented by me for examination in any other course or subject at this or any other institution.

The thesis is less than 100,000 words in length, exclusive of references and appendices.

The research undertaken for this thesis was approved by the Swinburne University Ethics Committee (SUHREC Project 0607/213).

Signed,

______________________________
Erin Holloway

October, 2012
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“We are part of a conspiracy of hope and we see in the face of each person with a psychiatric disability a life that is just waiting for good soil in which to grow. We are committed to creating that good soil”.

~ Patricia E. Deegan

“If you want to build a ship, don't drum up people to collect wood, and don't assign them tasks and work. But rather teach them to long for the endless immensity of the sea”.

~ Antoine de St Exubery
Part I - Recovery from Serious Mental Illness: Examining Traditional Clinical and Psychosocial Factors

Chapter 1. Introduction and Overview

1.1. Introduction

Traditionally, the term “recovery from serious mental illness (SMI)” has referred to symptom remission and a return to premorbid functioning. This definition has largely ignored the subjective experience of the individual (Bellack, 2006; Davidson, Lawless, & Leary, 2005). Dissatisfaction from consumers who describe this definition as externally imposed, evaluative, and disempowering has produced a shift towards a new concept of recovery (Ralph & Corrigan, 2005). This new interpretation of the term incorporates the subjective experience and suggests there is the potential for sufferers to live a fulfilling life as integral members of society (Ralph & Corrigan, 2005). This new recovery zeitgeist has generated a more optimistic outlook for those with an SMI and is emerging as the prevailing model and objective of mental services worldwide (Anthony, 1993; Corrigan, Giffort, Rashid, Leary, & Okeke, 1999; Davidson, Lawless, et al., 2005). Policy within the “2009 to 2014 National Mental Health Plan for Australia” provides a vision for the mental health system, which has adopted a recovery-oriented approach, and aims to reduce the effects of stigma, social exclusion, and enable those with mental illness to “participate meaningfully in society” (Commonwealth of Australia, 2009, p. 22). Furthermore, it describes the need for mental health policies and services to recognise the importance of a holistic approach which incorporates social and health domains.

The diverse use of the term “recovery” and confusion between the more traditional and new consumer-driven definitions poses a challenge for research, and it
has proved to be a challenging construct to conceptualise and measure (Corrigan, Salzer, Ralph, Sangster, & Keck, 2004). The term is entangled in many social sciences and medical fields including sociology, phenomenology, ethnography, psychology, and psychiatry, all of which describe different facets of the construct (Ralph & Corrigan, 2005). Even within the recovery literature, the term can represent different ideas. The current study explores the conceptualisation of recovery as a process. It attempts to advance this understanding of recovery, delineate what factors are associated with it, and examine how one might measure it using quantitative measurement methods.

1.2. Methodology

This research is a single study project which aims to examine the concept of recovery by developing and testing structural models. The study also examines some of the factors associated with recovery using correlational and regression models. The research used a clinical community sample of 154 people diagnosed with an SMI. Participants completed a questionnaire booklet which contained measures of recovery, current affect, cognitive schemas, coping strategies, attachment style, functional disability, medication adherence, alcohol use, drug use, as well as basic demographic information. Information about the perceived severity of illness was also gathered from participants’ support staff. The independent variables included psychosocial variables (i.e., cognitive schemas, coping strategies, attachment style). An attachment theory framework was used to provide empirical links between the psychosocial variables. Other independent variables used in the study are more traditionally associated with outcome studies conducted in SMI (i.e., medication adherence, severity of illness, and substance use). Current affect was included to control for the
confounding effects of state mood. The dependent variables included recovery and functional disability. Functional disability was included as a dependent variable due to its common use in SMI outcome research, and to allow for the comparison between subjective recovery outcomes and functioning outcomes. Correlation and regression analysis, as well as structural equation modeling (SEM) were used to examine these psychosocial and clinical variables with regard to recovery and impact on functional disability in those with an SMI.

**Figure 1.** Proposed model for clinical variables with recovery and functional disability.

### 1.3. Outline of Thesis

This document is comprised of four sections. The first section (chapters 1 to 7) reviews the previous theoretical and empirical research literature relevant to this research. The second section (chapter 8) of this thesis presents the method for the present study, and details of the analytical approach for decisions made in relation to the data analysis. The third section (chapters 9 to 13) presents the results, while the final section (chapters 14 to 17) discusses the findings in the context of previous literature and, cognisant of the limitations of the study, their implications for the recovery and SMI literature, and future research directions.
Chapter 2. Background and Justification of Research

2.1. Outline of Chapter

This chapter outlines the various definitions for SMI as well as the operationalisation of the term in the current study. The phenomenology of various types of SMI, including prevalence and associated features are then presented. Although the majority people with an SMI are diagnosed with a psychotic illness, other disorders such as depression and anxiety disorders are considered to be an SMI if the effects of the disorder are sufficiently profound.

2.2. The Effects of Mental Illness in Australia

In Australia, almost 45% of the population will experience mental illness during their lifetime, and 3% will experience serious consequences from that illness (Australian Bureau of Statistics, 2007; Department of Health and Ageing, 2005). The Department of Health and Ageing (2005) report that in Australia, mental disorders are the third leading cause of disease burden and account for 13% of total disease burden in Australia, and 11% worldwide. These numbers are expected to rise over the next 10 years. Mental disorders also account for 27% of total years lost due to disability and represent the largest single cause of disability, accounting for just under 24% of the burden of non-fatal disease (Commonwealth of Australia, 2009; Department of Health and Ageing, 2005). Furthermore, mental illness has a well-established relationship with risk of suicide, with between 71% and 99% of suicide victims having a mental illness diagnosis, most commonly mood disorders, substance use disorders, personality disorders, and psychotic illness (Krysinska & Lester, 2010).
2.3. Serious Mental Illness

SMI accounts for the largest proportion of specialist mental health services in Australia, and represent around 80% of all spending on mental health care (Department of Health and Ageing, 2005). SMI disorders have a profound influence over a person’s life and can lead to considerable subjective distress for the individual and those who support them. Individuals with an SMI have a reduced life expectancy, with more than twice the mortality rate of the general population, mainly attributed to untreated comorbid physical conditions (Berren, Hill, Merikle, Gonzalez, & Santiago, 1994; Department of Health and Ageing, 2005). People with an SMI are also at increased risk of suicide, economic disadvantage, as well as comorbid physical conditions such as diabetes and hypertension. SMI has also been associated with reduced functioning in physical, occupational, and social domains (Davidson & Roe, 2007; Jablensky et al., 1999). Up to 75% of those who are homeless have a mental illness, and around one third have an SMI (Department of Health and Ageing, 2005). The social consequences of SMI permeate interpersonal relationships as a result of the social stigma placed on SMI (Frese & Davis, 1997; Spagnoto, Murphy, & Librera, 2008; Warner & Mandiberg, 2003).

Rates of SMI depend on the criteria used to define the term. In Australia, the degree a mental illness interferes with daily life is typically classified as mild, moderate, or severe, based on impairments in areas such as home life, social life, employment, and relationships (Australian Bureau of Statistics, 2009). In a recent Australian population study, 21% described themselves as having a mental illness which resulted in severe impairment, whilst 33% described having a moderate mental illness, and 46% a mild mental illness (Australian Bureau of Statistics, 2009). Other reports, using more specific definitions of SMI are based on the diagnosis, intensity of
symptoms, duration of disorder, and degree of disability. These reports estimate that around 3% of Australians suffer from an SMI. Of these, around half were diagnosed with a psychotic illness or bipolar disorder, and the remainder comprise individuals diagnosed with severe depression or anxiety disorders (Commonwealth of Australia, 2009). International literature also provides detailed descriptions of SMI. In the United States of America rates for SMI range from 4% to 88% for those already receiving psychological treatment (Schinnar, Rothbard, Kanter, & Jung, 1990). The most representative estimates for those already receiving psychological treatment are believed to be between 45% to 55%, based on the NIMH 1987 definition of SMI as a non-organic psychosis or personality disorder with the presence of dysfunction and impairment, and a history of previous hospitalisations and long-term treatment (Schinnar et al., 1990).

Defining SMI for research purposes has become more challenging since deinstitutionalisation. Prior to this, the definition could be applied to any persons residing in a psychiatric institution. Since then, other factors such as psychiatric diagnosis, functional disability, and illness duration have all been used as criteria for SMI (Narrow et al., 1998; Schinnar, Rothbard, & Kanter, 1991; Schinnar et al., 1990). From a diagnostic standpoint, the term SMI accompanies disorders such as schizophrenia and psychotic illnesses, major depression, obsessive compulsive disorder, and bipolar disorder (Peck & Scheffler, 2002; Pernice-Duca, 2006; Schinnar et al., 1991; Schinnar et al., 1990). However, this definition fails to account for functional disability or illness duration. The most generally accepted definition of SMI is “persons who have severe and persistent disabilities that result primarily from mental illness” (Schinnar et al., 1990, p. 1602). The United States National Advisory Mental Health Council (1993) states:
Severe mental illness is defined through diagnosis, disability and duration, and includes disorders with psychotic symptoms such as schizophrenia, schizoaffective disorder, manic depressive disorder, autism, as well as severe forms of other disorders such as major depression, panic disorder, and obsessive compulsive disorder. (p. 15)

The report goes on to state, the illness should be “long lasting and/or produce significant levels of impairment” (p. 15). This definition encompasses each of the three elements of diagnosis, functional disability, and illness duration.

To be consistent with current definitions of SMI in research literature, the current study will define SMI as being diagnosed with a persistent mental illness whilst also experiencing serious functional disability. The current study includes individuals with an SMI, consisting largely of those with psychotic illness (primarily schizophrenia), but also includes those with mood disorders (primarily bipolar disorder and major depressive disorder), anxiety disorders (primarily post-traumatic stress disorder), and personality disorders (primarily borderline personality disorder). As such, background information on these disorders is outlined below.

It is worthy to note that a primary diagnosis of a mood disorder or anxiety disorder can be legitimately considered to be an SMI when the impact of the disorder is severe (Commonwealth of Australia, 2009). Furthermore, schizophrenia is commonly comorbid with depression and anxiety disorders (McGorry et al., 1991; Sands & Harrow, 1999), and as such, background information on these disorders are also provided.
2.4. Psychotic Illness

Psychotic disorders include schizophrenia, schizoaffective disorder, schizophreniform disorder, bipolar disorder, depression with psychotic features, delusional disorders, shared psychotic disorder, psychotic disorder due to a general medical condition or substance, brief psychotic disorder, and psychotic disorder not otherwise specified (American Psychiatric Association, 2000; Jablensky et al., 1999). These disorders usually emerge in early adulthood and can have a prolonged course. There is substantial evidence for specific brain abnormalities underlying psychotic symptoms and also for a genetic predisposition to these disorders (American Psychiatric Association, 2000; Jablensky et al., 1999).

The point prevalence for psychotic disorders in adult Australians is between 4 to 7 per 1000, depending on the catchment area (Jablensky et al., 1999). There is also a particularly high service utilisation of psychiatric emergency services by people with psychotic disorders (Jablensky et al., 1999). The National Survey of Mental Health and Wellbeing found more than half of those with psychotic illness were admitted to a hospital for mental or physical problems in the past 12 months. Around 58,000 adults have contact with mental health services each year due to a psychotic illness. Schizophrenia makes up the majority of these adults (about 40,000), whilst the remainder have a severe mood disorder (Department of Health and Ageing, 2005; Jablensky et al., 1999). Furthermore, schizophrenia is commonly comorbid with other mental illness with up to 40% of people meeting clinical levels of depression, around 35% meeting criteria for post-traumatic stress disorder, around 20% meeting criteria for panic disorder, 25% meeting criteria for obsessive-compulsive disorder, up to 60% having a dual diagnosis of comorbid substance disorder, and around 50% a comorbid...
personality disorder (Hambrecht & Hafner, 1996; Kuipers, Garety, et al., 2006; McGorry et al., 1991; Sands & Harrow, 1999).

A recent Australian study by Robinson et al. (2010) found at the 7.4 year follow-up for those diagnosed with first episode psychosis, 21.6% of the sample had made a suicide attempt and 4.3% completed suicide. These figures are similar to previous research which suggests between 4 and 15% of people diagnosed with schizophrenia will complete suicide, whilst more than half will make a suicide attempt or experience significant suicidal ideation during their lifetime (Caldwell & Gottesman, 1992; Fenton, McGlashan, Victor, & Blyler, 1997; Kontaxakis, 2004; Nieto, 1992; Palmer, 2005; Westermeyer, Harrow, & Marengo, 1991).

There are also wider social ramifications for a psychotic illness including loss of self-esteem, alienation, and stigmatisation (Bellack, 2006). Between 1997 and 1998 the National Survey of Mental Health and Wellbeing conducted a national study in Australia to provide epidemiological, clinical, and social data related to people living with psychotic disorders (Jablensky et al., 1999). It was reported that many of those living with a psychotic illness had lost essential life roles, had impaired functioning, and were socially isolated. Nearly 47% described being severely impaired in daily life and almost 58% reported trouble in social interactions. Most of those surveyed (84%) were single, separated, divorced or widowed, and only 33% had children. Further, 58% described themselves as socially withdrawn and over one third described no intimate relationships. Just under a third of those surveyed were living alone and 45% were currently or had been living in the past month in institutions, hostels, group homes, supported housing or crisis shelters or were homeless. Social and economic disadvantage often preceded the onset of psychosis and most (72%) did not engage in a regular occupation (paid work, study, or home duties). Of those who did engage in a
regular occupation, nearly half reported obvious dysfunction in that activity. For the large majority (85%), the main source of income was welfare benefits.

2.5. Mood Disorders

Mood disorders include diagnoses of major depressive disorder, dysthymia, and bipolar disorder. In Australia, they affect around 6.2% of people aged 16–85 years, with more women being diagnosed than men (7.1% and 5.3%, respectively). Lifetime prevalence for mood disorders is around 15% (12.2% for males and 17.8% for females) (Australian Bureau of Statistics, 2009). Lifetime risk of suicide for people with mood disorders (primarily major depressive disorder and dysthymia) is between 6 and 15% (World Health Organisation, 2000).

In Australia, one in five females and one in eight males will experience depression at some point in their life (Australian Bureau of Statistics, 2007). Worldwide, depression is at third place overall for burden of disease, and first place in middle- and high-income countries, and is the leading cause of disability as measured by the Years Lived with Disability (World Health Organisation, 2008, 2010, May 25).

The 12-month prevalence for bipolar disorder is 1.8% (1.8% for males, and 1.7% for females), with a lifetime prevalence of 2.9% (3% for males, 2.7% for females) (Australian Bureau of Statistics, 2007). Comorbid conditions are common, with 39% found to have a comorbid substance abuse disorder, and 52% having a comorbid anxiety disorder, over a 12 month period (SANE Australia, 2003). In 2003, SANE Australia published a report on the burden of bipolar disorder and found that the pain, suffering, disability and death in those with bipolar illness was greater than that seen in ovarian cancer, rheumatoid arthritis or HIV/AIDs, and similar to schizophrenia.
2.6. **Anxiety Disorders**

Anxiety disorders include panic disorder, agoraphobia, social phobia, generalised anxiety disorder, obsessive-compulsive disorder, and post-traumatic stress disorder. Lifetime prevalence for anxiety disorders is 26% (20% for males and 32% for females) (Australian Bureau of Statistics, 2007). In the SMI population, there is a higher prevalence of trauma and post-traumatic stress disorder than the general population and is often overlooked in this population (McGorry et al., 1991; Mueser, Rosenberg, Goodman, & Trumbetta, 2002). Much higher rates of trauma are reported in SMI populations, with between 70% and 98% having experienced a traumatic event in their life (compared with 50-65% in the general population) (Australian Centre for Posttraumatic Mental Health, 2007; Lommen & Restifo, 2009). Between 29% and 48% of the SMI population will meet criteria for comorbid post-traumatic stress disorder, also much higher than the general population rate of 5 to 10% (Australian Centre for Posttraumatic Mental Health, 2007; Lommen & Restifo, 2009). Those with an SMI and comorbid post-traumatic stress disorder have poorer outcomes, increased risk of substance abuse, and comorbid physical and psychological issues (Lommen & Restifo, 2009; Mueser et al., 2002).

2.7. **Borderline Personality Disorder**

Borderline personality disorder affects 1-2% of the general population, and is more common in females (Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004). It is characterised by a pervasive pattern of instability in the regulation of emotion, interpersonal relationships, self-image, and impulse control (American Psychiatric Association, 2000). There are a range of factors associated with borderline
personality disorder which cause distress and functional disability, including affect instability, cognitive disturbances, and unstable interpersonal relationships (Ebner-Priemer et al., 2007; Lieb et al., 2004; Linehan, 1993). Those with borderline personality disorder are also likely to show high levels of impulsivity in their behaviours, such as self-mutilation and suicidal communication, as well as other forms of impulsivity such as substance use, emotional outbursts and recklessness (Lieb et al., 2004). Genetic factors and adverse childhood experiences appear to play a role in the development of borderline personality disorder. Sexual abuse is reported by 40 to 71% of inpatients with borderline personality disorder, and unavailable or inconsistent attachments in childhood have also been linked to the condition (Lieb et al., 2004).

Borderline personality disorder is associated with severe functional disabilities and substantial treatment utilisation (American Psychiatric Association, 2000). It is the most common personality disorder seen in clinical mental health settings (up to 10% of psychiatric outpatients and 15-20% of inpatients), and has a mortality rate by suicide of almost 10% (American Psychiatric Association, 2001; Lieb et al., 2004).

2.8. Summary of Chapter

This chapter outlined the various definitions for SMI and descriptions of how the term was operationalised in the current study. The chapter also presented the phenomenology and features of various types of SMI contained in the present sample. It outlined the profound effects of these SMI on daily life, and the cost to the wider community. The following chapter introduces the recovery construct in relation to SMI populations.
Chapter 3. Recovery and Serious Mental Illness

3.1. Introduction and Outline of Chapter

The term “recovery” is common term in social sciences and is used in various and sometimes contradictory ways. With regard to SMI, two primary definitions are used. The first definition is more traditional, describing recovery as a return to premorbid functioning and the absence of symptoms. The second is a more modern definition describing recovery as process involving efforts to live a meaningful existence despite the presence of a mental illness (Anthony, 1993; Corrigan, 2006; Ralph & Corrigan, 2005). Both conceptualisations of the term are of ongoing relevance and are reviewed in this chapter. The dependent variables in the current research will include aspects of both the modern and traditional conceptualisations of recovery. One of the independent variables assesses one’s ability to lead a fulfilling life and manage illness, whilst the second assesses the impact of symptoms on functioning.

The first section of this chapter will review the historical origins of the more traditional views of SMI and recovery. The next section reviews the emergence of the more modern descriptions of recovery and the consumer movement. The third section describes in detail these two definitions of recovery and the integration of these two approaches. The fourth section reviews the approaches to measuring both conceptualisations of recovery. Following this, a section dedicated to concerns surrounding self-reported data in SMI populations are presented. The sixth section in this chapter reviews the rates of recovery in SMI populations using a range of recovery criteria. The final section reviews the factors which have so far been associated with recovery in SMI populations.
3.2. Traditional Views of Recovery from SMI

For close to a century in mental health sciences there has been a pessimistic outlook for those with an SMI. This view was strongly influenced by Emil Kraepelin (1913), a prominent German psychiatrist, who reported 12% of his patients with schizophrenia would experience a restoration of their mental health, but most would experience a progressive deterioration over time, and would be unable to function as integral members of society. The continued presence of this Kraepelinian view presents an insidious view of SMI and a disheartening view of recovery. This view, has wide ramifications for those with an SMI and has contributed to the stigma associated with many SMIs (Corrigan, 2002).

The pessimism regarding the prognosis for those with an SMI is reinforced by society, which appears to consider those with an SMI unlikely to recover, and may also believe they are dangerous, unable to make responsible decisions, or unable to live independently (Corrigan, 2002; Davidson, O'Connell, Tondora, Styron, & Kangas, 2006). Even mental health professionals may inadvertently reinforce this pessimism and stigma by focusing on symptoms, treatment compliance, and poor prognosis rather than recovery (Corrigan, 2002). The presence of stigma and absence of hope in much of our mental health system, as well as our society, continues to jeopardise opportunities for recovery and further perpetuates a pessimistic outlook for those with an SMI. However, the recovery movement challenges this pessimism and the Kraepelinian notion of SMI, and can provide much needed hope to those recovering from an SMI.
3.3. The Emergence of the Recovery Movement

Historically, the early ideas relating to recovery as a more personal process whereby one may live a meaningful existence despite an SMI began to emerge in the 1960s with the deinstitutionalisation of people with psychiatric disorders. The premise for deinstitutionalisation was the belief that those with an SMI are entitled to the best possible quality of life, and have the basic human right to live as part of a community (Bonder, 1991). Unfortunately, without the daily care previously provided to psychiatric in-patients, the process of deinstitutionalisation left many people isolated and homeless, and in some cases, incarcerated (Rhoden, 1982). In response to these issues, the mental health system initiated community based interventions using a new social framework focused on individual need (Anthony, 1993). Concurrent with the deinstitutionalisation movement was the development of newer medications with less severe side effects also allowed those on antipsychotic medications to function at a higher level (Leech & Holcomb, 2000). This new social framework continues today, and fortunately, is a more conducive environment for the implementation of this new concept of recovery into our mental health services than prior to deinstitutionalisation.

3.3.1. The consumer–survivor movement. The growing number of consumers with an SMI wanting to share their personal stories of recovery led to what is now called the consumer-survivor movement, which has provided hope of a better life for those experiencing an SMI (Davidson, 2005; Davidson, 2007; Davidson & Roe, 2007; Frese & Davis, 1997; Ralph & Corrigan, 2005). Although consumer movements in mental health can be traced back as far as 1845, the consumer movement known as the psychiatric patients’ liberation began in America in the 1970s (Frese & Davis, 1997).
By the late 1970s, the consumer-survivor movement for mental health had began to establish itself through the establishment of conferences to discuss the issues in mental health (Frese & Davis, 1997). The consumer-survivor movement promoting recovery is now a prominent group in this area, and consists of consumers and ex-patients, as well as clinicians and researchers within the mental health and research community, who have expressed dissatisfaction with existing treatments in the mental health system and the pessimistic prognosis for those with an SMI. These groups have strongly advocated that recovery is possible (Bellack, 2006; Deegan, 1988; Frese & Davis, 1997). This movement has described the traditional views of recovery as being externally imposed by clinical practitioners and by society, evaluative and ultimately disempowering to those with an SMI (Ralph & Corrigan, 2005). As such, consumers within this movement promoted a shift to a new definition of recovery that draws attention to the subjective experiences of the SMI consumer, and which are often overlooked in clinical practice and by the scientific community (Anthony, 1993; Davidson, Lawless, et al., 2005; Davidson, Ridgway, Kidd, Topor, & Borg, 2008). The new definition describes recovery as a personal process, less concerned with achieving a specific outcome or restoration of premorbid functioning. Instead the focus is on personal comfort and a sense of meaning and gratification in one’s life, in spite of any limitations of the enduring disability (Andresen, Oades, & Caputi, 2003; Corrigan & Phelan, 2004; Davidson, Lawless, et al., 2005; Deegan, 1988; Ralph & Corrigan, 2005; Ralph, 2000a; Sells, Stayner, & Davidson, 2004). This new definition of recovery has not been not traditionally been addressed in the scientific and empirically-based methods of psychiatry and psychology, and is at odds with many of the assumptions underlying current treatments for SMIs (Ralph & Corrigan, 2005).
3.4. Defining Recovery

In the psychiatric literature, recovery theory has two primary conceptualisations—the traditional and the more modern—and a string of labels for both notions (Bellack, 2006; Davidson, Lawless, et al., 2005; Davidson, O'Connell, Tondora, Lawless, & Evans, 2005; Davidson & Roe, 2007; Ralph & Corrigan, 2005; Slade & Hayward, 2007). For the purposes of the current study these two major conceptualisations of recovery are referred to as “recovery as an outcome” and “recovery as a process”. These two conceptualisations are presented and then followed by a critical evaluation of both approaches.

3.4.1. Definitions of the term recovery: Recovery as an outcome.

Traditionally, recovery has referred to a return of premorbid functioning and an absence of functional deficits and is measured by reductions in hospitalisations, signs and symptoms of the relevant SMI, and the restoration of cognitive, social, and occupational functioning (Bellack, 2006; Davidson, O'Connell, et al., 2005; Davidson & Roe, 2007; Ralph & Corrigan, 2005). According to this definition, recovery can be maintained for some period of time, but relapse and remission may still occur (Torgalsbøen & Rund, 2002). This notion of recovery has also been called “recovery as an outcome”, “the service-based definition of recovery” and as “recovery from” SMI, and is linked to the heterogeneity seen longitudinal outcomes for those with an SMI over the past 30 years (Davidson, O'Connell, et al., 2005; Davidson & Roe, 2007).

Operational definitions for this conceptualisation of recovery have been developed to assess individual levels of recovery and also to facilitate research (Bellack, 2006). These definitions for recovery as an outcome vary in the specifics
but overall provide of set of objective criteria based on the course and consequences of SMI from which to measure recovery (Bellack, 2006). Liberman Kopelowicz, Ventura, and Gutkind (2002) proposed one of the most widely accepted criteria for measuring recovery as an outcome. They suggest a person with schizophrenia may be considered to have achieved recovery if, over a period of two consecutive years, he or she demonstrates symptom remission, involvement in work or school, is living independently, is not dependent on disability financial support, and shares activities with friends on a regular basis. Alternatively, Kruger (2000) suggests recovery is achieved when the person is not in a psychiatric hospital, has minimal or no symptoms of the relevant SMI, has been in employment for the past year, is engaging in at least one social gathering every two weeks, is having their basic needs met, have good functioning skills, and are leading a subjectively moderate or full life. Torgalsbøen and Rund (Torgalsbøen & Rund, 1998, 2002) suggest that a person can be considered to have achieved recovery, provided that they had a reliable previous psychiatric diagnosis for which they no longer meet diagnostic criteria, has been out of hospital for five years, has good functioning (a Global Assessment Scale score of more than 65), and is on no more than a low dose of antipsychotic medication. However, Torgalsbøen and Rund (2002) go on to report findings from their longitudinal studies and suggest meeting the full criteria for recovery from schizophrenia appears to be a rare and a transient state.

3.4.2. Recovery as a personal process. Recovery as a process refers to the more recent definition of the concept as involving efforts to live a meaningful existence despite the presence of a mental illness (Anthony, 1993; Corrigan, 2006; Ralph & Corrigan, 2005).
This modern definition of recovery has been, and continues to be, influenced by several concurrent movements in the broader psychological literature. As mentioned earlier, the conceptualisation of recovery as a process was largely influenced by the consumer movement (Davidson & Roe, 2007). This perspective is also reminiscent of current concepts in positive psychology (e.g., Csikszentmihalyi & Gillham, 2000), with its focus on hope and optimism in the face of adversity rather than on pathology which may promote illness. Similar to the positive psychology movement, recovery-oriented therapy approaches emphasise that minimising illness symptoms and living a meaningful life are not necessarily analogous processes for those with an SMI (Davidson, Drake, Schmutte, Dinzeo, & Andres-Hyman, 2009). Descriptions of resilience as a positive adaptation in response to adversity (Luthar, Cicchetti, & Becker, 2000) also sound strikingly familiar to the themes of recovery as a process.

There is a plethora of proposed definitions and key components for the conceptualisation of recovery as a process. Furthermore, the highly personal and individual nature of the process means that establishing a comprehensive list of its components is a challenge. In saying this, there are commonalities and recurrent themes in the literature from which to draw on. A number of authors have provided operationalised definitions and collations of the recovery process and are presented below.

Definitions for this approach to the recovery concept typically describe a highly personal and ongoing process where an individual can learn to live a fulfilling life and manage their mental illness (Anthony, 1993; Carpenter, 2002; Davidson, Lawless, et al., 2005; Davidson & Roe, 2007; Ralph & Corrigan, 2005; Ralph, 2000a; Schrank & Slade, 2007). A return to a premorbid state is not a prerequisite for recovery as a
process and although symptom remission may be occur, the focus is broadly directed on one’s ability to manage symptoms (Anthony, 1993; Schrank & Slade, 2007). This definition posits that recovery can still occur without total symptom remission, and a person may still experience active symptoms, and yet continue to live a full and meaningful life (Anthony, 1993). Just as one would learn to live with a chronic physical condition, there is the potential to lead a fulfilling and meaningful life and achieve goals in spite of the ongoing symptoms or deficits (Anthony, 1993; Corrigan, 2006; Ralph & Corrigan, 2005).

Many personal consumer stories of recovery in the literature include the idea of personal growth and concepts of hope, empowerment, goal setting, acceptance of mental disorder, positive self-identity, purpose and meaning, inspiration, spirituality, sense of personal control and responsibility, valued activities, social support, managing medications, and contributing to society. All these elements are commonly reported in survivor stories, with hope being the most common (Andresen et al., 2003; Davidson, 2007; Davidson, O’Connell, et al., 2005; Ralph & Corrigan, 2005; Ralph, 2000a, 2000b). Authors writing about recovery as a process highlight the importance of active consumer involvement, drawing on self-determination, skills of self-management, and the assumption that individuals with an SMI have the desire to set their own goals and have control over their achievements (Carpenter, 2002; Ralph & Corrigan, 2005).

Anthony (1993) describes recovery as a complex and ongoing process of personal growth which incorporates changes in life roles, skills, goals, values, attitudes, and the development of a new meaning and purpose beyond that of the SMI. He describes recovery as a non-linear progression with some fluctuations, but with a general movement towards improvement, and not being a static state. In addition to
the direct effects of SMI on a person, Anthony and others also suggest broader consequences, such as the damaging effects of being labeled a “mental patient”, societal stigma, self-determination, unemployment, and unrealised dreams, also need to be addressed as part of recovery (Anthony, 1993; Brier & Strauss, 1984; Carpenter, 2002; Corrigan & Phelan, 2004; Davidson, O’Connell, et al., 2005). These iatrogenic consequences of an SMI resulting from the mental health system and society have been suggested to be even more difficult to overcome than the symptoms of the mental illness itself (Anthony, 1993).

Encapsulating these diverse perspectives on recovery is a necessary step to develop a unitary theoretical framework for recovery as a process. In their review, Davidson, Lawless and Leary (2005) collated various concepts of recovery and suggested the following are the most prominent in the literature:

- Recovery involves the development of new meaning and purpose in one’s life as one grows beyond the catastrophic effects of psychiatric disability;
- Recovery refers to the … real life experience of persons as they accept and overcome the challenge of the disability;
- Recovery is a process by which people with psychiatric disabilities rebuild and further develop important personal, social, environmental, and spiritual connection, and confront the devastating effects of discrimination through… empowerment. (p. 483).

A synthesis of the conceptual works of several authors was also conducted by Schrank and Slade (2007) who suggest the key components of recovery include: hope and belief or determination for change and recovery, spirituality, reassuming responsibility and control, empowerment, establishing and maintaining of social
connection, meaning and purpose, the re-conceptualisation of self-identity, overcoming social stigma, and the management of symptoms through coping and illness management strategies.

Ralph (2000b) also provided a synthesis of the recovery process using several quantitative and qualitative studies. She describes an interaction between a range of concepts, suggesting recovery involves a combination of internal factors and self-managed care, along with external factors which interact and together foster empowerment. The internal factors she describes include determination, recognition of the need to change, and insight about how to change. Further, she puts forward the concept of “self managed care” to describe how a person manages their mental health and how they cope with challenges. According to her synthesis, external factors describe the presence of interconnectedness with others and the social supports who also believe in the possibility of recovery. When these factors interact in a positive way, it is said to foster empowerment which leads to self-help, advocacy, and caring about their own and others’ futures.

Jacobson and Greenley (2001) describe a conceptual model for recovery also containing internal and external factors. In their descriptions, internal factors refer to attitudes, experiences, and the change processes which incorporate hope, healing (both of the self, separate from illness and relieving the effects of symptoms), empowerment, and social connection. External factors are described as the conditions, circumstances, events, policies, and practices that have the potential to facilitate recovery. These include human rights (eliminating stigma and discrimination, and protecting the rights of the consumer), a positive culture of healing which promotes recovery, and recovery-oriented services.
Further to the definitions and components of recovery as a process, is the notion that individuals go through specific stages during the recovery process. Known as the “stages of recovery” model, authors propose successive stages for recovery. The National Institute for Mental Health in England (2004) describe these four stages as: dependent and unaware, dependent and aware, independent and aware, and interdependent and aware. The first stage of recovery describes a state of dependence and distress resulting from the SMI and is characterised by denial, confusion, hopelessness, loss of identity, and withdrawal. Once an individual becomes aware of the condition and the possibility of recovery they begin to work towards it. This phase is known as the dependent and aware phase. The next stage is to become independent and aware whereby the individual engages in goal setting, building social connections, and taking responsibility for the management of the condition and their own life. The final stage of the recovery process describes a place of psychological well-being and the ability to manage the illness and live a fulfilling and meaningful life.

Similar stages have been outlined by Andresen, Oades, and Caputi (2003) who describe five stages: moratorium (denial, confusion, helplessness, identity confusion and withdrawal); awareness (awareness of the possibility of recovery); preparation (begin working on recovering); rebuilding (taking responsibility, managing illness, and taking control of one’s life); and growth (the outcome of recovery where illness is managed and a meaningful life is obtained).

In Australia, the National Mental Health Plan (2009, p. 26) defines recovery as “a personal journey toward a new and valued sense of identity, role and purpose together with an understanding and accepting of mental illness with its attendant risks”. The definition is thought to encompass “hope, empowerment, choice, responsibility, and citizenship” (Commonwealth of Australia, 2009, p. 26).
Although there are different approaches to defining recovery as a process, there are collations of the theory and common themes throughout the literature. Essentially, as a process, recovery describes an overcoming of the effects of SMI and an existence that is meaningful and fulfilling. The specific processes of how one achieves this are varied, but again, contain common themes. It is of great importance to explore these factors in order to gain a better understanding of the recovery process and suggest a way forward for clinical research and practice. In order to further extend the literature base on recovery, a consistent approach to defining recovery is required.

3.4.3. Integrating the definitions of recovery. The multidimensional nature of recovery and the two very different approaches to its conceptualisation have made it a challenging term to operationalise. Furthermore, the simultaneous use of the two perspectives of recovery, without clarification of how the term was defined within some research studies, has resulted in inconsistencies in the research literature and consequent difficulties in its implementation into practice (Davidson, Lawless, et al., 2005; Davidson & Roe, 2007).

Both conceptualisations of recovery have inherent strengths and weaknesses. Whilst recovery as an outcome may fail to capture the unique and personal experience of the consumer, it does offer a way of operationalising the term using explicit criteria which makes it more compatible with clinical intervention and evaluation, as well as research (Bellack, 2006). The process view of recovery has a rich variety of qualitative research which captures the unique experiences of people with an SMI. However, the diversity and variability of its components make it difficult to apply to scientific research methods. The components of recovery as a process do not always provide clear criteria and this limits the applicability of the findings for research,
evaluation, or guiding policy formation (Bellack, 2006). Furthermore, the different definitions of recovery as a process limit the applicability of findings across studies.

The idea of hope is more prominent in the concept of recovery as a process than as an outcome, where the latter presents recovery as unachievable to many with an SMI. If one does achieve symptom remission and restoration of function, then they are in the minority, as 35-75% of those with an SMI will not meet this stringent criterion. Even if one does achieve this, recovery as an outcome is considered transient (Davidson & Roe, 2007; Torgalsbøen & Rund, 2002). In contrast, the recovery as a process perspective can offer people with an SMI a more optimistic prospect of a recovery that does not necessitate symptom remission, but rather self-efficacy in spite of their illness (Anthony, 1993; Davidson & Roe, 2007).

Recent writings have begun to reconcile and integrate the two approaches to recovery (Bellack, 2006; Davidson, Lawless, et al., 2005; Davidson & Roe, 2007). It has been suggested these two concepts are not mutually exclusive, but complementary, and an integration of these two concepts is likely to be the more encompassing and useful than adopting one or the other in isolation (Bellack, 2006; Davidson & Roe, 2007). Corrigan et al. (2004) integrated the concepts by developing the Recovery Assessment Scale (RAS), an outcome measure derived from qualitative findings of people living with a mental illness. Davidson, O’Connell et al. (2005) suggest that an integration of the concepts is underway, however concerns remain about how each individual definition of recovery is utilised. They suggest recovery as an outcome is useful in populations who have achieved symptom remission, whilst recovery as a process is most relevant to those who continue to experience symptoms. Ultimately, both approaches are useful and it is important for the recovery concept to incorporate symptomatology and psychosocial functioning, as well as the subjective
components which consumers suggest to be more important than the formal symptoms of the illness (Bellack, 2006). Furthermore, by combining the more subjective components of a consumer-driven definition of recovery as a process with the practical application and rigor of measurement from the recovery as an outcome concept we can gain a deeper understanding of how people recover and better assess treatment interventions (Bellack, 2006). The National Mental Health Plan for Australia (2009) suggest mental health services adopt a recovery oriented approach which incorporates recovery both as a process and as an outcome, which promotes hope, wellbeing, and autonomy. It does remain to be seen if this new definition of recovery as a process can be reconciled with the traditional approaches and utilised widely for research and practice (Davidson, O'Connell, et al., 2005).

3.5. Measuring Recovery as a Process and as an Outcome

Just as no agreed definition of recovery has been established, there is also no consensus on how best to measure it. Empirical evidence of how people recover from an SMI is essential to further our understanding of the concept recovery, and to provide direction for the delivery of services to those with an SMI. Whilst there are a range of studies providing various criteria for the measurement of recovery as an “outcome”, research for the consumer-driven “process” of recovery is needed to establish prevalence figures and enable further understand its underlying processes and associated factors (Bellack, 2006).

As an outcome, recovery is typically measured using quantitative methods, where as a process recovery is often explored using qualitative methods. Both quantitative and qualitative approaches to measuring concepts such as recovery have their inherent methodological benefits and flaws. Qualitative methods can explore
subjective accounts in order to understand, interpret, and find the meaning in concepts such as recovery. Quantitative methods use numeric data in order to measure, analyse and predict a concept and then generalise findings across a population (Todd, Nerlich, McKeown, & Clarke, 2004). Qualitative approaches collect a rich array of data on a topic, whilst quantitative approaches are more likely to collect more focused data from more people (Todd et al., 2004). In social sciences, quantitative methods are most widely used, however both methods play important roles (Cousineau, 2007). Mixed method approaches which attempt to utilise the strengths of both approaches also exist.

3.5.1. Measuring recovery as a process. With the emergence of the consumer-survivor movement, the recovery literature has focused on the exploration of consumer stories (Ralph, 2000a; Ralph, Kidder, & Phillips, 2000). A substantial body of literature using conceptualisations of recovery as a process is qualitative in nature and relies on autobiographical and self-report data (Davidson, 2003). Davidson (2003) wrote that, from a quantitative standpoint, no single measure of recovery exists; rather different measures assess a range of aspects of recovery such as adjustment, hope, and self-determination. Quantitative scales specifically measuring recovery as a process are few, but the range is expanding and psychometric evidence for these scales is growing (Borkin et al., 2000; Campbell-Orde, Chamberlin, Carpenter, & Leff, 2005). Anthony (1993) suggests that the multidimensional nature of recovery makes the use of a single instrument difficult. However, in order to advance the recovery literature, a psychometrically sound quantitative recovery measure which incorporates the subjective experience of recovery does need to be established (Slade & Hayward, 2007).
For recovery as a process, both quantitative and qualitative approaches are fundamental in the exploration and development of the concept. The use of qualitative methods has been vital in the exploration of this new concept of recovery as a process. Research is now at a stage where quantitative evidence can be useful to further explore the concept and associated variables. Slade and Hayward (2007) suggest that empirical research is needed to assess recovery (as a process) in mental health services that provide the methodological rigor seen in the current outcome research. One of the suggestions proposed to achieve this is to develop outcome measures that conceptualise recovery as a process (Andresen, Caputi, & Oades, 2010; Bellack, 2006; Slade & Hayward, 2007).

Ralph (2000a) suggested a universal system for rating recovery which includes the presence of good social interactions with friends and family, community integration and the absence of signs or symptoms, medication, or behaviours typical of those with prior psychiatric hospitalisations. Other approaches include the RAS which was developed as an outcome measure for program evaluations and is based on the process model of recovery with a focus on hope and self-determination (Campbell-Orde et al., 2005). It is a promising scale that involved consumer-survivors, mental health care providers, and researchers in its construction and revisions. The RAS was developed by analysing four qualitative consumer stories, and revised using an independent group of twelve consumers (Giffort, Schmook, Woody, Vollendorf, & Gervain, 1995). The construct validity of the RAS is ongoing, as is exploration of its psychometric properties, and the first aim for the current study is to develop measurement models for each of the scales in the study, including the RAS.

Dickerson (1997) suggests several difficulties in the measurement of recovery outcomes, including the diversity of domains affected by SMI, differences in opinions
about what domains should be measured, the variability and persistence of SMI, and methodological issues including the limitations of self-reported data. Firstly, the diversity of factors affected by SMI includes a plethora of factors including daily living activities, social functioning, occupational functioning, life satisfaction, and physical health. As such, the measurement of the SMI outcome needs to address the multidimensional nature of its effects on a person. Secondly, there are differences of opinion about which domains should be measured. Family members, clinicians, consumers and other stakeholders may have different ideas of which domains are important to incorporate in an outcome measurement (Corrigan, 2006). While clinicians are more likely to focus on symptom remission, consumers are more likely to be concerned with factors such as quality of life (Corrigan, 2006; Dickerson, 1997; Ralph & Corrigan, 2005). Governments however are likely to be more focused on the utilisation of treatment resources and to measure outcome by the amount of contact with mental health services (Dickerson, 1997). Thirdly, the variability of the course and persistence of SMI symptoms makes measuring outcome problematic. It is typically assumes those with an SMI will experience ongoing symptoms with intermittent exacerbation and remission of symptoms. The assumption of ongoing illness infers there is no endpoint or “outcome” but rather fluctuations in symptoms and functioning (Dickerson, 1997).

3.5.2. Measuring recovery as an outcome. Traditionally research has relied on three forms of measurement for recovery outcomes in SMI. Firstly, hospital admissions have been used as an indicator of illness severity and of relapse and is used as a proxy for recovery in SMI (Bebbington et al., 2006; Ralph & Corrigan, 2005). However changes in treatments now allow a larger proportion of people with
an SMI who relapse to be treated in a community setting, or at home, without being admitted to hospital (Bebbington et al., 2006). Secondly, measurement using the subjective judgment of a clinician regarding recovery has been used. Thirdly, non-standardised local measures such as functioning (Andresen et al., 2010; Dickerson, 1997).

Due to the high demand for outcome measurement in SMI, a wide range of clinical outcome measures are typically used and focus on symptom severity, employment status, housing stability, mortality, and individual functioning (Andresen et al., 2010; Bebbington et al., 2006; Coursey, Alford, & Safarjan, 1997; Dickerson, 1997). Standardised measures of psychotic symptoms are also widely used to assess the effectiveness of treatments, however these measures fail to provide information on social and community functioning or one’s subjective experience (Dickerson, 1997). Other measures, such as the Global Assessment Scale, can address this gap; however, this scale fails to provide detailed information about functioning across distinct domains (Dickerson, 1997). A range of other outcome measures are often used, but are often lengthy and specific to particular research projects, making comparisons across studies difficult (Dickerson, 1997).

3.5.3. Measuring outcomes and recovery in the current study. The traditional measures of recovery as an outcome previously mentioned provide useful information, however, they cannot encompass the concepts underpinning the consumer-driven notion of recovery. Recovery measures that assess the subjective process of recovery are needed as a tool for understanding the consumer perspective of recovery (Andresen et al., 2010). The present study incorporated measures to
assess recovery both using more traditional concepts such as functional disability and severity of illness, and also recovery as a process using the RAS.

The present study examines the modern perspective of recovery as a process using the RAS. This measure is a quantitative scale based on qualitative reports of recovery factors and allows for the consumer notion of recovery as a process to be measured. Essentially, this scale enables the study to examine this new concept of recovery as a dependent variable. This scale allow the present study to advance the current understanding of subjective recovery by delineating what factors are associated with it, and explore how one might best measure it using quantitative measurement methods. For the purposes of this research, the term “recovery” refers to the subjective processes and encompasses hope, self-efficacy, and managing the effects and symptoms of SMI. These elements of subjective recovery are used as a dependent variable enabling the identification of predictors.

In addition to the RAS, other measures used in outcome studies were also incorporated into the study. An assessment of subjective functional disability across work/school, social life and home/family life domains was used as a dependent variable to compare functioning outcomes with recovery as a process. Furthermore, severity of illness, often assessed in outcome studies, was included as an independent variable to assess the impact of symptom severity on recovery as a process and functioning. Severity of illness was assessed by staff report and number of hospitalisations in the previous 12 months.

3.6. Sampling and Self-Report in SMI

In addition to the challenges posed in recovery research by the diversity of definitions and measurement methods, a range of methodological issues also exist in
broader SMI literature, including sampling and self-reported data (Meir, 1994). This section will review some of these difficulties and how they can be addressed.

The selection of a representative sample can be difficult and may be limited to those who are well enough, and willing to participate (Dickerson, 1997). Many studies select samples from inpatients at psychiatric facilities (e.g., De Rick, Vanheule, & Verhaeghe, 2009; Folsom et al., 2005; Kontaxakis, 2004; McEvoy, Howe, & Hogarty, 1984; McGorry et al., 1991; Meyer, 2001; Ponizovsky, Nechamkin, & Rosca, 2007). Exclusionary criteria is applied in some SMI research to ensure the validity and reliability of findings is not jeopardised by those who present with acute symptoms, such as an active psychosis. These factors impact on the representative value of the sample, and these sub-samples may only be applicable to a portion of the SMI population (Cohen & Cohen, 1984; Dickerson, 1997).

Once a sample is obtained, it needs to be decided who is the best person from which to obtain information. There are inherent flaws associated with self-report data (Sechrest & Sidani, 1995) which may be more apparent in SMI populations. Some suggest that persons other than the consumer may provide a more accurate depiction than the person themselves, whilst others have shown that even an objective report can be a distorted by confounding factors (Meir, 1994). Those involved in the treatment of a patient may not be privy to their day-to-day life and can only make inferences based on information gathered in treatment settings (Dickerson, 1997). Family members are also utilised for assessments and ratings, however this technique is limited to those consumers who live, or are in close contact, with their families. Independent third-party raters have been used to provide information on the consumer. However such raters are costly, and can only make inferences based on their interviews (Dickerson, 1997). The use of self-report data can appease many of these
concerns and also help ensure the subjective experience of the consumer is represented. Obtaining perspectives from a variety of sources including the client, and a therapist or outside observer is also recommended when using self-report measures (Coursey, 1995; McGlashan, 1984; Meir, 1994).

This recommendation is often adhered to, and many studies obtain both subjective and objective reports, however, there are often discrepancies between the data obtained (Meir, 1994). For example, The National Survey of Mental Health and Wellbeing survey (Jablensky et al., 1999) cited earlier, found the majority of those with a psychotic illness describe what most would consider to be an objectively poor quality of life. What they found, however, was a high number (44%) who reported subjective satisfaction with life. This is consistent with previous research reporting discrepancies in objective and subjective ratings (Bellack, 2006; Meir, 1994). As such, the accuracy of these subjective experiences in SMI populations has been questioned, and is of particular concern in populations with severe cognitive impairments (Bellack, 2006).

In the example mentioned above, it is possible the statistics only serve to highlight the discrepancy between how the objective rater views living with an SMI and the actual lived experience; rather than reflecting poor data validity. That is to say, no one can truly grasp the subjective experience from an objective perspective. Indeed the objective vantage point is actually of limited interest when considering topics such as quality of life or recovery, which can only be truly understood and measured from the consumer’s perspective. Even if the person’s beliefs about their illness might be considered to be delusional by an objective perspective, it should still be considered as a valid interpretation (Fowler, Garety, & Kuipers, 1995). If one of the goals of recovery is to live a meaningful and satisfying life, the inferences of an
objective observer regarding this cannot encapsulate the lived experience and as such could be considered to be tangential. For this reason, the primary focus of the current study is on the subjective experience of consumers, although in line with recommendations, corroborative data will also be gathered from external sources.

The use of self-report data comes with inherent problems including biases, and concerns about reliability, which may be accentuated by symptoms associated with an SMI (Dickerson, 1997). Factors shown to limit the reliability of self-report data in this population include variable insight into their illness, the presence of cognitive impairments, delusions, a desire to please, low motivation, fluctuations in mental state, medication effects, response biases, distorted rating of symptoms, and misunderstanding the meaning of questions (Dickerson, 1997; Flinn, 2005; Gulliksen, 1987). Furthermore, longer questionnaire length and group heterogeneity can also compromise score reliability (Gulliksen, 1987). Self-report measures used for those with severe psychological deficits can produce floor or ceiling effects, distorted means, reduced variance, overestimated or underestimated reliabilities, or attenuated correlations (Allen & Yen, 1979). To address such concerns, the current study implemented, wherever possible, recommendations for the use of self-report measures in SMI populations. This included providing clear directions and concrete wording on questionnaires, selecting short test length, and allowing extra time to establish rapport, explain the purpose of the assessment, and provide clarification where needed (Eisen, 1995; Gulliksen, 1987).

Although these factors should be considered in outcome assessment, self-report is considered to be a valid form for data collection (Eisen, 1995). Eisen (1995) found comparable responses for both self-reported data and structured interview data, and suggests that an interviewer is not necessary for eliciting reports of subjective distress.
Indeed, participants were more likely to report difficulties in self-reported formats than in an interview. Other authors have found that even those with very severe psychiatric illness can respond reliably and consistently, and subjective reports are essential tools for providing a thorough evaluation (MacCarthy, Benson, & Brewin, 1986).

3.7. Recovery rates in SMI

With the previous issues in mind, it is clear that recovery rates vary depending on conceptualisation of the term, the recovery criteria used, and also the population studied. There is strong evidence of recovery both as a process and as an outcome from longitudinal outcome studies which have consistently found heterogeneity in the course and outcomes for people with an SMI (Calabrese & Corrigan, 2005; Davidson & McGlashan, 1997; Davidson & Roe, 2007; Harrow, Grossman, Jobe, & Herbener, 2005). Most of this literature provides specific criteria for what constitutes recovery and typically looks at symptom remission and functioning. These studies are more in line with recovery as an outcome, and often referred to as “outcome studies”.

In their review of long-term follow-up studies looking at recovery as an outcome, Calabrese and Corrigan (2005) suggest that 36% - 65% of people with schizophrenia could be considered to be recovered or to have showed improvement. In another longitudinal study, Ciompi (1980) found that 20% of participants at a 37 year follow-up were considered recovered, 43% were improved, 30% were unchanged, and 6% were worse. Harrow et al. (1997) reported that 30% of their sample (22 of 79 people) demonstrated a complete remission of symptoms at a 7.5 years follow-up, whilst Mason, Harrison, Glazebrook, Medley, and Croudace (1996)
reported that 44% of their sample showed full recovery or mild impairment at 13-year follow-up.

Harding, Brooks, Ashikaga, Strauss, and Breier (1987) found that between 50% and 66% of their sample had recovered or showed significant improvement within 20 to 25 years. Using more stringent criteria, Bleuler (1978) found that 20% of their sample had fully recovered, whilst 33% showed significant improvement at the 20 year follow-up. In Australia, the National Survey of Mental Health and Wellbeing found that 43% of those living with a psychotic illness failed to show complete recovery between psychotic episodes (Jablensky et al., 1999). Harding (1998) found that approximately one third of people diagnosed with schizophrenia regained a functional life independent of mental health services at a 20-year and 30-year follow up. Another third had improved with the aid of mental health services. The remaining third showed continued problems with recurrent periods of symptoms and remission. Of this last group, one third (10% of the total sample) exhibited a course similar to descriptions of Kraepelin, with a progressive deterioration. Harrow, Grossman, Jobe, and Herbener (2005) found that over the 15-year period 41% of patients with schizophrenia showed at least one period of recovery. They also found that other types of SMI showed more favourable outcomes (55% with schizophreniform; 67% with other types of psychotic illness; and 78% with non-psychotic illness).

3.8. Factors Associated with Recovery as an Outcome

There are a range of factors which have been associated with a better prognosis or outcome for people with an SMI. The literature reviewed in this section refers to factors which may enhance recovery through improvements in outcome measures such
as functioning, quality of life, and reduction in symptoms. Factors associated with the more modern notion of recovery as a process which are reviewed separately.

With regard to demographic factors, longitudinal studies typically show that those with schizophrenia and psychotic illness show increased rates of recovery with age, and partial or full recovery has been documented in between 25-65% of participants sampled (Corrigan, 2002; Coursey et al., 1997; Davidson, O’Connell, et al., 2005; Davidson & Roe, 2007; Harding et al., 1987; Harrow et al., 2005; Harrow & Jobe, 2005; Harrow et al., 1997; Marta, Bertalan, Judit, Gyorgyi, & Pal, 2007). Females with a psychotic SMI have tended to show better functioning, longer periods of recovery, and fewer and shorter hospitalisations over time than males (Angermeyer, Goldstein, & Kuehn, 1989; Grossman, Harrow, Rosen, & Faul, 2006; McGlashan & Bardenstein, 1990). These gender differences may not apply to those with non-psychotic SMI, with authors showing no gender differences in longitudinal outcome studies of non-psychotic SMIs (e.g., Grossman et al., 2006). In their study, Grossman et al. (2006) attribute differences in those with a psychotic SMI to a range of factors including environmental factors including familial and cultural characteristics including expressed emotion and higher the vocational expectations placed on males. They also suggest that females may also be more adept in their social skills and more likely to have more sustaining social support systems throughout their illness.

Furthermore, substance use is more common in males, and may impact on SMI outcomes and there may also be contributions from sex differences in hormonal and brain structures.

Disruption or termination of educational pursuits is common for those with an SMI, and many people achieve a lower educational attainment as a result of the age of onset of their SMI (Bellamy & Mowbray, 1998; Kessler, Foster, Saunders, & Stang,
Given that most SMIs tend to emerge during adolescence and early adulthood, it is understandable that educational attainment is often compromised (Stein, 2005). The ramifications of lower education include an ongoing disadvantage in literacy, social activities, and employment opportunities (Jablensky et al., 1999; Stein, 2005).

Other factors associated with better recovery outcomes include more traditional clinical variables that are often the focus of treatments for those with an SMI. To date, there has been a strong focus on the biological underpinnings of many SMIs namely, biochemical dysfunction, and subsequently, treatment largely focuses on pharmacotherapy to correct these abnormalities (Gold, 2007). It is presumed that by correcting these chemical abnormalities, functioning and quality of life will subsequently improve (Davidson et al., 2009). There has been substantial evidence for this stance, with a large number of clinical trials demonstrating that medications can reduce the symptoms of SMI and improve outcomes (Corrigan, Reinke, Landsberger, Charate, & Toombs, 2003; Fialko et al., 2008; Leucht & Heres, 2006; Ziguras, Klimidis, Lambert, & Jackson, 2001). Research has found that patients with poor medication adherence require more frequent involuntary admissions to hospital and are more likely to stay in hospital longer and have poorer outcomes (Fialko et al., 2008; Leucht & Lasser, 2006; McEvoy et al., 1984). Other clinical variables include the presence of a dual diagnosis: Research suggests that those with an SMI and a comorbid substance use disorder appear to have more negative outcomes than those with an SMI but no problematic substance use (Havassy, Shopshire, & Quigley, 2000; Zeidonis & Fisher, 1994).

In their review, Davidson and McGlashan (1997) suggest a shorter duration of mental illness, later and more acute onset, shorter amounts of time in psychiatric
hospitals, and positive response to biological treatments, may be considered
determinants of recovery. They also suggest that the presence of negative symptoms
(i.e., social withdrawal, avolition, alogia, anhedonia, or restricted affect), cognitive
impairment, low capacity for employment and social activities, and longer duration of
untreated psychosis with an insidious onset, is predictive of poorer outcome.
McGorry (1992) identifies both clinical and psychosocial factors have shown to
influence outcomes, including engagement in biological and psychosocial therapies,
social support, self-identity, cultural factors, illness behaviour, effectiveness of coping
strategies, the developmental stage at onset, and the experience of stigma.

Interestingly, there has been substantial and consistent evidence over many years
of research showing more favourable outcomes for those with an SMI in developing
countries, where a typical course of schizophrenia consists of an acute episode
followed by a spontaneous recovery (Kruger, 2000; Lin & Kleinman, 1988; Sartorius,
Jablensky, & Shapiro, 1977; Warner, 2007; Waxler, 1979). The majority of the cross-
cultural studies in the last 30 years were as a result of the World Health Organisation’s
International Pilot Study of Schizophrenia (IPSS) and the Determinants of Outcome of
Severe Mental Disorders (DOSMeD). The International Study of Schizophrenia
(ISoS; Sartorius, Gulbinat, Harrison, Laska, & Siegel, 1996) conducted a follow-up
study of those who participated in the IPSS and the DOSMeD. This collection of
longitudinal research have consistently found that individuals with an SMI in
developing nations have substantially better outcomes in both functioning and
symptoms than those in industrialised nations (Hopper, Harrison, Janca, & Sartorius,
2007; Warner, 2007). Social factors such as higher family involvement, social
inclusion, and low criticism are likely to play key roles in the explanation of this
discrepancy in outcomes (Hopper et al., 2007). It also appears to be easier for those
with an SMI in developing countries to gain employment than in industrialised nations (Lin & Kleinman, 1988).

3.9. Factors Associated with Recovery as a Process

As the more modern notion of recovery as a process becomes the focus of mental health services, factors that can help people recover are of great interest in order to enhance understanding the recovery concept and also to suggest additional factors for enhancing recovery. For many with an SMI, the recovery process will occur without clinical support, whilst others will recover with assistance and clinical intervention, and for a small minority, recovery may not occur (Harding, 1998; Ralph & Corrigan, 2005). It is of interest why and how people recover whilst others do not. The following section reviews the literature regarding factors associated with this conceptualisation of recovery as a process.

As a process, the recovery movement highlights that minimising illness symptoms and living a meaningful life are not necessarily the same (Davidson et al., 2009). It encapsulates the idea that recovery can still occur without total symptom remission, and a person may still experience active symptoms, and yet continue to live a full and meaningful life (Anthony, 1993). Rather than focusing on biologically-based etiological explanations and treatments for SMI, the recovery as a process concept requires a multifaceted approach which incorporates a range of factors derived from the lived experience of the individual (Gold, 2007).

Research has indicated variables which may be important in recovery as a process including individual factors, social factors, environmental factors, and also clinical factors such as medication (Davidson et al., 2009; Green et al., 2008; Hanson, Curry, & Bandalos, 2002; Hendryx, Green, & Perrin, 2009; Lloyd, King, McCarthy,
& Scanlan, 2007). Many studies have used qualitative analysis to explore what factors assist a person’s personal recovery. Qualitative literature on recovery highlight the role of self-determination, pursuing a meaningful life despite any enduring disability, and enhancing functioning as an integral member of the community through education, employment, and social inclusion (Davidson et al., 2009). It is also of interest to conduct quantitative research regarding factors associated with higher recovery scores. Recently studies have begun exploring factors associated with recovery as a process using quantitative methods with findings thus far suggesting illness management, social support, benefit-finding, and leisure activities are linked to a greater likelihood of recovery (Arens & McKasson, 2009; Chiba, Kawakami, & Miyamoto, 2011; Hendryx et al., 2009; Lloyd et al., 2007). The current study builds on this literature by investigating a range of predictors in relation to subjective recovery as a process whilst also incorporating a more traditional outcome measure of functioning. The second and third aims for the study examine relationships between a range of psychosocial and more traditional clinical variables with recovery as a process and functional disability resulting from an SMI.

3.10. Summary

The current chapter reviewed the literature on recovery including its different definitions and conceptualisations, its measurement, and issues specific to measurement in SMI populations. It also reviewed recovery rates in SMI populations and factors associated with recovery and better outcomes. The following chapters (chapters 4 and 5) describe the selection process for the independent variables used in the current study, and review the associated literature.
The primary focus of this study is on the more contemporary notion of recovery, and from this point forward the term recovery is used to refer to the conceptualisation of recovery as a process. Other references to recovery as an outcome will use the term “outcome” or other specific descriptions of measures such as functioning, symptom severity, or prognosis.
Chapter 4. Selection of Independent Variables

4.1. Outline of Chapter

The following chapter provides an explanation of the selection process for the independent variables used in the current study. The independent variables in the study were categorised as either “clinical variables” or “psychosocial variables”. The clinical variables included in the study were derived from traditional clinical outcome studies in the SMI literature and are frequently considered in the treatment of SMI. The current chapter presents the selection process for the clinical variables and also reviews each of these variables included in the study.

4.2. Selection of Independent Variables in the Current Study

Whilst it is not possible to conduct a study fully encompassing the plethora of predictive variables associated with recovery, a selection of these factors was chosen for the current study. Examples of both traditional clinical predictors and psychosocial predictors of recovery can be drawn from the research literature and outcome studies for SMI populations. The psychosocial nature of the modern concept of recovery infers that psychosocial predictors will be relevant in whether and to what extent recovery occurs. In addition, the extensive findings regarding the impact of clinical variables in relation to outcomes such as medication and substance use indicate these factors may also play a role in recovery as a process and so therefore should not be overlooked when selecting research variables. Incorporating psychosocial predictors alongside the traditional clinical variables in research can suggest which type of factors – psychosocial or clinical – are most relevant to the more modern notion of recovery. Furthermore, the inclusion of both traditional
clinical variables and psychosocial variables may also encourage the integration of these factors in research and practice.

4.3. Independent Variables: Clinical Variables

Research has identified a range of common clinical factors consistently associated with lower levels of recovery, poorer outcomes, and increased risk of suicide in SMI populations. These factors include the presence of substance use, low adherence to medication and more severe psychiatric symptoms (Addington & Addington, 1993, 2007; Bellack, 2006; Bolton, Gooding, Kapur, Barrowclough, & Tarrier, 2007; Fialko et al., 2008; Mauri et al., 2006; Mueser et al., 2006; Stefanopoulou, Lafuente, Saez Fonseca, & Huxley, 2009; Wilkins, 1997). These factors tend to be at the forefront of treatment interventions in mental health settings, and as such, the contributions of these clinical factors should not be ignored (Wampold & Bhati, 2004) when designing recovery research studies.

With a strong focus on the biological underpinnings of SMI disorders, treatment for SMI largely focuses on pharmacotherapy to ameliorate the symptoms of SMI (Gold, 2007). And yet recovery may still occur without total symptom remission (Anthony, 1993). There appears to be some disparity between the focus on reducing SMI symptoms in clinical interventions, and the recovery movement which suggests that one can lead a full and meaningful life with the continuation of these symptoms. Although there is strong empirical evidence that clinical variables such as reducing substance use and encouraging medication adherence will reduce SMI symptom severity and improve overall functioning, it remains unclear if and how such clinical factors might promote recovery as a process (Addington & Addington, 2007; Davidson et al., 2009). There is a lack of research studies assessing clinical factors
using recovery-orientated outcome measures. Instead, most research to date has typically used objective measures such as symptom severity, functioning, or number of hospitalisations (Andresen et al., 2010; Davidson et al., 2009; Lloyd, King, & Moore, 2010). Utilising measures such as the RAS allows research to capture the subjective dimensions of managing an SMI, and can give new insight into the role of these clinical factors in recovery (Davidson et al., 2009; Lloyd et al., 2010). This type of research is also needed to justify the relevance of these clinical variables in treatment interventions under the new conceptualisation of recovery in mental health services.

4.3.1. Substance use and SMI. Substance can be defined as the use, abuse, or dependence on a substance, such as illicit or prescription drugs and alcohol (American Psychiatric Association, 2000; Australian Bureau of Statistics, 2007). Harmful misuse of substances can lead to physical and psychological impairment as well as dysfunctional behaviour (Australian Bureau of Statistics, 2007). In the general population, the rates of substance use are around 5% over a 12-month period (Australian Bureau of Statistics, 2007). There are higher rates of substance use in men than in women, and it is most prevalent in those aged 16–24 years (Australian Bureau of Statistics, 2007).

In SMI populations, epidemiological studies consistently show a much higher prevalence of substance use when compared to the general population. Most clinical studies have found at least half of people diagnosed with an SMI and up to 60% of those with a chronic course of schizophrenia, have a substance use disorder (Addington & Addington, 2007; Hambrecht & Häfner, 1996; Harris et al., 2005). The National Survey of Mental Health and Wellbeing (1999) found substantially higher
rates of drug and alcohol abuse, or dependence, in those with psychotic illnesses than the general population, with one in four people with an SMI meeting criteria for a “dual diagnosis” (i.e., a primary diagnosis of a psychotic disorder and a comorbid diagnosis of substance use disorder). The prevalence of a drug use diagnosis (substance abuse or substance dependence) over a 12-month period in the SMI population is reported at around 14.0% for men and 10.1% for women. The percentages of drug use disorder symptoms for SMI populations over a 12-month period are reported to be even higher: 26.9% for men and 23.2% for women (Maisto, Carey, Carey, Gordon, & Gleason, 2000). For alcohol use, the prevalence of a diagnosis of alcohol abuse or dependence over a 12-month period in the SMI population is also reported at around 14.0% for men and 10.1% for women, whilst the percentages of men and women identified as having alcohol use disorder symptoms in the previous year are reported at 42% and 31.9%, respectively (Maisto, Carey, et al., 2000).

Research has explored motivations and reasons behind substance use (both drug or alcohol use) in those with an SMI. Typically, findings suggest three primary motives for those with an SMI: (a) to enhance positive mood or achieve intoxication, (b) to cope with negative emotions, and (c) social reasons, including social integration and reducing isolation (Addington & Duchak, 1997; Spencer, Castle, & Michie, 2002). A smaller number of people with an SMI report alternative self-medication motives for substance use, such as relieving positive symptoms (i.e., hallucinations or delusions) or counteracting unwanted side effects of prescribed medications (Addington & Duchak, 1997; Noordsy, Drake, Teague, & Osher, 1991; Spencer et al., 2002; Teesson & Gallagher, 1999).
Although substance use can often be perceived by users as providing short term benefits, it places a person at an increased risk of physical illness and mental illness consequences such as increased depression, anxiety, and psychotic phenomena (Addington & Duchak, 1997; Jablensky et al., 1999). Research exploring the impact of substance use has found that alcohol use can lead to organic brain syndromes, withdrawal hallucinations, liver dysfunction, and anaemia. Marijuana and cocaine abuse use can increase paranoid symptoms, increased illegal activities, poor medication response, and more side effects from medications. Furthermore, cocaine use has been associated with minor strokes and suicidally during withdrawal (Zeidonis & Fisher, 1994).

People with comorbid substance use are more likely to have increased positive symptoms, suicidality, hostility, depression, be more prone to violence towards others, and are more likely to be re-hospitalised, non-compliant with treatment, have socioeconomic difficulties, and poorer social, occupational, and physical functioning than those with an SMI alone (Addington & Addington, 2007; Addington & Duchak, 1997; Bartels, 1993; Krausz, Mass, Haasen, & Gross, 1996; Laudet, Magura, Vogel, & Knight, 2000; Martinez-Aravelo, Calcedo-Ordonez, & Varo-Prieto, 1994; Mauri et al., 2006; Mueser, Bellack, & Blanchard, 1992; Strakowski, Tohen, Flaum, & Amador, 1994; Zeidonis & Fisher, 1994). Those with an SMI and a comorbid substance use disorder have shown to have more negative outcomes than those with an SMI having minimal or no substance use; it appears that even minor use of drugs or alcohol can predict poorer outcomes for those with an SMI (Havassy et al., 2000; Zeidonis & Fisher, 1994). Further, substance abuse in the early stages of an SMI predicts an earlier onset of schizophrenia, along with more severe symptomotology (Mauri et al., 2006). Substance use may also be important in the more modern
conceptualisation of recovery (Corrigan, 2006). However, it is unclear if findings from outcome studies can be generalised across the modern conceptualisation of recovery as a process.

The causal links between substance use and SMI symptoms remains unclear (Addington & Addington, 2007). Hambrecht and Häfner (1996) found that substance abuse in those diagnosed with schizophrenia prior to their first admission was twice the rate in the general population (24% for alcohol use and 14% for drug use). They also found alcohol abuse was more likely to precede the emergence of schizophrenia than follow the onset of schizophrenia. Drug abuse preceded the first symptoms of schizophrenia in 27.5% of cases, followed it in 37.9% of cases, and emerged around the same time in 34.6% of the cases. These findings do not support a unidirectional causality for substance use and SMI, and it remains unclear if substance use is a form of self-medication for prodromal symptoms or acts as a preceding trigger. Instead, it appears likely that both pathways may operate – substance use may be used as a way to self-medicate the unpleasant symptoms of SMI, and can also precede the onset of an SMI.

4.3.2. Medication Adherence and SMI. The use of antipsychotic medication is the central focus in the traditional treatment interventions of an SMI, particularly in schizophrenia. There are a substantial number of clinical trials showing efficacy in the reduction of psychiatric symptoms when patients are taking medications (Corrigan et al., 2003; Fialko et al., 2008; Leucht & Heres, 2006; Ziguras et al., 2001). Patients with poor medication adherence often require more frequent involuntary admissions to hospital, and are more likely to stay in the hospital longer and have poorer outcomes (Fialko et al., 2008; Leucht & Lasser, 2006; McEvoy et al., 1984).
Medication adherence or compliance can be defined as the extent to which one complies with medical or health advice (Haynes, 1979). It is known that a large proportion of mental health consumers do not take their medication as prescribed, and it is reported that the medication adherence rate for people with schizophrenia is around 25-55%, however rates as low as 10% and as high as 88% have also been reported (Fenton & McGlashan, 1987; Nosé, Barbui, & Tansella, 2003; Young, Zonana, & Shepler, 1986). Lieberman et al. (2005) found 74% of patients self-elected to discontinue their antipsychotic medication within 18 months, due to debilitating side effects or perceived lack of efficacy.

There is a plethora of variables found to be associated with poor adherence to medications including: the presence of comorbid substance use, side effects and negative subjective experiences on the medication, lower levels of medical supervision, a lack of education about the medication, and poor therapeutic alliance with the treating clinician (Hogan, Awad, & Eastwood, 1983; Pristach & Smith, 1990; Tattan & Creed, 2001; Weiss, Smith, Hull, Piper, & Huppert, 2002). Factors related to the mental illness have also been found to predict poor medication adherence such as increased psychotic disturbance, less affective disturbance, lack of insight during acute psychotic episodes, and higher levels of negative symptoms (Fenton, Blyler, & Heinssen, 1997; Tattan & Creed, 2001). Most empirical studies have found no associations between demographic factors such as age, gender, education, income, and ethnicity and medication adherence (Fenton, Blyler, et al., 1997; Weiss et al., 2002).

Although there is evidence that relevant medications are effective in reducing SMI symptoms, some studies including one by Harrow and Jobe (2007) suggest that those people with schizophrenia who are not continuously on antipsychotic medications show more favorable outcomes. Specifically, they found that a larger
proportion of schizophrenia patients who were not continuously on antipsychotic medication showed more periods of recovery and significantly better global functioning than those continuously on medication. They suggest these favorable outcomes are likely to be a result of a combination of medications alongside the individual characteristics such as better premorbid developmental achievements, resilience, personality, and attitudes, or a better initial prognosis. For those with better outcomes who were not on antipsychotic medications, they describe the positive influence of an internal locus of control, actively working on their own improvement, and a better self-image. They conclude that medication may be an important tool to reduce acute symptoms, but that not all patients will find continuous treatment with antipsychotics conducive to recovery (Harrow & Jobe, 2007). This may be of particular interest for those who experience prominent negative symptoms of psychosis, for which antipsychotic medications have been shown to be less effective (Usher, 2001), as well as for those whose symptoms are resistant to medications.

Other longitudinal research also indicates that many people with an SMI who are not continuously on medication will still achieve adequate or improved functioning and recovery (Bola, 2006; Fenton, Blyler, et al., 1997; Harding & Zahniser, 1994; Harrow et al., 2005; Harrow et al., 1997). There has been some apprehension from clinical and ethics researchers with regard to promoting non-continuous medication due to concerns around premature symptom relapse; however, there is no evidence that periods without antipsychotic medication is in itself harmful (Bola, 2006; Carpenter, 1997). Like Harrow (2007), others have also suggested the use of medications only during the acute phases of illness, such as a psychotic episode, can be more conducive to recovery (Bleuler, 1974).
As previously reported, research has repeatedly found more favourable outcomes for those with an SMI in developing countries, where many SMI consumers may not have access to ongoing medications and may only be taking them for acute phases of their illness, compared to SMI consumers in developed nations (e.g., Hopper et al., 2007; Lin & Kleinman, 1988; Sartorius et al., 1996; Sartorius et al., 1977; Warner, 2007; Waxler, 1979). It has been suggested that psychosocial factors including better social support and employment opportunities contribute to better outcomes in developing nations (Hopper et al., 2007; Lin & Kleinman, 1988). It is of interest to examine the relationship between recovery and medication adherence alongside some of these psychosocial factors to establish which contribute to the subjective experience of recovery.

It is also important to explore the reasons behind medication non-adherence in order to establish how best to utilise medications for those recovering from SMI. Of all of the factors previously mentioned, poor adherence rates in SMI populations have predominately been attributed to the subjective experiences of being on an antipsychotic medication (Awad & Hogan, 1994; Hogan et al., 1983). Most of the literature on effective use of medications have focused on their ability to reduce or alleviate symptoms, yet the subjective experience of taking antipsychotic medications is rarely addressed in the literature (Awad & Hogan, 1994; Usher, 2001). Subjective reports suggest antipsychotic medications tend to be useful in the treatment of positive symptoms but not the negative symptoms, and many people experience little or no benefits from their prescribed medications (Usher, 2001).

Non-adherence to medication is sometimes viewed as a result of poor judgment or poor reasoning on the part of the consumer, and the use of persuasion, education, or medication change is often implemented by the treating professional in order to
enhance adherence (Bellack, 2006; Roe, Goldblatt, Baloush-Klienman, Swarbrick, & Davidson, 2009). Contrary to this, a qualitative report suggested that the decision by consumers to cease taking medication is reflective of a rational assessment process of the perceived benefits versus costs of taking the medication (Roe et al., 2009). That is, a person is likely to stop taking medications when the negative consequences such as side effects outweigh the positive consequences such as symptom reduction. Research has also suggested that when medication is perceived as a barrier to personal goals or life roles, such as employment or meaningful activities, then non-adherence is more likely (Deegan, 2005; Roe et al., 2009).

Some of those diagnosed with an SMI report that the subjective experience of medications can become worse than the SMI symptoms themselves (Roe et al., 2009). Further, the coercive nature of medication compliance in many treatment settings has been mentioned in the recovery literature, with suggestions that the perception of forced medication adherence is disempowering to consumers and not conducive to recovery (Corrigan, 2002). This perception of coercion can result in behaviour that is in opposition to the coercion (Corrigan, 2002). Some consumers suggest a lack of personal control over their treatment is one of the reasons behind their non-compliance (Fogarty, 1997). Qualitative reports also suggest a lack of shared decision-making between practitioner and consumer contributes to negative associations by the consumer with the medication and the prescriber, as well as increased non-adherence (Deegan & Drake, 2006; Roe et al., 2009).

Primary to the issue of medication non-adherence is the concerns around the problematic side effects associated with medications. Although newer antipsychotic medications have reduced the incidence and severity of many side effects, medication side effects remain a concern (Hansen, Casey, & Hoffman, 1997). Many people find
the medication side effects debilitating and intolerable, and subsequently discontinue their medication (Hansen et al., 1997; Lieberman et al., 2005). A number of side effects have been observed in relation to antipsychotic medications (some of which are irreversible), including weight gain, agranulocytosis (a dangerous condition involving low white blood cell count), sexual dysfunction (including erectile and ejaculatory problems), hyperprolactinaemia (the presence of high prolactin which can induce breast milk and menstrual disruptions in females and hypogonadism in men), urinary incontinence or retention, dermatological side effects (including photosensitivity and unusual pigmentation), ocular problems, tardive psychosis (psychosis induced by antipsychotic medications), and tardive dysphrenia (worsening of psychiatric symptoms) (Hansen et al., 1997). Extrapyramidal reactions include acute dystonias (painful involuntary muscle contraction or spasm), akathisia (subjective restlessness and characteristic movements), drug induced parkinsonism (rigidity and tremor), tardive dyskinesia (characteristic involuntary, repetitive movements), tachycardia, hypotension, seizures, neuroleptic malignant syndrome, and cognitive dysfunction and sedation (Hansen et al., 1997). Many also report an “inability to think straight”, feeling “like a zombie” or feeling ”weird” on these medications (Awad & Hogan, 1994, p. 27).

Whilst some of these side effects such as extrapyramidal symptoms are more common in older antipsychotic medication, there are still reports of problematic side effects with newer antipsychotic medications (Hansen et al., 1997; Stanniland & Taylor, 2000; Tsang, Fung, & Corrigan, 2009). Understandably, some people report the side effects of medications to be more distressing than the illness itself, and this negative subjective report can contribute to reduced quality of life (Awad & Hogan, 1994; Marder, Ames, Wirshing, & van Putten, 1993; Roe et al., 2009). Studies
looking at the subjective experience of medications suggest that most (83%) describe reduced psychotic symptoms however, most also report side effects (84%) and 75% of these people consider the side effects so severe that it impairs their daily lives (Jablensky et al., 1999).

There are numerous ways to assess medication adherence in research settings, each with its own advantages and disadvantages. Common approaches include patient and clinician report, pill counts, and biological testing (such as blood or urine drug concentrations) (Fialko et al., 2008). Biological testing is expensive, and invasive, whilst self-report relies on participants’ willingness to disclose accurate responses. Self-report is, however, associated with objective measures as well as being relatively inexpensive, non-intrusive and can also explore attitudes towards medications (Fialko et al., 2008; Thompson, Kulkarni, & Sergejew, 2000).

The current study will examine self-reported medication adherence with the intention to establish its relationship with recovery and functioning outcomes. Although there is significant evidence that medications can reduce the symptoms associated with an SMI, the new conceptualisation of recovery does not necessitate the alleviation of symptoms. As such, it is of interest to explore if higher adherence to medications is related to higher recovery and functional disability.

4.3.3. Severity of Illness in SMI. Measures of illness severity have been shown to predict course of illness and treatment response, functional outcomes, and long-term outcomes (Opler, Opler, & Malaspina, 2006). Research has suggested that more severe symptoms are associated with poorer outcomes and increased risk of suicide in SMI (Bolton et al., 2007; Strous et al., 2004). Addington and Addington (1993) found that more severe positive and negative symptoms were associated with
poorer outcome at a six-month follow assessment for people with schizophrenia. Hoffmann and Kupper (2002) found severe negative symptoms resulted in poorer outcomes in people with schizophrenia.

Lower scores on the RAS have been associated with the presence of greater psychiatric symptoms (Chiba, Miyamoto, & Kawakami, 2010; Corrigan et al., 1999; McNaught, Caputi, Oades, & Deane, 2007), suggesting that recovery as a process may be associated with symptom severity. Strack, Deal, and Schulenberg (2007) found that self-report measures of functioning predicted empowerment, an important factor in recovery. Conversely, there has also been research that found no relationship between SMI symptoms and outcome (e.g., 1999; Jonsson & Nyman, 1984; 2007).

When measuring symptom severity, obtaining a variety of perspectives including the client, and a therapist or outside observer, is recommended (Eisen, 1995; Gulliksen, 1987; McGlashan, 1984). Approaches to measuring symptom severity commonly include objective report with regard to symptoms from a clinician as well as a record of the number of previous psychiatric hospital admissions (Davidson et al., 2009; Sheehan, Harnett-Sheehan, & Raj, 1996). To provide additional information on severity of illness which cannot be obtained from objective reports alone, a subjective measure of severity should also be used (Arbuckle et al., 2009). Further to this, McGlashan (1984) recommended the utilisation of different outcome dimensions including measures of functioning. As such, the current study also included a dependent variable of functional outcome using the Sheehan Disability Scale (SDS; Sheehan, 1983) as a global measure of the subjective impact of mental illness on functioning (i.e. functional disability).
4.4. Summary

This chapter has provided a description of the process of selecting the independent variables for the present study. It gave a background into three of these variables often included in clinical outcome studies. It also reviewed the relevant literature in relation to the independent variables, SMI, and recovery. The presented relationships found in previous research between the clinical variables were used to guide the development of SEM models using latent variables depicted in aim 5. The next chapter will explore the selection of the psychosocial variables in the current study, and describe their theoretical underpinnings to attachment theory that has been adopted as a theoretical framework.
Chapter 5. Theoretical Framework for Psychosocial Variables: Attachment Theory

5.1. Outline of Chapter

There is an array of psychosocial factors likely to contribute to recovery, and only a selection of these can be investigated in the current study. As such, the theoretical framework of attachment theory was used to tie each of the psychosocial variables to each other, and also to the concept of recovery. An attachment theory framework was used to guide the development of SEM models using latent variables depicted in aim 6. This chapter reviews the selection process and justifications behind the attachment framework. It then reviews the relevant literature including a brief background regarding attachment theory and classifications of attachment style. The final section reviews the empirical research findings for attachment style and recovery and outcomes in SMI.

5.2. Selection Process for Psychosocial Variables

There is a myriad of psychosocial variables cited in recovery and outcome research to understand and predict disorders such as SMI (e.g., Bakermans-Kranenburg & van Ijzendoorn, 2009; Drayton, Birchwood, & Trower, 1998; Hoffmann & Kupper, 2002; MacDonald, Pica, McDonald, Hayes, & Baglioni, 1998; Ritsner et al., 2003; Tait, Birchwood, & Trower, 2004). With a considerable array of psychosocial factors likely to contribute to recovery, a theoretical framework was used in the current study to allow integration of a selection of these factors in the exploration of the recovery concept. An attachment theory framework offers a systematic way forward and can also provide a rich source of hypotheses. Each of the
psychosocial variables used in the current study were derived from attachment theory and had been previously examined in SMI populations.

In proposing the relevance of attachment theory and psychosocial variables to SMI and recovery, it is also important to acknowledge biological factors associated with the etiology of SMI. Whilst the causes of SMI cannot be attributed to one single factor, the “stress vulnerability” model has been attributed to the development of SMI, with interactions between genetic and environmental factors (Gilmore, 2010; Lieberman, Stroup, & Perkins, 2006; van Os, Kenis, & Rutten, 2010). There is a strong heritability component, particularly for schizophrenia, and genetic risk factors include the polygenic interaction of many common variants of genes and genetic deletions or duplications (Purcell et al., 2009; Stone et al., 2008). Environmental factors are wide-ranging and also play an important role. So far, research has implicated environmental factors for the development of SMI including prenatal exposure to infection (Clarke, Tanskanen, Huttunen, Whittaker, & Cannon, 2009), urban birth, prenatal exposure to depression and stress, minority group influences, substance use, and developmental trauma (van Os et al., 2010). In particular, the high incidence of trauma and negative childhood experiences in the SMI population highlights the relevance of attachment theory as an environmental explanation for the development or, at the very least, the amelioration of SMI (Bendall, Jackson, Hulbert, & McGorry, 2008; Faust & Stewart, 2007; Gold, 2007; Karon, 2007; Read, van Os, Morrison, & Ross, 2005). High levels of attachment insecurities have previously been reported in SMI populations (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Brennan & Shaver, 1998; Cannon, 1990; Doron, Moulding, Kyrios, Nedeljkovic, & Mikulincer, 2009; Dozier, Stovall, & Albus, 1999; Rosenstein & Horowitz, 1996). As such, the importance of recognising the lived experience of the
individual, including historically negative social environments, in etiological explanations and treatments for SMI should be recognised (Gold, 2007).

The current study, suggests that just as there are both biological and environmental determinants for developing SMI, there are also both biological and environmental determinants of recovery. The current study focuses on the clinical and the psychosocial determinants of recovery from SMI. The conceptual model below presents a summary of the theoretical framework used in the current study. It refers to the stress vulnerability model in the development of SMI, suggesting both biological and environmental factors as determinants of SMI. Similarly, it suggests both clinical and psychosocial as determinants for recovery from SMI.

**Figure 2.** Theoretical model for the development of SMI and recovery from SMI.

In addition to its relevance to the recovery concept, attachment theory also provides a theoretical pathway between the psychosocial variables selected for the current study: attachment style, cognition, and coping style (e.g., Bakermans-Kranenburg & van IJzendoorn, 2009; Dozier & Lee, 1995; Drayton et al., 1998; Gibbs, 2007; Mikulincer & Florain, 1995; Mikulincer & Shaver, 2006). Further, attachment literature has empirical ties to recovery and clinical outcomes in SMI as well as clinical variables including substance use, and medication adherence (e.g., Dozier et al., 1999; Joyce, 1984; Kassel, Wardle, & Roberts, 2007; Macbeth, Schwannauer, & Gumley, 2008; Mikulincer & Shaver, 2006; Morriss, van der Gucht,
Lancaster, & Bentall, 2009). Attachment theory has been developed and shaped over a lengthy period and the abundance of empirical research in attachment theory provides a large body of literature from which to draw.

Already, attachment theory has provided insights into the etiology of psychopathology and how relationships may influence SMI (Mikulincer & Shaver, 2006). Attachment theory has particular applicability in understanding the social aspects of recovery. It has been well established that attachment quality has a strong influence on a person’s ability to relate with others (Mikulincer & Shaver, 2006), and since social functioning is a factor frequently cited in recovery literature (Corrigan & Phelan, 2004; Hendryx et al., 2009), it would be reasonable to assume the relevance of attachment theory to recovery.

Social functioning has been cited as a major factor in recovery (Corrigan & Phelan, 2004; Hendryx et al., 2009) and can conceptually tie together recovery and attachment theory. Recovery for people with an SMI has been suggested to be influenced by a range of social relationships including romantic relationships, friends and family, and the therapeutic working alliance with health practitioners (Berry, Barrowclough, & Wearden, 2008; Calsyn, Klinkenberg, Morse, & Lemming, 2006; Corrigan & Phelan, 2004; Hendryx et al., 2009). There has also been research suggesting that specific attachment styles does impact a person’s outcomes and recovery in SMI populations (e.g., Drayton et al., 1998; Tait et al., 2004). Further, enhancing general social functioning and improving expressed emotion has also shown to reduce the risk of relapse in SMI (Hendryx et al., 2009; Pharoah, Mari, Rathbone, & Wong, 2006).

Attachment literature provides a range of perspectives from which one can explore recovery. For example, one may choose to explore the impact of childhood
trauma, parenting style, or therapeutic alliance on recovery from an SMI. In the present study, attachment style was investigated. In addition to attachment style, other independent variables with established links to attachment theory were explored, including cognitive schemas (e.g., Mason, Platts, & Tyson, 2005; Mikulincer, Orbach, & Lavnieli, 1998; Platts, Tyson, & Mason, 2002; Roth-Ledley & Heimber, 2006; Sander, 2001), and coping style (e.g., Crittenden, 1992; Mikulincer & Florain, 1995; Modestin, Soult, & Malti, 2004; Tait et al., 2004). The clinical factors in SMI research used in the current study also have established empirical links to elements of attachment theory such as substance use (e.g., Caspers, Cadoret, Langbehn, Yucuis, & Troutman, 2005; De Rick et al., 2009) and functioning (e.g., Tyrrell, Dozier, Teague, & Fallot, 1999). Medication adherence has also been associated with attachment and SMI (e.g., Joyce, 1984), with many examples highlighting the importance of the therapeutic relationships in medication adherence (e.g., Day et al., 2005; Weiss et al., 2002). Additional theoretical and empirical links between these variables and the attachment framework is discussed in the subsequent chapters.

5.3. Attachment Theory

According to Bowlby (1980), attachment is “the propensity of human beings to make strong affectional bonds to particular others and explains the many forms of emotional distress and personality disturbance” (p. 39). Bowlby (1973) proposed a theory for the potential underlying cognitive mechanisms involved in attachment style and suggests that childhood attachment experiences lead to the development of internal working models. Working models are cognitive representations formed by the evaluation of self and the world, which serve as prototypes for subsequent interrelations and guide expectations. He proposed that these attachment styles persist
into adulthood and influence the perceptions of one’s adult world, and that poor attachment experiences can lead to unhelpful working models.

Psychopathology has been attributed to deviations in the normal development of attachment behaviors (Ainsworth, Parkes, Stevenson-Hinde, & Marris, 1991; Bowlby, 1988; Mikulincer & Shaver, 2006). According to attachment theory, a person is more vulnerable to mental illness as a result of poor attachment experiences, especially with the presence of other risk factors such as trauma and biological factors (Bowlby, 1988; Roche, Runtz, & Hunter, 1999; Rosenstein & Horowitz, 1996).

From a therapeutic standpoint, clinical interventions that enhance internal or external supports and strengthen attachment security can reduce the occurrence and intensity of psychiatric symptoms where mental illness exists (Eagle, 2003; Mikulincer & Shaver, 2006; Tyrrell et al., 1999). Thus, the use of attachment theory provides both a sound theoretical framework for the exploration of recovery as well as providing a practical, clinical utility for intervention.

Although a link has been established between attachment and psychopathology, it does not appear to have been directly studied in relation to recovery. Its relevance is apparent through its usefulness in the exploration of the etiology of disorders and its ties with social factors often mentioned in recovery literature (Caspers et al., 2005; Corrigan & Phelan, 2004; Hendryx et al., 2009).

5.4. Classification of Attachment Style

Classifications of attachment using Bowlby’s theory have been applied to both adults and infants. A coding system derived from Bowlby’s attachment theory for infant attachment was developed by Ainsworth, Blehar, Waters, and Wall (1978) based on the separation-reunion interactions of children with caregivers.
Adult attachment has been investigated using retrospective self-report of childhood experiences or through the exploration of close relationships as adults, based on the assumption of stability in attachment style over time (Mikulincer & Shaver, 2006). Retrospective reports of parent-child relationships come with inherent problems (see Roth-Ledley & Heimber, 2006), thus adult attachment patterns have been used in the current study based on the assumption that attachment style is a pervasive pattern exhibited in adulthood.

Brennan, Clark, and Shaver (1998) performed a large factor analysis of the various self-report measures of adult attachment and suggested there are two distinct dimensions underlying adult attachment style: anxiety and avoidance. Attachment anxiety describes anxiety about separations, fear of abandonment, or anxiety with regard to insufficient love. Avoidant attachment describes an avoidance of intimate relationships, dependency on others, and the lack of expression of emotion to others (Mikulincer & Shaver, 2006). These two dimensions are analogous to the infant attachment categories described by Ainsworth et al. (Ainsworth et al., 1978).

Bartholomew (1990) integrated these two attachment dimensions (anxiety and avoidance) with Bowlby’s concepts of internal working models of self and others. She proposed a four-dimensional model for these two factors, suggesting those with high attachment anxiety have a negative-self model, whilst those with high attachment avoidance have a negative model of others (Sander, 2001). Those with positive models of self and others (low on both anxiety and avoidance) can be considered to be “secure”; those with positive models of others (low avoidance) and negative models of self (high anxiety) are considered “preoccupied”; those with a negative model of others (high avoidance) with a positive model of self (low anxiety) are considered
“dismissing”; and those with negative models of both self and others (high anxiety and avoidance) are considered “fearful” (Mikulincer & Shaver, 2006).

5.5. Psychopathology and Attachment

Bowlby (1973, 1980) highlighted the role of attachment experiences in his etiological explorations of depression and anxiety disorders. More recently, it has been hypothesised that individuals with insecure attachment styles are more vulnerable to a range of other psychopathological conditions (Dozier et al., 1999; Greenberg, 1999; Mikulincer & Shaver, 2006). Attachment insecurities are indeed more prevalent among people with psychological disorders, including SMI (e.g., Bentall et al., 2001; Bhugra et al., 1996; Brennan & Shaver, 1998; Cannon, 1990; Doron et al., 2009; Dozier et al., 1999; Rosenstein & Horowitz, 1996).

Insecure attachment styles are considered to develop as an adaptive measure in order to have the needs of a child met. However these insecure styles tend to persist into adulthood, where they often become problematic and foster maladaptive interpersonal functioning (Mikulincer & Shaver, 2006). Insecure attachments can foster doubts of self-worth and self-efficacy which can lead to hopelessness, helplessness, self-criticism, severe perfectionism and sensitivity to rejection, criticism, and disapproval (Mikulincer & Shaver, 2006). These processes provide a destructive psychological environment that is conducive to psychopathology (Bowlby, 1973).

In addition to its etiological ties to pathology, attachment security has been associated with more adaptive forms of coping and resilience in those with an SMI (Drayton et al., 1998; Mikulincer & Shaver, 2006; Tait et al., 2004). Attachment experiences have been implicated in regulation of emotion, where an individual can utilise secure attachment experiences to moderate negative affect and restore
emotional stability and positive affect (Mikulincer & Florian, 2001; Mikulincer & Shaver, 2005; Mikulincer & Shaver, 2006). Insecure attachments can impede behavioral self-regulation via difficulty with planning, problem solving, and the disinhibition of impulsive actions. Insecurely attached persons are also less likely to disengage from unrealistic goals, which can lead to repeated failures across all areas of functioning, leaving them predisposed to prolonged distress and psychopathology. A lack of stable interpersonal interactions resulting from insecure attachment styles may exacerbate this distress (Mikulincer & Shaver, 2006).

Attachment style is not suggested to uniquely predict psychological functioning, but rather insecure attachments are thought to act as a pathogenic process which interacts with other biological and contextual factors and to ultimately reduce resilience to stress (Dozier et al., 1999; Mikulincer & Shaver, 2006; Rosenstein & Horowitz, 1996). The underlying mechanisms behind this process are not yet known, but are likely to be a combination of cognitive, emotional, and interpersonal factors which interact together and create a vulnerability to distress and disorder (Bowlby, 1973; Mikulincer & Shaver, 2006; Mikulincer, Shaver, & Horesh, 2006; Roche et al., 1999). It is likely that the attachment-pathology process is bi-directional, that is, attachment insecurities can both contribute to psychopathology, but also mental illness can exacerbate attachment insecurities. For example, people diagnosed with an SMI, such as schizophrenia, face social stigma which may challenge attachment relationships, whilst over-identification with the disorder may challenge positive-self views and therefore lead to attachment insecurities (Joiner, 1999; Mikulincer & Shaver, 2006).

In general, specific types of insecure attachments are not predictive of specific forms of mental disorder but rather an insecure attachment is considered to constitute
a generalised predisposition to psychopathology (Mikulincer & Shaver, 2006). In saying this, some attachment disorders such as separation anxiety are linked with attachment insecurity, and particular attachment styles have been associated with particular personality disorders (Brennan & Shaver, 1998; Crawford et al., 2006; Meyer & Pilkonis, 2005; Mikulincer & Shaver, 2006). Mason et al. (2005) conducted research using an attachment framework in a clinical population and found that 81% of adult mental health service users were classified with an insecure attachment style. Many of the research findings in this area are correlational, however some of the theoretical depictions are now being supported by prospective studies linking attachment style with specific psychological disorders (Mikulincer & Shaver, 2006). Relevant findings from this research with regard to attachment style and SMI are presented below.

5.5.1. Attachment, schizophrenia, and psychotic illness. Insecure attachments have been associated with severity of symptoms in schizophrenia and psychotic illness (Dozier et al., 1999; Mikulincer & Shaver, 2006). Several studies have shown that disruption in early relationships with parents is associated with psychosis (e.g., Cannon, 1990). Mickelson, Kessler, and Shaver (1997) found that both attachment anxiety and avoidance were associated with more severe schizophrenia symptoms. Dozier and Lee (1995) found that those classified as avoidant were rated as experiencing more psychotic symptoms than those without this classification. Macbeth, Schwannauer, and Gumley (2008) found that attachment avoidance predicted paranoid ideation, which is consistent with the theoretical ideas put forward by Bentall et al. (2001) that dismissing/avoidant attachments influence the development of paranoid symptoms.
Attachment experiences have also been researched in relation to the management of SMI. Two studies, Drayton, Birchwood, and Trower (1998) and Tait, Birchwood, and Trower (2004) found that recovery from psychosis and level of engagement with services was influenced by the level of attachment anxiety and avoidance. The studies also found that those with attachment avoidance displayed more maladaptive coping strategies for managing their psychotic symptoms.

5.5.2. Attachment, depression, and anxiety disorders. With regard to depression, Bowlby (1980), along with other cognitive theorists, suggested that a loss of attachment security through death or the failure of an attachment figure relationship in childhood can lead to pessimistic and hopeless views of the world as well as of self. Bowlby (1973) also postulated that anxiety disorders can result from the unavailability of an attachment figure due to the absence of protection and feelings of being unsafe in the exploration of the world. Research has found support for this prediction, with rates of depression higher in those who have experienced the death of a parent (e.g., Harris, Brown, & Bifulco, 1990). Furthermore, depressed or anxious adults also describe their parents as more rejecting, unavailable, and unsupportive (Cassidy, 1995; Gotlib, Mount, Cordy, & Whiffen, 1988). Attachment experiences can also explain the frequency and intensity of post-traumatic stress disorder symptoms, with the insecurely attached adults having heightened post-traumatic stress disorder symptoms (Mikulincer et al., 2006; Roche et al., 1999; Shapiro & Levendocky, 1999; Twaite & Rodriguez-Srednicki, 2004).

5.5.3. Attachment and substance use. Research has also explored associations between insecure attachments and substance use, and has found higher
rates of substance use in those with insecure attachments (Caspers et al., 2005; Kassel et al., 2007). It has been proposed that insecurely attached persons may use alcohol and drugs in an attempt to avoid or block painful emotional states (Caspers et al., 2005; Kassel et al., 2007).

5.5.4. Attachment and personality disorders. Pervasive interpersonal issues are central to personality disorders, which can originate from insecure attachments (Bartholomew, Kwong, & Hart, 2001). These insecure attachments can lead to problems with emotional regulation and can create unstable views of self and the world which interfere with one’s ability to form and maintain close relationships (Mikulincer & Shaver, 2006). There is substantial evidence for this association between personality disorder and insecure attachments, and specific personality disorders have also been associated with particular attachment types (Bartholomew et al., 2001; Brennan & Shaver, 1998). Extreme attachment anxiety is strongly related to borderline personality disorder. Symptoms of the disorder such as affective instability, unstable interpersonal functioning, feelings of emptiness, and fears of abandonment are synonymous with those observed in people with high levels of attachment anxiety (Bartholomew et al., 2001). Furthermore, attachment insecurities appear to play an important role in dissociative symptoms (Anderson & Alexander, 1996), which can also be a symptom of borderline personality disorder.

5.5.5. Attachment and bipolar disorder. There are a limited number of studies exploring the relationship between bipolar disorder and attachment, however poor parental bonding has been attributed to increased risk of relapse and poor medication adherence in those with bipolar disorder (Joyce, 1984). Although
causality has not been established, Morriss, van der Gucht, Lancaster, and Bentall (2009) found that 78% of people with bipolar disorder had an insecure attachment style compared to only 32% of those without the condition.

5.6. Summary

This chapter has provided a description of the process of selecting the psychosocial variables in the current study and the relevance of attachment theory as a framework for the study. It gave a brief background into attachment theory and classification systems, as well as a review of the literature in relation to attachment style and specific SMIs included in the current participant sample. The next chapter will explore the other psychosocial variables selected for the current study, including cognitive schemas and coping style. Both of these factors are examined in term of their relevance to recovery and SMI as well as their theoretical underpinnings to attachment theory.
Chapter 6. Other Psychosocial Variables: Cognitive Schemas and Coping

6.1. Outline of Chapter

As previously discussed, the current study has three psychosocial independent variables: attachment style, cognitive schemas, and coping style. Each of these factors has empirical links with attachment theory. Whilst the previous chapter reviewed the relevant literature on attachment style, this chapter reviews the other two psychosocial variables: cognitive schemas, and coping style. The first section in this chapter will compare the similarities with regard to attachment theory’s description of internal working models and cognitive theory’s model of cognitive schemas. This is followed by a review of the cognitive schema literature in relation to SMI. The next section in the chapter reviews the relationship between attachment theory and coping. This is followed by a review of the coping literature including theory, empirical findings, measurement approaches, and a description of specific coping strategies explored in the current study.

6.2. Integrating Attachment Theory and Cognitive Theory

Cognitive theory describes patterns of information possessing which have their origins in attachment and early relationships (Beck, Rush, Shaw, & Emery, 1979). Similar to the concepts posited by Bowlby, Beck (1979) postulated that early relationship experiences lead to the development of cognitive patterns associated with depression.

There are many parallels between cognitive theory and attachment theory, primarily the notion of internal working models described by attachment theorists, which parallel the “self-schemas” and “others-schemas” described by cognitive
theorists. Both theories describe cognitive structures that depict an internal representation of the self and also of others, and are considered to have their origins in early development and continue into adulthood (Sander, 2001).

However, despite the commonalities between Bowlby’s internal working models of attachment, and Beck’s notion of cognitive schemas, there has been little research or theoretical literature considering how these two concepts relate (Mason et al., 2005). Main (2000) suggests that it would be beneficial to incorporate other fields, such as cognitive theory, into attachment research in order to gain a better understanding of clinical phenomena. Authors have highlighted the commonalities between these two theories and suggest that attachment style can offer a “conceptual bridge” between early interpersonal experiences and cognitive schemas (Mason et al., 2005, p. 550; Platts et al., 2002).

Using Bartholomew’s (1990) four-dimensional attachment model, it is possible to integrate Bowlby’s concepts of internal working models with cognitive theory of self- and others-schemas (Hanay & Sander, 2001; Mason et al., 2005; Platts et al., 2002). With the development of their core schema scale Fowler et al. (2006) present a four-dimensional scale of beliefs about the self and others that is consistent with attachment theory. The authors recommend its use in the exploration of schemas in SMI populations. This scale provides a measurement approach that is consistent with the attachment framework used in the current study. Exploration of cognitive models of self and others allows for the relationships between cognitive schemas and attachment style to be examined. Further, it allows for exploration of cognitive schemas with regard to coping style as well as recovery and functioning.
6.3. Cognitive Schemas and SMI

Similar to the ideas posited by attachment theorists, Beck (1976) proposed that the presence of dysfunctional beliefs about self and the world lead to vulnerabilities to psychopathology. This has been substantiated in research for depression, and has now also been integrated into models for other disorders such as post-traumatic stress disorder, obsessive compulsive disorder, eating disorders, as well as models of paranoia, delusions, and hallucinations (Doron et al., 2009; Fowler et al., 2006; Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002; Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001).

In their cognitive model of positive symptoms in psychosis, Garety et al. (2001) suggest that early adverse experiences lead to the formation of negative schematic beliefs of the self and the world, and create a cognitive vulnerability to psychosis. Freeman et al. (2002) speculated that schematic beliefs also influence the development of delusions in psychosis, suggesting that schematic beliefs are utilised during the search for meanings in order to explain unusual internal or external experiences. For example, a paranoid delusion is likely to result for a person who has a schematic belief that they are vulnerable and/or that others hold malicious intentions towards them. Similarly, those diagnosed with borderline personality disorder are likely to have negative schematic models of others as a result of childhood trauma and to also perceive themselves as needy and vulnerable (Meyer & Pilkonis, 2005). Research evidence supports this notion, and negative self-concepts are common in people with psychosis and have also been associated with negative content in hallucination and delusions (Close & Garety, 1998; Fowler et al., 2006; Trower & Chadwick, 1995).

Furthermore, self construals have been associated with symptom severity. Smith et al. (2006) found that those who had negative self-evaluations showed a
higher preoccupation with, and greater severity of, persecutory delusions, as well as a heightened distress from their delusions. Similarly, Barrowclough et al. (2003) found that negative-self evaluation was strongly associated with the positive symptoms in a psychotic sample even after controlling for depression.

Fowler et al. (2006) measured schemas in both clinical and non-clinical participants to explore cognitive models of psychosis proposed by previous authors. In the non-clinical group, they found that paranoia was associated with “negative others-schemas”, that is, evaluations of others as bad and untrustworthy (Fowler et al., 2006). This finding was consistent with the cognitive model of paranoia suggested by other authors (Bentall & Swarbrick, 2003; Chadwick, Birchwood, & Trower, 1996; Freeman et al., 2002; Garety et al., 2001; Trower & Chadwick, 1995). Grandiose delusions were also explored and found to be associated with an inflated positive “self-schemas” or self evaluations. Furthermore, Fowler et al. (2006) found that those with a chronic psychotic presentation reported extreme negative self- and others-schemas, but the positive-self and others-schemas were similar to a non-clinical group.

Similarly, Addington and Tran (2009) found that positive symptoms (unusual thought content, suspiciousness, grandiosity, perceptual abnormalities and disorganised communication), as well as suspiciousness, was significantly associated with both negative self-schemas and negative others-schemas. Further, they found that low levels of disorganised communication were related to “positive other” schemas, and that perceptual abnormalities were related to negative evaluations of others.

It is suggested that by forming a new, incompatible schema, the old belief being attributed to the psychosis is reappraised and replaced and that this process will result
in a reduction of relapse rates and better outcomes (Garety et al., 2001). This prediction is supported by an increasing body of empirical evidence which suggests that cognitive interventions such as Cognitive Behavioural Therapy (CBT) can relieve a range of symptoms and improve outcomes (Garety et al., 2001; International Association for Cognitive Psychotherapy, 2009; Kingdon & Turkington, 2005; Kuipers, Garety, et al., 2006; Twamley, Jeste, & Bellack, 2003; Zimmermann, Favrod, Trieu, & Pomini, 2005). Tait et al. (2004) recommend that therapeutic interventions for psychosis should address any negative evaluations of self, and that attention should also be drawn to a strong therapeutic alliance between the clinician and client. This trusting relationship and associated positive evaluations of others can then be generalised to other relationships with the intention of improving outcomes, including recovery (Green et al., 2008). As such, it is of interest to further understand the role and development of schemas in the SMI population.

Although cognitive schemas have not been directly explored with regard to recovery, the concept of having a positive self-identity has been highlighted in the recovery literature (e.g., Wisdom, Bruce, Saedi, Weis, & Green, 2008). As such, it is reasonable to conclude that lower evaluations of negative-self and others as well as higher positive evaluations of self and other should result in higher recovery.

Although there are many ways to assess schemas, self-report methods are commonly used (Mason et al., 2005). Some authors suggest that assessing schemas should be done on an individual level whilst others have put forward coding systems for more globally observed schemas (Mason et al., 2005). The BCSS is used to assess schemas focusing on evaluations of self and others and yields a four-dimensional structure that corresponds to the four attachment styles proposed by Bartholomew and Horowitz (1991). It has been suggested the use of this scale can provide a theoretical underpinning to explore schema in psychosis within an attachment theory framework.
(Bartholomew & Horowitz, 1991; Fowler et al., 2006). Further explanations of the integration of attachment theory and cognitive theory will be presented in the next section.

6.4. Coping and Attachment Theory

Coping styles often have their origins in early development and because of this, coping has been conceptually linked to early attachment experiences and cognitive working models (Mikulincer et al., 1998; Roth-Ledley & Heimber, 2006). Attachment theory provides a conceptual underpinning for coping and allows for the integration of attachment experiences, cognitive theory, and coping theory.

Attachment theory posits that the implementation of specific coping strategies as a way of managing distress can be attributed to cognitive working models developed through attachment experiences (Mikulincer et al., 1998; Roth-Ledley & Heimber, 2006). According to attachment theory, attachment styles influence the formation of models of the self and others which in turn influence the implementation of adaptive or maladaptive coping strategies (Crittenden, 1992; Mikulincer et al., 1998; Mikulincer & Shaver, 2006; Roth & Cohen, 1986; Shapiro & Levendocky, 1999). It has been suggested that maladaptive models of the self and others, and the associated coping strategies are implemented to deal with adverse environments in childhood and are then maintained in adulthood, where they may become maladaptive (Shapiro & Levendocky, 1999). Research evidence in SMI populations support this notion, and avoidance coping styles have been associated with negative attachment experiences and insecure adult attachment as well as negative evaluations of self in psychotic populations (Tait et al., 2004).
6.5. Coping Theory

Coping is one of the most widely researched fields in psychology (Somerfield & McCrae, 2000) accounting for over 3% of all of the psychological literature in 1999 (Coyne & Racioppo, 2000). Interest in its application to all kinds of research stems from the role of coping as a mediator or moderator between stress and illness (Somerfield & McCrae, 2000). Theoretical conceptualisations of the construct of coping vary, but typically research on coping explores the ways in which people adapt to and manage stressful events (Somerfield & McCrae, 2000).

According to Lazarus (1993), coping as a function can be conceptualised as being emotion-focused or problem-focused. He suggests that these factors are not mutually exclusive, but rather interact with one another (Lazarus, 2000). Emotion-focused coping is an attempt to either change the meaning behind the situation or how the situation is attended to, whilst problem focused coping is an attempt to alter the situation by changing the environment or oneself. Another proposed model of coping was suggested by Roth and Cohen (1986) and is referred to as the approach-avoidance model, where an individual attempts to direct thoughts and/or behaviour towards (approach), or away from (avoid), a particular threat. Other approaches to the classification of coping include simply categorising coping strategies as adaptive (helpful) or maladaptive (unhelpful) (Miyazaki, Bodenhorn, Zalaquett, & Ng, 2008).

Coyne and Racioppo (2000) write that there are two main bodies of coping literature which are both dependent on each other. One of these bodies of literature explores the theory of coping and stress, whilst the other explores the practical utility of interventions designed to enhance coping and adaptation in response to stress. Whilst the theoretically-based explorations of coping, such as those previously mentioned, can suggest underlying mechanisms involved in coping with stress, the
majority of the research literature has not generalised the findings from theoretical-based coping research in a way that can inform a practical basis for clinical interventions (Coyne & Racioppo, 2000; Somerfield & McCrae, 2000). On the other hand, interventions designed to enhance coping typically lack the theoretical underpinnings which can explain the vital components of the construct of coping (Coyne & Racioppo, 2000). Unfortunately, this gap between research theory and clinical practice is a recurrent theme in the coping literature (Lazarus, 2000). The present study attempts to address the traditional disconnection between theoretical and applied coping literature by examining the theoretical underpinnings of specific coping strategies which can then guide practical interventions for the treatment of SMI.

6.6. Coping and SMI

It has been proposed that the ability to cope effectively with illness symptoms plays a fundamental role in recovery, functioning, and outcomes (e.g., Boschi et al., 2000; Meyer, 2001). In SMI research, it is of great importance to discover how sufferers cope with their illness and the coping methods which can facilitate the recovery process, functioning, and lead to better outcomes (Boschi et al., 2000; Lee, 1993; Meyer, 2001; Turkington, 2000). For those with an SMI, there are numerous stressors. A person is not only faced with the illness symptoms, but must also contend with the broader implications of the illness, such as entrenched social stigma (Hatfield, 1993; Meyer, 2001; Spagnoto et al., 2008). Coping with the symptoms and the broader implications of an SMI is a personal process that is unique to each individual, and plays a central role in the recovery process. Coping encompasses a range of processes such as acceptance of diagnosis, alteration of social roles,
reframing experiences, seeking comfort from spiritual beliefs, and engaging in
treatment (Meyer, 2001). A range of contextual factors play a role in the ability to
implement these coping strategies, including the diagnosis, severity of symptoms,
personality characteristics, cognitive factors, socio-demographic factors, cultural
factors, gender factors, family influences, and social environment (Meyer, 2001; van
den Bosch, 1997).

It is clear that those with an SMI utilise a wide variety of coping strategies in an
attempt to manage symptoms (Boschi et al., 2000; Carr, 1988; Farhall & Gehrke,
1997; Farhall, Greenwood, & Jackson, 2007; Lee, 1993). However the coping
strategies employed by a particular individual are not always helpful, and authors have
noted that the frequency with which strategies are used do not necessarily correspond
to their efficacy (Carter, 1996; Farhall & Gehrke, 1997). For example, Boschi et al.
(2000) found that although cognitive coping strategies were most commonly endorsed
in coping with an SMI, the behavioural strategies were reported by consumers to be
most successful.

Research into coping and SMI has suggested that people employ a range of
coping approaches to manage unwanted symptoms, such as auditory hallucinations
(Farhall et al., 2007; Knudson & Coyle, 1999). Farhall et al. (2007) suggest the
coping strategies used by those with schizophrenia are similar to those used by people
with other disorders and life stressors. Furthermore, coping strategies are not
culturally unique, with similar self-initiated coping attempts occurring universally
among those who experience auditory hallucinations. Taking prescribed medications
to reduce symptoms is one way of coping with an SMI (Boschi et al., 2000; Carr,
1988; Farhall et al., 2007). Approaches to coping with auditory hallucinations was
investigated by Farhall and Gehrke (1997), who found that active acceptance of
auditory hallucinations (e.g., by listen and accepting the content of auditory hallucinations) was associated with an increase in perceived control, whilst passive acceptance (e.g., by relying on supports such as spirituality to cope) was associated with reduced distress. Interestingly, a third category of coping known as resistance coping (e.g., engaging in competing actions in an attempt to inhibit auditory hallucinations) was found to be associated with heightened distress. In an effort to explain this phenomenon, Farhall et al. (2007) suggest that attempts to resist or change auditory hallucinations may lead to further distress, or alternatively, the distress associated with the auditory hallucinations may lead to poorer coping attempts (e.g., by resistance coping).

It appears that the more coping resources one has available, the better the chances of recovery. In their review, Farhall et al. (2007) suggest that the majority of studies report that the more coping strategies an individual implements to manage mental illness, the better the outcome. Lee et al. (1993) found that social, work, and daily life adjustment, quality of life, and symptom outcomes were enhanced the more sources of help (such as social support and medications), and number of coping approaches, were utilised.

Research into coping has also suggested that those with a psychotic illness may experience more difficulties coping than those with other SMIs. Meyer (2001) found that those with schizophrenia scored lower on adaptive coping strategies as measured by the Brief COPE than those without schizophrenia. Similar results were found by Macdonald et al. (1998) who found that those with early psychosis tended to cope less well than the non-psychosis group (which comprised of matched sample of participants without a diagnosis of psychotic illness). Cognitive factors also appear to impact the implementation of adaptive coping. Van den Bosch and Rombout (1997),
as well as Pallanti, Quercioli, and Pazzagli (1997), found that cognitive dysfunction impacts on one’s ability to cope for those with schizophrenia. Similarly, Lysaker, Davis, Lightfoot, Hunter, and Stasburger (2005) found that deficits in neurocognition were linked to preferences for less adaptive forms of coping in persons with schizophrenia spectrum disorders. While neurocognition is considered an important factor in SMI, with a growing research base (Mesholam-Gately, Giuliano, Goff, Faraone, & Seidman, 2009), it has been related to cognitive rehabilitation interventions with limited evidence of efficacy (Barlati, De Peri, Deste, P, & Vita, 2012) rather than being systematically related to cognitive-behavioural therapy models (Kyrios, 2011).

Further research into coping approaches for people with schizophrenia have found that the more pronounced psychotic symptoms are associated with lower levels of adaptive coping, and more adaptive forms of coping are related to higher psychological wellbeing (2001). Further to this, Meyer (2001) found that lower adaptive coping mediated the relationship between symptom severity and social functioning. The presence of depressive symptoms in those with an SMI has also been shown to moderate the ability to implement adaptive coping styles (Meyer, 2001). MacDonald et al (1998) found that effective coping correlated with greater self-efficacy and social support, and lower levels of negative symptoms. Factors such as psychological wellbeing, managing symptoms, social functioning, and self-efficacy all have ties to the recovery literature and overall suggests a role for coping in recovery from SMI.

Further evidence suggests specific coping strategies are associated with better outcomes, including active coping, behavioural coping strategies (Boschi et al., 2000) and the use of humour in therapy (Witztum, Briskin, & Lerner, 1999). Yagi,
Kinoshita and Kanba (1991) found that those with schizophrenia are more likely to engage in physical activity, than those with depression, and may assist those to cope with psychosis. Further, Tooth et al. (2003) found that an active sense of self, which consisted of a determination to get better, optimism, understanding and managing one’s illness, and realisation of the viability of self-help, were the most commonly reported strategies for fostering recovery.

The effectiveness of particular coping approaches is also influenced by personality traits, but coping styles are considered more malleable than these personality factors and thus provide more practical utility in treatment interventions (Somerfield & McCrae, 2000). Farhall et al. (2007) suggest that strengthening adaptive coping and increasing the breadth of strategies used by the SMI populations could be implemented in psychological interventions to facilitate better outcomes. Further, the National Mental Health Plan for Australia (2009) also suggests that mental health services should recognise and promote an individual’s strengths in coping, resilience, and self-determination. Cognitive interventions that target coping strategies for people with an SMI, including CBT have been shown to be effective, but need to be further utilised and assessed in clinical settings (Chadwick et al., 1996; Edwards, Francey, McGorry, & Jackson, 1994; Fowler, Garety, & Kuipers, 1998; Fowler et al., 1995; Jackson, Edwards, Hulbert, & McGorry, 1999; Kuipers, Garety, et al., 2006; Meyer, 2001).

6.7. Methodologies and Measuring Coping in SMI

It is important to address two criticisms highlighted in the coping literature with regard to the methodological and measurement approaches in coping research (Coyne & Racioppo, 2000; Lazarus, 2000; Somerfield & McCrae, 2000).
The first criticism questions the quality of research designs, methods, and evaluations including the choice of outcome variables. Outcome measures tend to be non-specific in nature with a focus on the absence of pathology rather than the presence of positive outcomes and adaptive responses, such as subjective growth (Folkman & Moskowitz, 2000; Somerfield & McCrae, 2000). This argument runs parallel with the positive psychology movement (Folkman & Moskowitz, 2000) and is highly relevant to the recovery literature. Folkman and Moskowitz (2000) addressed this in the coping literature by conducting research exploring positive affect and coping in caregivers with a partner with AIDS. They found that positive affect was conducive to adaptive coping for caregivers. The current study will also address this criticism in the coping literature (i.e., research tends to focus on an absence of pathology rather than the presence of positive outcomes) by using a positive outcome measure of recovery, and exploring how coping style contributes to this outcome variable.

The second key criticism of the coping literature was suggested by Coyne and Racioppo (2000), who highlight the risk of confounding measures of coping, where any similarities between the predictor and outcome variables represent a tautology between factors, rather than a true relationship. In response, Lazarus (2000) suggests that the use of coping scales remain useful in quantifying coping for large samples, and many studies are now putting more consideration and rigor into their methodologies in the coping literature (e.g., Folkman & Moskowitz, 2000; Tennen, 2000). Due to the similarities between the recovery concept and coping literature, this criticism is relevant to the current study and was addressed by exploring the discriminant validity between the each of the scales used in the study.
Another challenge in the coping literature is the lack of agreement about how best to measure coping styles (Miyazaki et al., 2008; Somerfield & McCrae, 2000). The different approaches to measurement, and the enormous breadth of coping literature, makes comparisons across studies difficult (Meyer, 2001). Categorising qualitative responses as problem-focused, emotion-focused or into other groupings is common place in psychiatric settings (Miyazaki et al., 2008). However coping inventories containing theoretically derived coping strategies are not often used, despite their demonstrated ability to predict level of functioning and outcomes in clinical populations (Miyazaki et al., 2008).

Carver, Weintraub, and Scheier (1989) developed the COPE and Brief COPE scales which have a demonstrated ability to predict outcomes in many contexts and populations (including SMI) with a low level of participant burden (Meyer, 2001). The Brief COPE scale identifies a range of coping strategies which can be assessed individually or grouped as adaptive versus maladaptive or emotion-focused versus problem-focused. Criticisms have been raised regarding each of the approaches to grouping coping strategies (Carver et al., 1989; Parker & Endler, 1992; Schwarzer & Schwarzer, 1996; Zuckerman, 2003). Those researchers who generalise coping into larger categories, such as adaptive or problem-focused, risk losing valuable and practical information provided by smaller, more specific groupings (Carver et al., 1989; Zuckerman, 2003). Yet those who investigate specific coping strategies may compromise empirical validity and reliability (Parker & Endler, 1992; Schwarzer & Schwarzer, 1996). For the purposes of the current study, the specific information gained from using more specific groupings of particular coping strategies was a priority. In an attempt to strengthen the psychometrics of the smaller groupings, the validity and reliability for these scales were assessed.
The Brief COPE scale was designed to measure a range of different approaches to coping with particular relevance to mental illness. The scale measures specific coping strategies such as: active coping, planning, emotional support, instrumental support, positive reframing, acceptance, religion, humour, venting, denial, substance use, behavioural disengagement, self-distraction, and self-blame. Many of these coping strategies can be grouped into broader concepts. Social coping can encapsulate emotional or instrumental support, and also venting, and humour. Active coping can also encapsulate a variety of active approaches to managing mental illness such as planning, positive reframing, acceptance, and spirituality. Avoidance coping can also theoretically encompass concepts such as denial, substance use, behavioural disengagement, self-distraction. A review of these coping strategies in relation to SMI populations is contained in the following section.

6.8. Coping Strategies Explored in the Current Study

While there is a broad range of coping strategies that can be used to manage an SMI, discussion below focuses on those coping strategies measured by the Brief COPE, used in the current study.

6.8.1. Active coping. Active coping is described as the process of actively trying to eliminate the stressor or ameliorate its effects (Carver et al., 1989; Yusoff, Low, & Yip, 2009). It includes “initiating direct action, increasing one's efforts, and trying to execute a coping attempt in a stepwise fashion” (Carver et al., 1989, p. 268). Active coping can be a cognitive process, such as maintaining optimism, positive reframing, and acceptance (Moos, 1990). Planning, in the sense of the processes of thinking about how one might cope and forming action strategies to handle a stressor,
has been strongly associated with active coping (Carver, 1997; Carver et al., 1989), and may be analogous with cognitive forms of active coping. In conjunction with the cognitive approaches, active coping can also be behavioural in nature. The behavioural elements include taking active steps to improve a situation such as engaging in treatment, using strategies to manage symptoms, and engaging in activities (Moos, 1990). The recovery literature also include the concept of using spirituality as a form of coping which may serve as an active coping approach used to manage daily life as well as setting life goals (Huguelet, Mohr, & Borras, 2009).

6.8.2. Social support. Seeking social support is also a form of coping which can be broken down into several subcategories. Carver et al. (1989) suggest that social support can be either instrumental or emotional. Instrumental social support involves seeking advice, assistance, or information, whilst emotional social support involves seeking moral support, sympathy, or understanding.

Social support is mentioned throughout the recovery literature as an important factor in recovery from SMI (e.g., Corrigan & Phelan, 2004). The concept of social humour is also mentioned in the recovery literature and suggested to improve mental health through a variety of functions (Witztum et al., 1999). With regard to social support as a form of coping with an SMI, research suggests those people with an SMI who report larger or more satisfactory support networks have a better quality of life and higher recovery (Corrigan et al., 2004); yet, those with an SMI tend to have a smaller and less satisfactory support networks than those without an SMI (Corrigan & Phelan, 2004). It has been found that social support does not appear to be directly related to psychiatric symptoms (Corrigan & Phelan, 2004), suggesting that social support does not necessarily impact on the severity of psychiatric symptoms. In
saying this, it may still act as a positive coping strategy and promote recovery independent of psychiatric symptom severity.

Although social support is generally considered an adaptive form of coping, it is not always helpful and is dependent on many factors, such as what kind of support is required and its availability (Coyne & Racioppo, 2000). For example, the venting of emotions for long periods of time, or spending time with people as a social diversion, may inhibit adjustment and change by providing a distraction from confronting and coping with a stressor (Carver et al., 1989; Parker & Endler, 1992).

6.8.3. Avoidance coping. This idea of social diversion also taps into another coping strategy known as avoidance coping, which involves behavioural or cognitive strategies that are intended to avoid or delay confrontation with a stressor in order to alleviate distress (Carver et al., 1989; Cooper, Wood, Orcutt, & Albino, 2003; Lyne & Roger, 2000; Parker & Endler, 1992; Roth & Cohen, 1986). Despite its obvious short-term effectiveness in reducing distress, avoidance coping is generally considered to be a maladaptive approach when used in the longer term and is associated with a range of dysfunctional behaviours including substance use (Aldwin, 1987; Carver et al., 1989; Cooper, Frone, Russell, & Mudar, 1995; Cooper, 1988; Cooper et al., 2003; Wagner, Myers, & McIninch, 1999). Avoidance coping may also involve denying the existence of the mental illness in order to avoid distressing emotional states (Roth & Cohen, 1986).

Avoidance coping is a phenomenon closely linked to learned helplessness, where in spite of any attempts to cope with or manage a stressor, poor outcomes are expected (Carver et al., 1989; Lefton, 2000). This approach to coping has also been associated with poorer outcomes and recovery in SMI (Modestin et al., 2004; Tait et
al., 2004). Long term use of avoidance may inhibit active coping and reduce the occurrence of disconfirmatory evidence which challenges maladaptive thoughts and delusions (Carver et al., 1989; Cooper et al., 2003; Freeman, Garety, & Kuipers, 2001; Freeman et al., 2002; Wagner et al., 1999). Avoidance coping has been found to be utilised by many people with psychotic illnesses; however, it may serve as an ineffective strategy and has been associated with less engagement with services, poorer quality of life and lower social functioning (Drayton et al., 1998; Tait et al., 2004; Thompson, McGorry, & Harrigan, 2003). Similarly, Boschi et al. (2000) found that those who identified active coping as the most useful strategy, compared with avoidant coping, showed better outcomes with regard to symptoms and social functioning at 24-month follow-up.

Behavioural disengagement is a form of avoidance coping which occurs when one’s efforts to deal with a stressor are reduced or ceased (Carver et al., 1989). For example, a person might stop taking medications or withdraw from social situations. Another behavioural avoidance strategy is engaging in distraction activities in order to distract oneself from distressing symptoms or emotional states (Lyne & Roger, 2000). A variation of behavioural disengagement is mental disengagement, which involves the implementation of activities such as watching television, going shopping, or sleeping in order to distract oneself from a stressor (Carver et al., 1989). These forms of disengagement, also referred to as “distraction”, can also function as an adaptive response and are often encouraged in clinical settings for psychotic symptoms, such as auditory hallucinations (Knudson & Coyle, 1999). Risner et al. (2003) found that the use of distraction strategies in those with schizophrenia was highly associated with quality of life and mediated quality of life in those with paranoid symptoms. Similarly, Haddock et al. (Haddock, Slade, Bentall, Reid, & Faragher, 1998) found
that the implementation of “distraction” therapy resulted in improved measures of hallucination frequency, distress, and disruption to life after a 2-year follow up.

Similarly, Ritsner, Ben-Avi, Ponizovsky, Timinsky, Bistrov, and Moda (2003) found that diversion-oriented strategies served as an adaptive form of coping for those with schizophrenia and was strongly associated with a better quality of life. In consideration of these and other similar findings, it is highly probable that distraction coping approaches may be considered an adaptive and helpful approach to coping in the SMI population.

6.9. Summary

This chapter gave an introduction and general discussion of the relevant research conducted in the SMI literature with regard to cognitive schemas and coping. It further examined the theoretical applicability of attachment theory as a framework for the psychosocial variables used in this study. The next section describes the theoretical approach to the current research based on the previous review of the literature.
Chapter 7. The Current Research

7.1. Outline of Chapter

This chapter begins with a summary of the findings in the literature and how these findings influenced the design of the current study. Following this, the research questions including aims and hypotheses are presented.

7.2. Summary of the Literature and the Design of the Current Research

The term “recovery” has emerged as an important concept for mental health systems across the world and also for those experiencing an SMI. Rather than focusing on symptom remission alone as an indicator of outcome, the recovery perspective integrates concepts such as hope, optimism, purpose, and the management of ongoing symptoms. These quantitative measures of recovery are relatively new, but can offer a way forward to enrich our understanding of the recovery concept and its relationship with other factors. Qualitative research has enabled research to explore the elements which contribute to the subjective experience of recovery and has also paved the way for the development of quantitative measurements of recovery as a process.

The current study attempts to advance the current understanding of the concept of recovery, delineate what factors are associated with it, and investigate how one might best measure it using quantitative measurement methods. The current study explores the construct of recovery by examining the factor structure of a quantitative recovery scale. For the purposes of this project, the term “recovery” refers to a subjective process which encompasses hope, self-efficacy, and managing the effects and symptoms of SMI. Using recovery as a dependent variable, this research
investigates what kinds of factors are associated with higher or lower levels of recovery in those with an SMI.

There is a plethora of factors that could be examined in relation to recovery, and a framework was needed to systematically explore a small but focused number of these variables. The current study examines psychosocial predictors alongside the more traditional clinical variables in relation to both recovery and functioning. In addition to building on the existing knowledge of recovery, these factors could potentially show practical utility as a focus of intervention in the treatment of SMI. The predicted relationships between each of these factors and recovery and functional disability were based on the previous literature.

With regard to the selection of psychosocial variables, the conceptual framework of attachment theory provided a framework from which to investigate some of the psychosocial factors potentially associated with recovery. Social factors have been cited as a major factor in recovery (Corrigan & Phelan, 2004; Hendryx et al., 2009) and can provide a conceptual bridge between recovery and attachment theory. There are established links between attachment and coping style (e.g., Crittenden, 1992; Mikulincer & Florain, 1995; Mikulincer & Florian, 2001; Modestin et al., 2004; Tait et al., 2004), as well as cognitive beliefs and schemas (e.g., Mason et al., 2005; Mikulincer et al., 1998; Platts et al., 2002; Roth-Ledley & Heimber, 2006; Sander, 2001). Further to this, attachment and social factors (Corrigan & Phelan, 2004; Drayton et al., 1998; Hendryx et al., 2009; Mikulincer & Shaver, 2006; Tait et al., 2004), cognitive schemas or beliefs (Tait et al., 2004; Wisdom et al., 2008), and coping style (Huguelet et al., 2009; Modestin et al., 2004; Tait et al., 2004) have all been previously cited in the recovery literature and also utilised in treatment settings to optimise recovery and outcomes in SMI. Based on the literature, the psychosocial
variables selected for the current study include attachment style (attachment anxiety and avoidance), cognitive schemas (self- and others-schemas), and coping strategies.

The current study also examines some of the clinical factors traditionally used in outcome studies in order to determine their role in recovery. The “clinical variables” were derived from some of the more traditional outcome studies based on SMI populations, and also factors typically targeted in the conventional treatment for SMI. These clinical variables have been found to optimise outcomes for those with an SMI, and include medication adherence (Fialko et al., 2008; Petersen et al., 2008), substance use (Addington & Addington, 2007; Mauri et al., 2006), functioning (Stefanopoulou et al., 2009), severity of illness as measured by support staff and number of hospitalisations in the previous 12 months (Addington & Addington, 1993; Opler et al., 2006). It is of interest to establish if the psychosocial variables of attachment, schema, and coping contribute to recovery and functioning outcomes over and above these clinical variables. This question is presented in the fourth aim of the study and was tested using a hierarchical regression.

As mentioned earlier, obtaining perspectives from a variety of sources including the client, and therapist or outside observer is recommended when using self-report measures (Eisen, 1995; Gulliksen, 1987; McGlashan, 1984). As such, two measures of illness severity were obtained in the current study. The first indicator of severity used in the current study is an objective report from support staff for each participant. The number of psychiatric hospital admissions in the previous 12 months was also used as an indicator of illness severity. Further, McGlashan (1984) recommend the utilisation of different outcome dimensions including measures of functioning. In line with this, a subjective report of functional disability was collected as global measure of the impact of mental illness on the participants’ functioning (Sheehan, 1983). This
measure was used alongside the recovery scale in order to provide additional information on outcomes, which cannot be obtained from commonly used objective reports alone (Arbuckle et al., 2009).

Due to the potential extraneous influence of effect on participant responses, current affect was measured using the PANAS and was used as a control variable when examining the contributions of independent variables with regard to subjective reports of recovery and functional disability. The next section presents the current study’s aims and hypotheses, and is followed by the methodology of the current research and then an examination of the results. These results are discussed later within the context of previous literature and implications for the current findings and future research.

7.3. Research Questions and Hypotheses

The overarching aim of the current study was to advance understanding of the contemporary, process-oriented concept of recovery by investigating what factors are associated with it in an SMI sample. Furthermore, the utility of measuring the recovery concept using a subjective quantitative scale – the RAS – was examined. Alongside the RAS, a subjective measure of the impact of mental illness on functioning – the SDS – was used as a separate outcome measure and allowed for comparisons with the RAS. Predictor variables included both traditional clinical and psychosocial factors. To test the research hypotheses, correlations, regressions, and SEM were applied. The aims and corresponding hypotheses are presented below
7.3.1. **Aim 1.** The first aim was to develop measurement models to be used in the SEM and assess the goodness-of-fit of established factor structures for each scale in the current SMI sample.

7.3.2. **Aim 2.** The second aim was to investigate whether traditional clinical variables (severity of illness as reported by staff, number of hospitalisations, medication adherence, and substance use) were associated with recovery and functional disability. The expected direction of the associations was based on previous studies of SMI which posit the following associations:

H1: higher levels of medication adherence, as well as lower alcohol use, drug use, number of hospitalisations, staff reported severity of illness, and functional disability, would be related to higher recovery scores;

H2: higher levels of medication adherence, as well as lower alcohol use, drug use, hospitalisations, and staff reported severity of illness, would be related to lower functional disability scores.

7.3.3. **Aim 3.** The third aim was to investigate whether psychosocial variables (attachment style, self- and others-schemas, and coping style) were associated with recovery and functional disability. In accordance with the literature, it was hypothesized that:

H3: higher attachment anxiety and avoidance scores would be associated with lower recovery scores and higher functional disability scores;

H4: less negative views of self and others, as well as more positive views of self and others, would be associated with higher recovery scores and lower functional disability scores;
H5: social support and active coping would be positively associated with higher recovery scores and lower functional disability scores, whilst avoidance coping would be associated with lower recovery scores and higher functional disability scores.

7.3.4. Aim 4. The fourth aim was to identify which of the variables uniquely contributed to recovery and functional disability, over and above that of current mood, and the clinical variables. It was anticipated that:

H6: attachment style, self- and others-schemas, and coping strategies would explain a significant proportion of variance in recovery scores, over and above that explained by current affect and clinical variables (severity of illness, substance use, number of hospitalisations, and medication adherence).

H7: attachment style, self- and others-schemas, and coping strategies would explain a significant proportion of variance in functional disability scores, over and above that explained by current affect and clinical variables (severity of illness, substance use, number of hospitalisations, and medication adherence).

7.3.5. Aim 5. The fifth aim was to develop a model (summarised in Figure 3) of the hypothesised associations between traditional clinical factors, recovery and functional disability. Since causality between some of the clinical variables has not yet been established, directionality between medication adherence and substance use could not be assumed, and an alternate configuration to the hypothesised model was also presented as an appendix. The model suggested that:

H8: higher levels of alcohol use would be associated with higher levels of drug use;

H9: higher levels of medication adherence would be associated with lower drug and alcohol use;
H10: lower levels of drug and alcohol use and higher levels of medication adherence would all be associated with lower numbers of hospitalisations and severity of illness scores;

H11: higher medication adherence and lower substance use, lower hospitalisations, and lower severity of illness would be reflected in higher recovery scores and lower functional disability scores in the SEM model;

H12: substance use and medication adherence would mediate the relationship between illness severity and recovery as well as the relationship between illness severity and functional disability.

Figure 3. Proposed model for clinical variables with recovery and functional disability.

7.3.6. Aim 6. The sixth aim was to develop a model for the associations between psychosocial variables recovery, and functional disability using an attachment framework (Figure 4). On the basis of the existing literature, it was hypothesised that:

H13: higher attachment anxiety scores would be associated with higher negative self-schema scores whilst higher attachment avoidance scores would be associated with higher negative others-schema scores;

H14: lower negative self- and others-schemas and higher positive self- and others-
schemas would contribute to higher social and active coping strategies and lower avoidance coping;

H15: lower attachment anxiety and attachment avoidance, lower scores on negative self- and others-schemas, higher scores on positive self- and others-schemas, higher social and active coping strategies and lower avoidance coping would significantly contribute to higher recovery scores and lower functional disability scores in the SEM model.

Figure 4. Proposed model for clinical variables with recovery and functional disability.

H16: schematic beliefs would mediate the relationship between attachment style and recovery and functioning.

Figure 5. Proposed mediation between attachment style, schema, and recovery and functioning.
H17: finally, it was hypothesised that coping style would mediate the relationship between schematic beliefs and recovery and functioning.

*Figure 6.* Proposed mediation between schema, and coping style, and recovery and functioning.
Part II- Method

Chapter 8. Procedure and Materials

8.1. Outline of Chapter

This chapter presents the procedure and instruments used in the current study. It includes a description of the organisation from which the sample was obtained. It also includes a description of the participants contained in the sample and the data collection procedure. Finally, the analytic approach used to address the research questions and hypotheses is presented.

8.2. Organisational and Service Context

Participants were recruited between 2007 and 2008 from psychosocial rehabilitation services attached to Mind Australia (formally known as Richmond Fellowship) in Victoria, Australia. Mind Australia has been operating for more than thirty years and is one of Australia’s largest not-for-profit, non-government providers of mental health services to people recovering from SMIs such as schizophrenia, severe depression, bipolar disorder, and severe anxiety as well as other serious psychiatric conditions (Mind Australia, 2006, July 6a). Mind Australia programs provide a range of services including residential rehabilitation, outreach, respite, day programs, volunteer programs and individual service packages. The length of involvement in Mind Australia programs varies from a series of planned respite breaks to an extended period in residential rehabilitation or outreach programs. All Mind Australia programs maintain the goal of actively supporting clients in their journey...
towards recovery, enhanced relationships, and improved quality of life (Mind Australia, 2006).

8.3. Participants

At the time of participation in the current study, all participants were residing in a Mind Australia residential rehabilitation program, respite, or outreach service, were 18 years or older, and had a current DSM-IV-TR diagnosis of a mental illness which produced significant functional disability. In order to receive support from a Mind Australia service, a person must be experiencing an enduring psychiatric, emotional, or dual diagnosis that has a serious impact on quality of life, functioning ability and health (Mind Australia, 2006, July 6b). Thus, it was inferred from their participation in a Mind Australia service that each participant experienced a mental illness that produced significant functional disability.

Data from the Mind Australia annual report (2008) for 2007 to 2008 offers that 2108 people accessed one or more Mind Australia services for an SMI over that time period. In this study, a sample of one hundred and fifty four participants were obtained from thirty of the Mind Australia residential programs, day programs, and attached outreach programs. Twenty-four metropolitan services and six regional services across Victoria were contacted, with a mean of five consumers per program volunteered to participate in the study. Due to greater accessibility, the sample largely consisted of residential program consumers.

8.4. Data Collection Procedure

One hundred and fifty-four participants responded from the thirty Mind Australia programs. Ethical approval for the research was obtained from the
Swinburne University Ethics Committee (Appendix A) and the Mind Australia research committee (Appendix B). Plain language information sheets (Appendix C) were given to the staff at the service sites prior to the researcher arriving. The researcher gave a general overview of the project to staff and clients following the community meeting, and clients were invited to participate in the study. Participants were also offered the opportunity to discuss their personal experiences of recovery in a one-to-one interview with the researcher following their completion of the questionnaire.

Plain language statement about the research project was given to each participant and their consent to participate was obtained prior to completing the questionnaire (Appendix D). Participants completed the questionnaire individually or in small groups (of up to 5 people) at the recruitment sites in the presence of the researcher. Current diagnosis, length of time in the service, and number of hospitalisations in the previous 12 months was collected from participants’ case files, and support staff were asked to complete three questions relating to the severity of their clients illness (Appendix E). Participation was voluntary and in no way affected service provision at Mind Australia. Consumers were reimbursed $10 for time taken to participate in the research.

Previous authors have suggested other factors which can limit the reliability of self-report data in this population including illness symptoms, medications, length of questionnaire, level of motivation, response biases, a desire to please, and misunderstanding the meaning of questions (Dickerson, 1997; Flinn, 2005; Gulliksen, 1987). As outlined below, steps were taken to minimise such difficulties during the collection of the data, and each the scales were assessed for their psychometric strength and usability in SMI samples.
Care was taken to explain the purpose of the research and the procedure for completing the questionnaires. Further, efforts were made to establish good rapport with participants. Assistance was offered by the researcher for any literacy difficulties or problems experienced whilst completing the questionnaires. Breaks were also encouraged during the completion of the questionnaire. It was unnecessary to have identifying information for the purpose of this study and participant anonymity was assured to encourage honest responses.

Length of attendance in the Mind Australia program, medication type, and DSM-IV-TR diagnosis, were collected by the researcher from case files. A severity of mental illness rating from Mind Australia support staff was obtained by asking three questions regarding the perceived severity of illness as well as the presence of any positive or negative symptoms (Appendix E). This last scale was developed by the researcher as an indication of objective illness severity, however only the data from the overall severity of illness question was included in the statistical analysis due to the latter two questions only being relevant to those experiencing a psychotic illness.

Individual factors which had the potential to compromise the validity or reliability of data were monitored by the researcher whilst collecting data. For example, participants who reported or displayed active psychotic phenomena, mania, or very disorganised behaviour were flagged, through observation and interaction with participants. Twenty-two participants were identified through this process. These observed states were potential extraneous variables in the study, and statistical comparisons were conducted on these participants (see below) which resulted in the retention of this data.
8.5. **Analytical Approach**

The analytical approach used to address the research questions and hypotheses is presented in this section, including a description of considerations, justification for statistical procedures, and approaches to assumption testing.

The study was non-experimental, cross-sectional and correlational. The independent variables were: adult attachment style, cognitive schemas, coping strategies, number of hospitalisations in the previous 12 months, objective severity of illness, drug use, alcohol use, and medication adherence. Recovery as measured by the RAS and functional disability as measured by the SDS were the primary dependent variables.

**8.5.1. Demographics.** In order to assess the generalisability of findings, a range of demographic information was collected and compared to previous findings in SMI populations. These included gender and age, length in the current Mind Australia service, diagnosis, type of prescribed medication, and educational attainment.

Due to the high rates of substance use and poor rates of medication adherence in SMI populations, it is of interest to determine if the current sample also reflected this trend. To establish the rates of substance use in the current sample compared to those previous reported in SMI populations, the current study examined cut off points for both the DAST-10 and the AUDIT scales. Cut off scores suggested by previous authors were compared to results from a mixture modeling analysis. Mixture modeling allows observations with-in the data to be represented in categories based on a probabilistic model. These groups were assigned labels (such as low, medium, and high) based on statistical inference. Similarly, medication adherence was examined
using categorical cut off scores suggested by previous authors and mixture modeling for the MARS. A continuous score was then used for the substance use and medication adherence scales for the subsequent analyses.

8.5.2. Screening for effects of active symptoms on the data. A small number of participants (22) reported or displayed active psychotic phenomena, mania, or very disorganised behaviour during data collection. Statistical analysis was conducted to determine if these scores may compromise the data set and if these participants should be excluded from the study. This subsample was compared to the remaining dataset to establish if there were any differences in responses.

Due to the low sample size of those who were flagged as having active symptoms, statistical methods to establish differences between these groups were limited. To overcome this, a series of two one-way, between-groups multivariate analysis of variance (MANOVA) were performed. The MANOVAs assessed for differences between the two groups by comparing scores for the flagged ($n=22$) and non-flagged ($n=132$) participants across each of the scales. The MANOVA procedure is robust to departures in normality when performed on equal sample sizes, and as such the unequal sample sizes were addressed by taking ten, separate, random samples of 22 participants from the non-flagged participant data ($n=132$). Each of the ten random samples consisting of 22 non-flagged participants was then compared with the same 22 flagged participants over ten separate MANOVAs.

8.5.3. Contextual effects on the data. The data was obtained from 30 different Mind Australia programs. Contextual factors within each of these recruitment sites may have contributed to the variance of the variables and the data.
cannot be assumed to contain independent observations between program sites (Duan, 2003). To take into account any contextual features of the data, and to ensure the assumption of independent observations was met, the design effect for each variable used in the analysis was calculated using the MPlus statistical package. Muthen (1999, October 29) suggests that when considering the cluster effects in data, the size of the design effect should be calculated. The design effect is a function of the intraclass correlation and the mean cluster size, $1 + (\text{mean cluster size} - 1)$ multiplied by the intraclass correlation. Muthen (1999, October 29) suggests that a design effect of greater than two would indicate a clustering in the data.

8.5.4. Reliability. To ensure reliable measures were used to explore the variables in the study, all of the scales were assessed for reliability. For a measure to be reliable, the indicators associated with the concept must be correlated with one another. The Cronbach’s alpha (Cronbach, 1951) is the most widely used method for assessing internal consistency reliability in social science research (Bollen, 1989). Typically, the acceptable level of item reliability is based on Cronbach’s coefficients greater than .70 (Tabachnick, 2007). This measure is sensitive to scales with a low number of items, and smaller scales can still demonstrate an acceptable reliability with coefficients over .50 (Nunnally, 1978).

8.5.5. Validity and the development of measurement models. The first aim of the study was to develop measurement models to be used in the SEM, and to assess the goodness-of-fit of established factor structures for each scale to provide validity for the constructs measured. The SEM approach requires the development of measurement models which have been validated through Confirmatory Factor
Analysis (CFA) prior to the modeling process (Bollen, 1989). Existing measurement models for each scale were tested and modified in order to provide conceptually clean measures which reflect true co-variation with no conceptual overlap. Where there was an existing model for the construct in the literature, a CFA using Maximum Likelihood (ML) as the estimation method was conducted to examine the goodness-of-fit of these previously proposed models. On two of the scales (the RAS and the Brief COPE), adequate fit was unable to be established with measurement models reported from previous authors, and as such an Exploratory Factor Analysis (EFA) was conducted on the scales to further examine their factor structure. Despite this somewhat unusual approach of conducting an EFA and CFA on the same data set, the CFA was conducted after the EFA in order to use a more powerful test which allows for the examination of a range of goodness-of-fit indices, modification indices, and a standardised residual covariates matrix. Ideally, a separate sample would have been utilised for the CFA, however, the difficulty in obtaining a sizable sample in this population restricts this approach.

Validity refers to the degree to which a measure accurately assesses a specific concept. Construct validity is demonstrated when a measure can provide a good representation of the variables it was intended to measure (Kline, 2004). In order to demonstrate construct validity in the one-factor congeneric measurement models in the study, the indicator variables contributing to the latent variable must all be valid measurements. Goodness-of-fit measures can confirm the construct validity of a specific factor and these measures were used for this purpose. One form of construct validity is convergent validity, which is demonstrated when each of the indicator variables for one construct are at least moderately correlated among themselves (Bollen, 1989).
Discriminant validity refers to the absence of correlations between theoretically different constructs. That is, the indicator items should show stronger loading on to the factor they are intended to measure and not on other domains (Bollen, 1989). Discriminant validity of the scales was assessed by a comparison of each of the items for the latent variables across each of the other scales. Items were removed if they failed to discriminate among other items on the same scale or separate scales, that is, if they had a higher correlation with another factor.

A series of one factor congeneric models using ML were developed in order to examine the unidimensionality of the constructs and as a pre-test to provide validity for the Cronbach’s alpha reliability measures for the scales. For smaller samples with non-normal data, the chi square estimate of fit often results in rejection of a good fitting model (Bollen & Stine, 1993; Boomsma, 1983). While estimation methods exist that do not require distributional assumptions to be met (e.g., weighted least squares (WLS) or asymptotically distribution-free (ADF); Browne, 1984), they require very large sample sizes, which are not feasible in many social science studies, including the current study (Muthén, 1993). Therefore, to address non-normality and limitations in the sample size, any influential outliers were removed and the Bollen-Stine bootstrap $p$ (Bollen & Stine, 1992) was applied as a post-hoc adjustment when there was significant multivariate kurtosis. Bootstrapping in the AMOS program is a resampling procedure which creates random sub-samples drawn from the original data set in order to assess of the variability of parameter estimates and fit indices and therefore provides more accurate values (Byrne, 2001).

The variance of the latent variable was set to unity and all loadings were freely estimated to examine whether the item indicators were significantly reflective indicators for the latent construct. When there were only three indicators for a single
latent variable, a pair of referent items were set to equality in order to establish one degree of freedom and assess the goodness-of-fit for the proposed model.

Identification of referent items was conducted in line with Van de Vijver and Harsveld (1994) who suggest that the factor loadings of the unconstrained CFA model be examined and items with the most similar loadings should be used as referent items.

Redundant items not adequately explaining the data were removed to preserve the unidimensionality and achieve adequate fit. The removal of these items was based on an examination of the standardised residual covariates matrix and the modification indices. Items on the standardised residual covariates matrix which were not adequately explaining the proposed relationships in the model were prioritised to be removed in accordance with modification indices. Once acceptable one-factor congeneric models were obtained, an independent multi-factor measurement model was also specified for the scale to cross-validate the model and establish discriminant validity across the items for each scale and its separate factors.

Fit indices were used to assess the appropriateness of the model based on the covariance structure of the observed data. The Chi Square Index has been shown to be sensitive to violations of normality and smaller sample sizes and as such, other indices were also used to substantiate model fit. The following fit indices were used: Normed Chi Square (CMIN/DF; values of less than 3 and more than 1 are desirable), Goodness-of-Fit Index (GFI; Hair, Anderson, Tatham, & Black., 1998: values of 0.95 or greater are desirable), Adjusted Goodness-of-Fit Index (AGFI; Hair et al., 1998: should be above 0.95), Tucker Lewis Index (TLI; Hair et al., 1998: should be above 0.95), the Standardised Root-Mean-Square Residual (SRMR: values of 0.05 or less are desirable), the Comparative Fit Index (CFI, Bentler, 1990: suggests values of 0.95 or
greater are desirable), and the Root Mean Squared Error of Approximation (RMSEA, Browne & Cudeck, 1993: values of 0.08 or less are desirable).

8.5.6. Relationships between variables. The second aim of the study was to examine the relationships between the clinical variables in the study and the dependent variables of recovery and functional disability. The third aim was to examine the relationships between the psychosocial variables in the study and the variables of recovery and functional disability. Two-tailed Spearman’s correlations were used to test the hypothesised relationships. A non-parametric correlational analysis was used due to the non-normality of some of the variables. Further, relationships between the independent variables in the study were also examined using correlational data. This analysis included an exploration of the relationships presented in aim five (between the clinical variables among themselves), and aim six (between the psychosocial variables).

8.5.7. Regression analysis. To investigate which factors uniquely contribute to recovery and functioning outcomes above that of current affect, two hierarchical regressions were performed. It was expected that the psychosocial variables would contribute to recovery (hypotheses 6) and functioning outcomes (hypotheses 7) over and above that of the more traditional clinical variables that are often the focus of outcome studies and treatment approaches for SMI. Due to the potential influence of affect at the time of data collection, current affect was entered as a control variable. The first regression explored the contributions of the independent variables with regard to recovery scores, and the second with regard to functional disability scores. Current affect was entered in the first step to control for affect at the time of data collection.
collection. Clinical variables were entered at step two, and psychosocial variables at step three. Due to the large number of variables and limited sample size, clinical and psychosocial variables were only included as independent variables if they had a significant correlation with the dependent variable.

Based on Tabachnick and Fidell’s (2001) formula \( N > 50 + 8m \); where \( m \) = number of independent variables), the sample size \( n = 154 \) was adequate for inclusion of up to 13 independent variables for regression analyses. Thus, the sample size was sufficient for all regression analyses undertaken. Test assumptions were examined for each analysis. A \( p < .001 \) criterion for Mahalanobis’ distance was used to identify multivariate outliers. The assumptions of normality, linearity, homoscedasticity, and independence of residuals were examined through inspection of the residuals scatterplot and normal probability plot of the regression standardised residuals. The assumption of multicollinearity was established through examination of the correlation matrix and variance inflation factor scores.

8.5.8. Structural equation modeling. SEM was used to test possible predictive relationships between variables and determine how well the observed data fit into the hypothesised models presented in Aims 5 and 6. In addition to the investigation of the independent variables with regard to recovery and functional disability, the relationships between independent variables were examined. Of particular interest was to test the attachment framework and examine how attachment style (anxiety and avoidance) and schema variables relate to each other and how these variables relate to coping (Hypotheses 13 and 14).

Two structural models were examined; the first depicted the clinical variables and their relationship to recovery and functional disability (presented in Aim 5),
whilst the second depicted the psychosocial variables and their relationship to recovery and functional disability (presented in Aim 6).

The associations between the clinical variables are based on outcome studies for people with an SMI, which suggest that more severe symptoms, higher substance use, and low medication adherence is predictive of poorer outcome (Addington & Addington, 1993, 2007; Bellack, 2006; Bolton et al., 2007; Fialko et al., 2008; Mauri et al., 2006; Stefanopoulou et al., 2009). Substance use has been negatively associated with medication adherence (e.g., Ziguras et al., 2001) and both substance use (e.g., Addington & Addington, 2007; Bartels, 1993; Mauri et al., 2006; Petersen et al., 2008; Wilkins, 1997), and low medication adherence (e.g., McEvoy et al., 1984; Ziguras et al., 2001) have been associated with more severe symptoms.

It remains unclear whether substance use can lead to more severe symptoms or vice versa. Both pathways are plausible, and the research suggests that substance use may be both a form of self-medication, and can also contribute to the incidence of SMI (Addington & Addington, 2007; Hambrecht & Häfner, 1996). Similarly, it is unclear whether severity illness indicators such as staff reported severity and hospitalisations can lead to higher medication adherence or whether non-adherence may lead to more hospitalisations and more severe illness. It is likely that both occur. As such, directionality between many of the clinical variables could not be assumed for the clinical SEM model. For the purposes of exploration of the current data, it was of interest to try to better understand the mechanism(s) which mediate the relationship between illness severity and recovery and functional disability. As such, it was hypothesised that medication adherence and substance use would mediate the relationship between illness severity and recovery and functional disability (Hypothesis 12). It is acknowledged that alternative plausible configurations of the
data may be valid, and as such an alternative configuration using severity of illness as a mediating variable was also tested.

The second SEM model presents the psychosocial variables and examines the associations between them and recovery and functional disability using an attachment framework (presented in aim six). On the basis of the existing literature explored earlier in this section, each of the variables in the psychosocial model has empirical links to attachment theory. Each of these variables has also been linked to recovery and functional disability in SMI populations. The directions of the associations in the proposed model are based on these previous findings.

SEM was used to test possible predictive relationships and determine how well the observed data fit into these hypothesised models. The measurement models validated through CFA were fitted into a structural path model using latent constructs. This process allows for the measurement errors of the scales and also provided a goodness-of-fit for the theoretical model for the sample data (Bollen, 1989).

8.5.8.1. Sample size. There are varied recommendations with regard to sample size for obtaining unbiased test statistics and meaningful parameter estimates in SEM. Loehlin (1992), as well as Schumacker and Lomax (2004), recommend at least 100-150 cases, while Boomsma (1983) suggest a sample size greater than 200. Anderson and Gerbing (1984) reported that a sample size of 150 is usually sufficient for models with three or more indicators per construct. Kline (2004) recommends the minimum sample size in terms of the ratio of cases to free model parameters should be 10:1 in order to obtain appropriate parameter estimates, and a ratio of 5:1 would usually result in stable parameter estimates. Hair et al. (1998) suggest 5-20 observations per weight. For the following study a sample size of over 154 was deemed sufficient with at least
17 observations per weight, which will provide a good indication of parameter estimates. Statistical procedures such as item parceling and use of several model fit indices were also utilised in the modeling to limit the impact of a smaller sample size.

8.5.8.2. Estimation methods and checking distributional assumptions. SEM was used to analyse the data using the AMOS 7 software package. ML was used as the estimation method and assumes multivariate normality and continuity of the data being analysed. To address non-normality and limitations in the sample size, influential outliers were removed and the Bollen-Stine bootstrap $p$ (Bollen & Stine, 1992) was applied as a post-hoc adjustment when there was significant multivariate kurtosis. Further to this, item parceling was utilised to address concerns of non-normality, limited sample size, and to form continuous variables for models. Item parceling is often used to address a variety of data problems including data non-normality, low sample size to variable ratio, and unstable parameter estimates (Bandalos & Finney, 2001; Bollen, 1989). Assumptions for the item parceling technique includes the unidimensionality of the items being parcelled (Bandalos, 2002), this was assessed during the testing and adaptation of measurement models.

8.5.9. Mediational hypotheses. There were several hypothesised mediations for the current study. It was hypothesised that substance use and medication adherence would mediate the relationship between illness severity and recovery as well as the relationship between illness severity and functional disability (Hypothesis 12). It was also hypothesised that schematic beliefs would mediate the relationship between attachment style and recovery and functional disability (Hypothesis 16).
Finally, it was hypothesised that coping style would mediate the relationship between schematic beliefs and recovery and functional disability (Hypothesis 17).

When a variable acts as an intermediate influencing variable between an independent variable and a dependent variable, it is said to be a mediator (Preacher, 2001, March 1). A popular test for mediation used in social sciences was provided by a seminal article by Baron and Kenny (Baron & Kenny, 1986). The Baron and Kenny (1986) mediation model has been criticised for its low statistical power in most situations (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), and formal testing can provide a more powerful statistical technique (Preacher & Hayes, 2004). More formal methods of establishing mediation can control for Type I and Type II errors (Preacher & Hayes, 2004). To formally test indirect effects and mediation hypotheses, the bootstrapping technique using SEM was applied according to recommendations by Shrout and Bolger (2002). This was done as an alternative to the Sobel test which can be overly conservative (MacKinnon, Warsi, & Dwyer, 1995).

For a mediation model in SEM, there must be significant paths for the model in the directions predicted, and evidence of a significant indirect effect between the predictor variable and the dependent variable (Holmbeck, 1997). A significant relationship between the predictor variable and the dependent variable needs to be established prior to the addition of the mediating variable as it is possible to have indirect effects which are not mediating relationships if this initial relationship does not exist (Holmbeck, 1997). Mediation is achieved when the previously significant relationship between the predictor variable and the dependent variable does not improve model fit and is reduced to non-significance (full mediation) or reduced but still significant (partial mediation) (Holmbeck, 1997).
The models were assessed for model fit by examining by the $p$ value of the $\chi^2$ test and the Bollen-Stine bootstrap $p$ when data was non-normal, whereby a $p$ value less than .05 indicates a discrepancy between the model and the data, and $p$ value greater than .05 indicating good fit. Other substantiating fit statistics were also utilised (CMIN/DF, GFI, AGFI, TLI, SRMR, CFI, and RMSEA). The standardised residuals covariance matrix (absolute values $> 2$), was used to indicate where the model is unable to explain an association between two variables in the data. In addition, the significance of parameter estimates was also examined.

### 8.6. Materials

Instruments were selected based on their previously established sound psychometric properties and prior use in SMI populations, suitability to address the research questions, as well as for their simplicity and conciseness. Shorter scales and scales using simply worded items were prioritised in order to minimise participant burden.

The questionnaire pack contained the RAS, the Positive and Negative Affect Schedule (PANAS), which measures current affect, the Brief Core Schema Scale (BCSS) which measures participants’ evaluative beliefs about themselves and others, the Brief COPE scale measuring a variety of coping strategies, the Sheehan Disability Scale (SDS), measuring the subjective impact of mental illness symptoms on work/school, social life and home/family life, the Experiences of Close Relationships - Short Version (ECR-S), measuring adult attachment anxiety and avoidance, the Medication Adherence Rating Scale (MARS), measuring the degree of medication adherence, the Alcohol Use Disorders Identification Test (AUDIT), measuring the degree of alcohol use, and the Drug Abuse Screening Test (DAST-10), measuring the
degree of drug use, as well as basic demographic information (age, sex, education) (Appendix F). The PANAS scale was administered first to measure current affect before the administration of the other scales, in order to avoid any influence from the questionnaire itself on a participant’s current mood.

8.6.1. The Recovery Assessment Scale. The RAS (Giffort et al., 1995) was used to measure recovery and was a dependent variable. It is a self-report measure developed from the qualitative analysis of four consumer stories, which originally yielded 39 items. Consumers who had experienced an SMI then reviewed these items, resulting in a 41 item, 5-point Likert scale ranging from strongly agree to strongly disagree. Scores yield both a single continuous score of recovery, and separate scores over five factors. The five factors were derived from EFA and CFA factors which are conceptually related to recovery theory. The five factors are “personal confidence and hope”, “willingness to ask for help”, “goal and success orientation”, “reliance on others”, and “no domination by symptoms” (Corrigan & Phelan, 2004). The five factor structure has been validated with SMI populations in USA, Australia, and Japan (Chiba et al., 2010; Corrigan et al., 2004; McNaught et al., 2007).

High correlations between the confidence and hope, and goal, success orientation subscales have been found by previous authors who suggest that these two factors both contain similar themes of hope or positive future-orientation. The same authors suggest that analysis “may benefit from focusing on the possible reduction of similarity between these two factors” (McNaught et al., 2007, p. 454). Further, authors have suggests that not all elements of recovery have been captured by the confirmed factor model (McNaught et al., 2007). Items referring to illness self-efficacy such as “I understand how to control the symptoms of my mental illness” and
"I can help myself become better" were omitted by previous authors during factor analysis to establish a viable model.

Previous studies have reported that the internal reliability of the RAS in SMI populations across the five factors range from .74 to .93 using Cronbach’s alpha, and the RAS has been found to be reliable in adults from diverse cultural backgrounds (Campbell-Orde et al., 2005; Corrigan & Phelan, 2004). The RAS has also been validated in an Australian SMI population (McNaught et al., 2007). Test-retest reliability was determined by administering the test twice within 14 days ($r = .88$).

The relationships with other measures (empowerment scale, subjective component of Lehman’s Quality of Life interview, the short version of the social support Questionnaire, and the Rosenberg Self-Esteem Scale) have been used within studies to establish concurrent validity (Campbell-Orde et al., 2005; Ralph et al., 2000).

Divergent validity for the RAS has also been established with traditional outcome measures which assess functioning and symptoms such as the Health of the Nation Outcome Scales, and the Kessler-10 (McNaught et al., 2007).

**8.6.2. The Experiences of Close Relationships - Short Version.** The ECR-S (Brennan et al., 1998) was used in the current study to measure attachment-related anxiety and avoidance. The scale was derived from a large factor analysis of items from a range of self-report measures for adult attachment which revealed a two-dimensional anxiety and avoidance model underlying most measures of attachment style (Brennan et al., 1998; Mikulincer & Shaver, 2006).

There are different versions of the ECR including the original scale, and a revised version (both consisting of 36 items) as well as a short version (Mikulincer & Shaver, 2006; Wei, Russell, Mallinckrodt, & Vogel, 2007). The current study used a
16-item short version of the ECR which contains items from the original version and was provided by one of the authors of the ECR (P. Shaver). Slight alterations to the wording of the ECR-S items and its instructions is accepted for the scale in order to make it applicable to either specific relationships, general orientation in romantic relationships, or (as was done in the current study) a general attachment style in a range of relationships (Mikulincer & Shaver, 2006). The current study replaced the word “partners” with “others”. For example instead of “I prefer not to show my partner how I feel deep down” the item used was “I prefer not to show others how I feel deep down”. The ECR-S requires participants to think about their close relationships, without focusing on a specific partner, and rate the extent to which each item accurately describe their feelings in close relationships, using a 7-point scale ranging from strongly disagree (1) to strongly agree (7). Both the attachment anxiety and attachment avoidance factors contain eight items. The avoidance subscale measures the extent to which a person is comfortable with closeness and dependence in romantic relationships. The anxiety subscale is designed to measure the extent to which a person is worried about being rejected, abandoned, or unloved. Odd numbered questions relate to the avoidance dimension (reported α = .94) whilst even numbered questions relate to the anxiety dimension (reported α = .91) (Mikulincer & Shaver, 2006).

The two dimensions have been shown to be orthogonal dimensions of attachment ($r = .08$) that are conceptually linked to Bartholomew’s (1990) analysis and Ainsworth’s (1978) discriminant analysis (Hwang, 2006; Mikulincer & Shaver, 2006). The attachment anxiety factor parallel Ainsworth and colleague’s category describing anxiously attached infants and incorporates fear of abandonment and anger about separations. Items on the avoidant attachment scale are reflective of Ainsworth
et al. (1978) concept of avoidantly-attached infants which describes a lack of
closeness and emotional suppression (Mikulincer & Shaver, 2006). A high score on
the anxiety scale also corresponds to Bartholomew’s (1990) preoccupied category,
whilst high scores on the avoidance scale correspond to the dismissing category, and
high scores on both scales correspond to the fearful category (Mason et al., 2005).
Safe attachment is only able to be indirectly measured by low scores in both factors
(Mikulincer & Shaver, 2006).

The ECR has been widely used in research, and has consistently displayed high
reliability with Cronbach’s alphas above .90 (Mikulincer & Shaver, 2006). There are
some reports of variability in the test-retest reliability over relatively short periods of
time with coefficients ranging from .50 to .75, however a more recent study by Sibley
consistent factor structure (e.g., Sibley & Liu, 2004), and sound construct validity, for
the two subscales has been demonstrated in a wide variety of samples (Mikulincer &
Florain, 1995), including clinical populations (e.g., Mason et al., 2005).

8.6.3. The Brief Core Schema Scale. The BCSS (Fowler et al., 2006) was
used in the current study to measure cognitive schemas about self and others. The
BCSS is a recently developed 24-item self-report measure designed to assess schemas
of self and others in psychosis populations (Addington & Tran, 2009). The scale
scores are assessed on a five point rating scale ranging from believe it slightly (0) to
believe it totally (4). The scale generates four factor scores: negative self-schema (6
items; e.g., “I am weak”, “I am bad”), positive self-schema (6 items; e.g., “I am
respected”, “I am valuable”), negative others-schema (6 items; e.g., “other people are
unforgiving”, “other people are bad”) and positive others-schema (6 item; e.g., “other
people are good”, “other people are trustworthy”). Items for the negative-self factor were derived from global negative self-descriptors of personality used by previous authors Teasdale and Dent (1987) and Teasdale and Cox (2001) (Fowler et al., 2006). Items for the remaining factors were derived on the basis of clinical experience and aim to encompass what clients report to their therapists (Fowler et al., 2006; Smith et al., 2006). Participants were asked to indicate whether they held each belief in a dichotomous no/yes format. If they endorsed the belief, they were asked to indicate how strongly they held that belief. Response options ranged from 1 (believe it slightly) to 4 (believe it totally) (Fowler et al., 2006). The four-dimensional structure is consistent with the quadrant model proposed by Bartholomew and Horowitz (1991).

The BCSS shows good internal consistency and has Cronbach’s alpha coefficients ranging from .76 to over .78 (Fowler et al., 2006; Smith et al., 2006). Factor analysis of the BCSS showed a four factor solution consistent with the four factors which accounted for 57% of the variance (Smith et al., 2006). Test-retest reliability for the BCSS sub-scales in a non-clinical population ranged from .70 to .84 (Fowler et al., 2006). The BCSS has shown sound concurrent validity with Young’s Schema Questionnaire and the Rosenberg Self-Esteem Scale, and discriminant validity from mood (Addington & Tran, 2009; Fowler et al., 2006).

8.6.4. The Brief COPE. The Brief COPE (Carver et al., 1989) was used in the current study to assess coping styles. The Brief COPE is a 28 item scale that assesses a range of different coping strategies and consists of fourteen subscales: active coping, planning, positive reframing, acceptance, humour, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioural disengagement, and self-blame. These subscales can be used as separate
factors or combined in several ways. The subscales can be divided into broad categories representing adaptive coping and potentially dysfunctional coping styles, or emotion-focused versus problem-focused coping (Carver, 1997; Carver et al., 1989). Authors also suggest the use of individual subscales (Carver, 1997).

The Brief COPE scale itself consists of 28 statements describing different ways people may cope when they are under stress, and statements are rated on a 4-point scale ranging from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot). The original COPE was developed as a comprehensive questionnaire of theoretically derived coping styles or strategies. The abbreviated version used in the current study was developed on the basis of these coping styles with two subscales removed, three subscales refocused, and with the number of items per subscale reduced (Carver, 1997).

Due to the recent development of the Brief COPE, much of the psychometric information has been generalised from the original COPE scale. The original COPE scale shows strong convergent and discriminant validity as well as adequate reliability (Carver et al., 1989; Clark, Bormann, Cropanzano, & James, 1995; Horan & Blanchard, 2003). The Brief COPE Scale displays high internal reliability for the religion (α=.82) and substance use (α=.90) subscales, and acceptable values for planning (α=.73), humour (α=.73), using emotional support (α=.71), and self-distraction (α=.71). Lower reliabilities were reported for self-blame (α=.69), active coping (α=.68), behavioural disengagement (α=.65), positive reframing (α=.64), acceptance (α=.57), using instrumental support (α=.64), denial (α=.54), and venting (α=.50) (Carver, 1997). However all reliabilities were considered adequate based on the low item numbers for which Nunnally (1978) suggests a minimal acceptance of .50. Both the Cope and Brief COPE have been validated in a range of populations
including in SMI (e.g., Horan & Blanchard, 2003; Meyer, 2001), and culturally diverse, populations (e.g., Muller & Spitz, 2003; Yusoff et al., 2009).

The Brief COPE scale shows a complex factor structure which is not entirely consistent with the 14 scale structure. An EFA in a non-clinical sample by Carver (1997) yielded nine factors with eigenvalues over 1.0. That study found four distinct factors: substance use, humor, religion, and behavioural disengagement, whilst emotional support seeking and instrumental support seeking formed one factor, and active coping and planning items also loaded onto the same factor. An EFA has also been conducted for the Brief COPE in an SMI population, and similarly found some substantial overlap between emotional support seeking and instrumental support seeking as well as active coping and planning (Meyer, 2001).

8.6.5. The Positive and Negative Affect Schedule. The PANAS (Watson, Clark, & Tellegen, 1988) was used in the current study to measure participants’ current affect. The scale was developed from previous existing measures through factor analysis. The resulting PANAS is a 20-item self-report mood scale which consists of 10 items assessing positive emotions (e.g., “interested”, “excited”, “alert”) and 10 negative affects (e.g., “distressed”, “irritable”, “nervous”). Participants rate their level of intensity of emotions at the time of completing the questionnaire ranging from 1 (very slightly or not at all) to 5 (extremely). The resulting scores reflect two affective dimensions, with high negative affect (NA) suggesting subjective distress and unpleasurable engagement, and high positive affect (PA) suggesting pleasurable engagement with the environment (Watson et al., 1988). Crawford and Henry (2004) concluded from a CFA that the two factors in the PANAS represent two distinct, but moderately negatively correlated, factors. Low scores suggest an absence of these two
dimensions. There is variation in the time frames used for the PANAS, but for the purposes of the current study the time frame adopted was “right now”.

Factor analysis and CFA in clinical and general samples has provided evidence for construct validity for the two distinct factors in the PANAS corresponding to positive and negative affect (Crawford & Henry, 2004; Crocker, 1997; Dyck, Jolly, & Kramer, 1994; Watson et al., 1988). There is evidence for convergent and discriminant validity across a range of populations (Lovejoy & Steuerwald, 1995; Watson et al., 1988), and the PANAS has been shown to be more effective at differentiating between depression and anxiety in clinical samples than many other scales (Crawford & Henry, 2004; Dyck et al., 1994). The internal reliability of the PA subscale ranges between .86 and .90, and for the NA subscale ranges between .84 and .87, whilst test-retest reliability has been deemed adequate in numerous studies including with clinical populations (Lovejoy & Steuerwald, 1995; Watson et al., 1988).

8.6.6. The Medication Adherence Rating Scale. The MARS (Thompson et al., 2000) was used in the current study to measure participants’ medication adherence. It is a brief self-report measure comprising 10 items with a dichotomous format (yes or no) that measures beliefs and behaviours related to non-adherence of medication such as “Do you ever forget to take your medication?”. The MARS was developed as a measure of medication adherence behaviour in psychosis populations, using items from two existing scales (the Drug Attitudes Inventory; Hogan, Awad, & Eastwood, 1993, and the Medication Adherence Questionnaire; Morisky, Green, & Levine, 1986). Scores on the MARS range from 0 to 10 and indicate the likelihood of medication adherence. It remains unclear which specific cut off scores can best
discriminate between adherence and non-adherence on the MARS (Pomykacz, Mao, Weiss, & Teter, 2007). Generally, those who score higher than 7 on the MARS are considered highly adherent to prescribed medications (Thompson et al., 2000).

The MARS has shown moderate-to-high internal consistency (Cronbach’s alpha ranged from .60 to .75), good test-retest reliability over two weeks and 12 month periods, as well as convergent validity in SMI populations (Fialko et al., 2008; Thompson et al., 2000). A three factor model has been validated for the MARS with factors representing medication adherence behaviour (items 1–4; accounting for 32% of the variance), attitude toward taking medication (items 5–8; accounting for 16% of the variance) and negative side-effects and attitudes to psychotropic medication (items 9 and 10; accounting for 12% of the variance) (Fialko et al., 2008; Thompson et al., 2000). Construct validity has been found to be satisfactory, whilst scores on the MARS correlate positively with scores on other medication adherence instruments and with biological measures such as blood results (Thompson et al., 2000). The MARS total score does not, however, appear to correlate with carer-rated medication adherence (Cochran & Gitlin, 1988; Fenton, Blyler, et al., 1997) or staff-rated medication adherence (Fialko et al., 2008). However, the MARS factor one medication adherence behaviour has been found to correlate positively with staff-rated medication adherence, and is considered to be the strongest factor in predicting medication adherence (Fialko et al., 2008).

8.6.7. The Alcohol Use Disorders Identification Test. The AUDIT (Saunders, Aasland, Babot, De La Fuente, & Grant, 1993) was used in the current study to identity those participants experiencing alcohol problems or who are at risk of alcohol problems. The AUDIT is a 10-item self-report instrument designed to identify
individuals whose alcohol use places them at risk or who are experiencing problems with alcohol use over the past year. Responses are on either a 3 option response format (response options are 1- no, 2- yes, but not in the last year, and 3- yes, during the last year) or 5 range response format (response options are either 1- never, 2- less than monthly, 3- monthly, 4- weekly, and 5- daily or most daily). Items 1 and 2 contain 5 response options pertaining to the frequency and quantity of alcohol use. Total scores range from 0 to 40. The current sample included people who do not drink alcohol, and item 2 on the AUDIT does not provide non-drinkers with an option for an appropriate response. As such, a “n/a” option was added for this item. Scores of “n/a” were combined with the “1 or 2” response and were both scored as 0. This adaptation did not affect the total scores of the instrument.

Higher scores on the AUDIT are indicative of more problematic experiences with alcohol, and the scale can be used as a continuous score, or as categorical score. Scores of 8 or above suggest the presence of current risk of alcohol problems or current experience of alcohol problems (Conigrave, Hall, & Saunders, 1995). Maisto, Carey, Carey, Gordon, and Gleason (2000) suggest cut off points of seven and eight on the AUDIT show good sensitivity (.75 and .90) and specificity (.65 and .70) for current DSM-IV diagnoses, and sensitivity and specificity figures are higher for substance use disorder symptoms. Of the individuals having an AUDIT score of 8 or more, between 95 and 100% would be considered to be consuming hazardous amount of alcohol, between 93% and 100% would be considered to have abnormal drinking behaviour, and all would be considered alcohol dependent (Dawe, Loxton, Hides, Kavanagh, & Mattick, 2002). A higher AUDIT cut off score of 10 was suggested by Cassidy, Schmitz, and Malla (2007), who found that this cut off score showed good sensitivity (.85) and specificity (.91) in first episode psychosis populations.
The AUDIT was intended to measure three factors: alcohol consumption, alcohol dependence, and alcohol-related consequences. Previous studies (e.g., Doyle, Donovan, & Kivlahan, 2007; Karno, Granholm, & Lin, 2000; Maisto, Conigliaro, McNeil, Kraemer, & Kelley, 2000) have found the scale to contain two or three factors. Due to high correlations between two of the factors, it is generally agreed that it contains two distinct factors: Alcohol Consumption (items 1-3) and Dependence/Consequences (items 4-10) (Doyle et al., 2007).

Empirical evidence suggests good internal consistency for the AUDIT with Cronbach’s alphas ranging from .80 - .94, and good test-retest reliability over 1-week (.96) and 6-week periods (.88) (Barry & Fleming, 1993; Dawe et al., 2002; Doyle et al., 2007). Evidence for its validity can be seen in the moderate-to-high correlations (.62 to .85) with other self-report screening tests such as the MAST, CAGE, and the MacAndrew Scale (Bohn, Babor, & Kranzler, 1995; Doyle et al., 2007; Hays, Merz, & Nicholas, 1995; Saunders et al., 1993). The AUDIT has also demonstrated adequate predictive validity (Barry & Fleming, 1993). The AUDIT has been used widely in culturally diverse populations and it has been validated in SMI populations (Cassidy et al., 2007; Dawe et al., 2002; Doyle et al., 2007; Karno et al., 2000; Maisto, Carey, et al., 2000).

8.6.8. **The Drug Abuse Screening Test – 10 item scale.** The DAST-10 (Skinner, 1982) was used in the current study to identify drug misuse (of any type of drug with the exception of alcohol, nicotine, or caffeine) in the sample. The DAST-10 was designed as a brief clinical and non-clinical screening instrument to identify problems with drug use over the past year. The DAST-10 comprising 10 items with a dichotomous format (yes or no) which cover a variety of consequences related to drug
use. It is designed to be non-specific about the drug in order to alleviate the need for various drug specific instruments. The measure has shown clinical utility in SMI populations with a high internal reliability (Cronbach's alphas = .86 and .94) and test-retest reliability (over 7 to 43 days; \( r = .71 \)) (Cocco & Carey, 1998; Maisto, Carey, et al., 2000; Yudko, Lozhkina, & Fouts, 2007).

The DAST-10 scale can be used either as a continuous score, with higher scores being indicative of higher or more problematic drug involvement, or as a categorical score. A cut off score of 2 on the DAST-10 is related to measures of past and current drug involvement and to the presence of a DSM-IV drug use diagnosis in the past year, with good sensitivity (.85) and specificity (.74 and .78) (Maisto, Carey, et al., 2000). Cassidy et al. (2007) found that a cut off score of 3 on the DAST-10 showed good sensitivity (.85) and specificity (.73) in first episode psychosis populations. Although the DAST-10 was not intended for diagnostic purposes due to a relatively low positive predictive validity, it has been shown to be useful in screening for drug use (Maisto, Carey, et al., 2000).

The concurrent validity of the short version of the DAST-10 has been also been assessed. Cocco and Carey (1998) reported that the DAST-10 correlated with other alcohol, drug, and psychiatric indices. Modest relationships have also been found between drug use and positive symptoms, depression, anxiety, paranoia, interpersonal sensitivity, somatisation, obsessive-compulsive behaviour, and the addiction severity index- psychiatric section score (Cocco & Carey, 1998). No significant relationships have been found between the DAST-10 and the number of previous psychiatric hospitalisations or global assessment of functioning scale (from The Structured Clinical Interview for DSM-IV Axis I Disorders) (Cocco & Carey, 1998).
With regard to DAST-10 factors, no clear structure for the DAST-10 has been established (Yudko et al., 2007). Carey, Carey, and Chandra (2003) have shown support for a unidimensional structure in a psychiatric patient population in India. However, Coco and Carey (1998) found three factors with one primary factor which taps into the external consequences of using drugs, accounting for 44% of the total variance. The other two other factors contained only one question each and accounted for a smaller 10% of the total variance, and assessed other aspects of addiction. These single item factors included item 3: “Are you always able to stop using drugs when you want to?”, and item 5: “Do you ever feel bad or guilty about your drug use?”.

Low item–total correlations have been found for item 3 “Are you always able to stop using drugs when you want to?” and authors have suggested removing this item when using the scale in psychiatric populations (Yudko et al., 2007).

8.6.9. Severity of illness. The current study incorporated measures of both objective and subjective severity of symptoms. Objective measures were devised to represent the severity of symptoms, and included both the number of hospitalisations in the past 12 months and reported symptom severity rating from support staff (who had a good understanding of the relevant participant’s symptoms). Support staff were asked to answer the following three questions in relation to a participant: “How severe do you think (insert name)’s mental illness is on a scale of 0 (not severe at all) to 10 (extremely severe), “How severe do you think (insert name)’s positive symptoms are? (i.e., hallucinations, delusions, racing thoughts, hostility, accelerated motor behaviour or a very labile mood )”, and “How severe do you think (insert name)’s negative symptoms are? (i.e., blunted affect, emotional and social withdrawal, apathy, poor rapport, experiencing little or no pleasure, poor social functioning, concrete or
inflexible thinking). The overall severity rating (item 1) was used as an objective report for the participant’s severity of illness. The other items only relate to participants with a psychotic illness, and were not used in the data analysis for the current study.

8.6.10. The Sheehan Disability Scale. The SDS (Sheehan et al., 1996) was used in the current study as a dependent variable to assess the subjective functional disability resulting from mental health symptoms. The SDS is a three-item self-report scale which is designed as a global measure the subjective impact of mental illness in functioning outcomes across three factors (work/school, social life and home/family life) (Sheehan et al., 1996). The scale can be used as an outcome measure for people with SMI (Erkens, Jonker, Blom, Haffmans, & Hoencamp, 2008). In completing the SDS a participant is asked: “To what extent do your symptoms impair your functioning in….”: (1) “….your social life?”; (2) “…your family and home life?”; and (3) “…your ability to work or go to school?”. Responses are rated on a visual analogue scale ranging from 0 (none) to 10, (extreme). Each SDS subscale has a total score ranging from 0 to 10, and the total SDS score ranges from 0 (no impairment across all areas) to 30 (severe impairment across all areas). An elevated SDS score (scores of 5 or above) has been associated with an increased risk of psychiatric impairment (Leon, Olfson, Portera, Farber, & Sheehan, 1997).

The SDS has been used in research regarding numerous psychiatric disorders including bipolar disorder, panic disorder, generalised anxiety disorder, major depressive disorder, obsessive–compulsive disorder, and drug and alcohol dependence (Arbuckle et al., 2009; Leon et al., 1997; Leon, Shear, Portera, & Klerman, 1992; Olfson et al., 1997; Sheehan et al., 1996). The SDS has shown high internal
consistency, with a coefficient alpha of .89 (Arbuckle et al., 2009; Leon et al., 1997). Test–retest reliability was acceptable in a population with bipolar disorder over a 1-2 week period (intraclass correlation coefficient=.73). The SDS is sensitive to changes over time in response to treatment (Arbuckle et al., 2009).

An EFA on the SDS in a population with bipolar disorder showed a single factor solution with high factor loadings (from .90 to .91), confirming the application of a composite score of functional disability (Arbuckle et al., 2009). Construct validity was substantiated by a good fit of the one-factor model, and the observation that patients with psychiatric disorders have significantly higher SDS impairment scores (Arbuckle et al., 2009) than those who do not (Leon et al., 1997). Furthermore, convergent and divergent validity was assessed a population of people with bipolar disorder and showed generally moderate correlations with the concurrent measures. SDS scores have been shown to have discriminant validity when measured against health status, clinician-rated functional status, and clinician-rated depression. High item-scale correlations ranging from .77 to .80 have also been reported for the SDS (Arbuckle et al., 2009).
Part III- Results

Chapter 9. Results: Demographic Characteristics

9.1. Outline of Chapter and Results Section

The results are presented in four chapters. In the first Results chapter (Chapter 9), the sample characteristics and descriptive statistics are presented. This chapter also explores the rates of substance use in the sample, and degree of adherence to prescribed medications. Chapter 10 describes the data screening process and the checking of test assumptions. Chapter 11 reports on the first aim of the study with the development of the measurement models for each of the scales. Chapter 12 presents the results for Aim 2: examining the relationships between clinical variables and recovery and functional disability as well as Aim 3: examining the relationships between psychosocial variables and recovery and functional disability using correlations. Chapter 12 also explores the fourth aim for the study: to identify which of the variables can uniquely contribute to recovery and functional disability, over and above that of current mood, and the clinical variables was examined using hierarchical regression. Finally, the chapter presents the SEM models for clinical (Aim 5) and psychosocial variables (Aim 6) in relation to recovery and functional disability using latent variables.
9.2. Age and Gender Characteristics

Table 1 presents the age and gender demographic information for the current sample.

### Table 1

*Age and Gender Statistics*

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<th>Demographic</th>
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<td>26-35</td>
<td>44</td>
<td>28.57</td>
</tr>
<tr>
<td>36-45</td>
<td>24</td>
<td>15.58</td>
</tr>
<tr>
<td>46-55</td>
<td>9</td>
<td>5.84</td>
</tr>
<tr>
<td>56+</td>
<td>6</td>
<td>3.90</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100.0</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>81</td>
<td>52.6</td>
</tr>
<tr>
<td>Female</td>
<td>73</td>
<td>47.4</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The mean age of participants was 30 years ($SD = 10.54$) and ages ranged from 18 to 62. The average age was slightly lower than the mean age of 39 contained in the 2007/2008 Mind Australia annual report (2008) and is reflective of the youth programs sampled in the study. The sample had an almost equal gender balance (52.6% males and 47.4% females), which is consistent with the more general Mind Australia population (Mind Australia, 2008).
9.2.1. Gender differences. To examine gender differences in the dependent variables, independent-samples $t$-tests were conducted comparing the recovery scores and functional disability scores for males and females. Levene’s test for equality of variances was violated for the RAS and as such the correction for unequal variances was used. There were no significant differences in recovery scores between males ($M=38.88, SD=6.19$) and females ($M=37.30, SD=8.33; t(132.13)=1.33, p=.188$). A $t$-test for functional disability scores found a significant difference between males ($M=14.97, SD=7.48$) and females ($M=17.64, SD=7.87; t(148.42)=-2.16, p=.032$) on the SDS, with males showing higher scores in functional disability. While significant, as the magnitude of the difference was relatively small (Cohen’s $d = .35$), for simplicity gender was not treated as an independent variable.

9.3. Educational Attainment

Data gathered on the highest level of educational attainment achieved is presented in Table 2 alongside comparison data from the Australian Bureau of Statistics National Survey (ABS; 2008) using the general Australian population. Note that some of the participants completed a TAFE course in addition to other educational attainments and as such the percentages total to over 100 per cent.
Table 2

*Highest Level of Educational Attainment*

<table>
<thead>
<tr>
<th>Highest Level of Education Attainment</th>
<th>Current Study Percent</th>
<th>ABS (2008) Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 12</td>
<td>22.7</td>
<td>53.3</td>
</tr>
<tr>
<td>Year 11</td>
<td>14.9</td>
<td>11.3</td>
</tr>
<tr>
<td>Year 10</td>
<td>26.0</td>
<td>24.4</td>
</tr>
<tr>
<td>Year 9</td>
<td>22.1</td>
<td>6.9</td>
</tr>
<tr>
<td>Year 8 or below</td>
<td>3.2</td>
<td>3.9</td>
</tr>
<tr>
<td>TAFE course/ Certificate/ Diploma</td>
<td>20.1</td>
<td>30.8</td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>2.6</td>
<td>15.8</td>
</tr>
<tr>
<td>Postgraduate Degree</td>
<td>1.9</td>
<td>6.2</td>
</tr>
</tbody>
</table>

The highest level of education attainment in the current sample was lower than the general population. Twice the proportion of people from the ABS national survey (2008) had completed their secondary education compared to participants in the current sample, whilst a substantially higher proportion of the current sample reported year 9 as their highest level of educational attainment. Furthermore, fewer people in the current sample had obtained an undergraduate or postgraduate degree, compared with the general population. To establish whether these discrepancies in education are attributable to an unrepresentative sample or to characteristics of the SMI population sampled, further comparisons were made to the National Survey of Mental Health and Wellbeing which consisted of people with a psychotic illness (Jablensky et al., 1999).
Table 3

Sample Comparison for Highest Level of Educational Attainment with SMI Population

<table>
<thead>
<tr>
<th>Highest Level of Education</th>
<th>Current Study Percent</th>
<th>Jablensky et al. (1999) Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary education</td>
<td>22.7</td>
<td>17.9</td>
</tr>
<tr>
<td>Year 10 or below</td>
<td>51.3</td>
<td>58.1a</td>
</tr>
<tr>
<td>Trade or other certificate</td>
<td>20.1</td>
<td>20.0</td>
</tr>
<tr>
<td>Undergraduate, postgraduate award</td>
<td>4.5</td>
<td>11.6</td>
</tr>
</tbody>
</table>

*a Left school at age 16 or earlier.

There was very similar educational attainment profile between the current sample and the sample consisting of people with a psychotic illness from the National Survey of Mental Health and Wellbeing (Jablensky et al., 1999). A comparable proportion of people in the current sample had completed a secondary education, year 10 or below, and a trade or other certificate. There were a smaller proportion of people in the current study that had completed an undergraduate or postgraduate degree, which may be attributable to a younger sample (46.1% of the current sample was aged 25 years or less, whereas only 11.7% of the National Survey’s sample were under 25 years old). Overall, the similar profile suggests that the educational attainment of the current sample is representative of SMI populations, but not of the general population.

9.4. Length in Mind Australia Service

The mean length in a Mind Australia program was 1.7 years and ranged from 0 (the first day was on the data of the data collection) to 14 years. Just over half the current sample (51.4%) had been involved in the program less than 12 months.
Table 4

*Length of Time in Current Program*

<table>
<thead>
<tr>
<th>Length in Program</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2 months</td>
<td>29</td>
<td>18.8</td>
</tr>
<tr>
<td>2 months to &lt; 1 year</td>
<td>51</td>
<td>33.1</td>
</tr>
<tr>
<td>1 year to &lt; 2 years</td>
<td>38</td>
<td>24.7</td>
</tr>
<tr>
<td>2+ years</td>
<td>36</td>
<td>23.4</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100.0</td>
</tr>
</tbody>
</table>

9.5. *Current Diagnosis*

The current DSM-IV-TR diagnosis of participants as reported in their case files is presented below. Almost three quarters of the sample contained participants who had been diagnosed with a psychotic illness (109 people, 71%). Just over half the sample had a primary diagnosis of schizophrenia (51% of sample). Almost 29% of the participants also had at least one comorbid diagnosis, and a further four people had a third comorbid diagnosis (for full list of diagnoses see Appendix G). The diagnoses obtained in the current sample are reflective of the Mind Australia population based on statistics obtained from the Mind Australia 2007 annual report (2007) which found 56% of consumers had a diagnosis of schizophrenia, with lower instances of major depressive disorder (12%), bipolar I and II disorder (9%), schizoaffective disorder (8%) and borderline personality disorder (4%).
Table 5

*DSM-IV-TR Mental Illness Diagnoses*

<table>
<thead>
<tr>
<th>Primary Diagnosis</th>
<th>$n$</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>79</td>
<td>51.30</td>
</tr>
<tr>
<td>Other Psychotic Illness</td>
<td>30</td>
<td>19.48</td>
</tr>
<tr>
<td>Bipolar Disorders</td>
<td>11</td>
<td>7.14</td>
</tr>
<tr>
<td>Borderline Personality Disorder</td>
<td>8</td>
<td>5.19</td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>9</td>
<td>5.84</td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder</td>
<td>6</td>
<td>3.90</td>
</tr>
<tr>
<td>Social Phobia</td>
<td>4</td>
<td>2.60</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>4.55</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Diagnosis</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No diagnosis</td>
<td>110</td>
<td>71.4</td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>17</td>
<td>11.00</td>
</tr>
<tr>
<td>Borderline Personality Disorder</td>
<td>10</td>
<td>6.5</td>
</tr>
<tr>
<td>Anxiety Disorder</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Eating Disorder</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Intellectual Disability</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Acquired Brain Injury</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Asperger’s Disorder</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Cerebral Palsy</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100</td>
</tr>
</tbody>
</table>

9.6. **Number of Hospitalisations in the Previous 12 Months**

In the current sample, 39% of participants had been admitted to a psychiatric hospital on at least one occasion during the previous 12 months. Of those who had had a hospitalisation within the previous 12 months, most (60%) had a single
admission. These figures are slightly higher than those obtained from the National Survey of Mental Health and Wellbeing survey which found that 43% of participants surveyed had been admitted to a psychiatric unit in the previous 12 months (Jablensky et al., 1999).

Table 6

<table>
<thead>
<tr>
<th>Number of Hospitalisations in the past 12 months</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>94</td>
<td>61.0</td>
</tr>
<tr>
<td>1</td>
<td>36</td>
<td>23.4</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>9.1</td>
</tr>
<tr>
<td>&gt; 3</td>
<td>10</td>
<td>6.5</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100.0</td>
</tr>
</tbody>
</table>

9.7. Substance Use

In order to examine substance use in the current sample, the cut off scores for the DAST-10 and AUDIT cited by previous authors were compared to results from mixture modeling. Using the MPlus statistical package, mixture modeling enabled observations in the data to be categorised into groups, which can then be compared to previously reported categories for the scales.

9.7.1. Drug use. Mixture modeling for the DAST-10 found that both the Vuong-Lo-Mendell-Rubin test and the bootstrapped parametric likelihood ratio test were significant, suggesting three drug use categories were more appropriate than two.
This implies three patterns of drug use found in the data: those who are “low users or abstainers”, “moderate or irregular users”, and “regular users”. Within the three groups, mixture modeling classified 27% of the observations as regular users, 31% as moderate or irregular users, and 42% as abstainers or low users falling in this group.

Table 7

Categories for Drug use

<table>
<thead>
<tr>
<th>Level of Drug use</th>
<th>Class Counts</th>
<th>Proportion</th>
<th>M</th>
<th>DAST-10</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>42</td>
<td>.27</td>
<td>7.57</td>
<td></td>
<td>1.42</td>
</tr>
<tr>
<td>Moderate</td>
<td>47</td>
<td>.31</td>
<td>3.45</td>
<td></td>
<td>1.34</td>
</tr>
<tr>
<td>Low/Abstainers</td>
<td>65</td>
<td>.42</td>
<td>0.22</td>
<td></td>
<td>.41</td>
</tr>
</tbody>
</table>

Most of the participants (59.7%) reported using illicit substances in the past 12 months. The mean DAST-10 scores for each group suggest that scores over 2.11 (the minimum score for the moderate users group) are likely to be indicative of drug use activity. This is consistent with the suggested cut off score of 2 on the DAST-10 suggested by Maisto et al. (2000). In the current sample, 57.8% of participants scored 2 or above. Previous research on the DAST-10 suggests that these participants are likely to have past or current drug involvement and the presence of a DSM-IV-TR drug use diagnosis in the past year (Cocco & Carey, 1998; Maisto, Carey, et al., 2000). Mixture modeling suggested that scores over 6.23 were indicative of problematic drug use, and contained 27% of the sample. This is similar to the prevalence of drug use disorders in SMI populations which are reported to be 26.9% for men and 23.2% for women (Maisto, Carey, et al., 2000). Table 8 shows the scores and descriptive statistics for the DAST-10 in the current sample.
Table 8

*Drug use: Scores for DAST-10*

<table>
<thead>
<tr>
<th>DAST-10 Score</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>51</td>
<td>33.1</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>9.1</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>7.8</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>7.8</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>9.7</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>6.5</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>7</td>
<td>11</td>
<td>7.1</td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>7.1</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>154</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*M* 3.21

*SD* 3.17

9.7.2. **Alcohol use.** A mixture modeling approach was also utilized to categorize observations and examine previously suggested cut off scores for the AUDIT in the data. Both the Vuong-Lo-Mendell-Rubin test and the bootstrapped parametric likelihood ratio test were significant, suggesting three categories were more appropriate than two. The three patterns of alcohol consumption were labeled as “abstainers or infrequent drinkers”, “moderate or social drinkers”, and “problematic
drinkers”. Within the three groups, mixture modeling classified 29% of the observations as problematic drinkers, 27% as moderate or social drinkers, and 45% as abstainers. Individuals who scored over 13 (the minimum score for the high users group) were classified into the problematic drinking category, scores over 4 and below 13 were suggestive of moderate to high use, and those who scored below 4 were classified as abstainers or low level drinkers. The cut off score for problematic drinking suggested by the mixture modeling was higher than the 7 or 8 cut off suggested by Maisto, Carey, et al. (2000) and also higher than the cut off score of 10 suggested by Cassidy et al. (2007). It would appear that in the current sample, there were many people reporting high rates of substance use, and enough variability in the scores to suggest three categories of problematic drinking.

Table 9

<table>
<thead>
<tr>
<th>Level of Alcohol use</th>
<th>Class Counts</th>
<th>Proportion</th>
<th>M AUDIT</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>44</td>
<td>.29</td>
<td>18.09</td>
<td>4.95</td>
</tr>
<tr>
<td>Moderate</td>
<td>41</td>
<td>.27</td>
<td>7.37</td>
<td>2.84</td>
</tr>
<tr>
<td>Low/Abstainers</td>
<td>69</td>
<td>.45</td>
<td>1.35</td>
<td>1.51</td>
</tr>
</tbody>
</table>

Based on the cut of score suggested by previous authors, just under half of the sample (41.7%) had an AUDIT score above eight, suggesting a risk of alcohol problems or current experience of alcohol problems based on previous literature (Maisto, Carey, et al., 2000). This cut off score is most consistent with previous literature which has reported that around 37% of people from an SMI population will have experienced symptoms from alcohol within the last year (Maisto, Carey, et al.,
2000). Table 10 shows the scores and descriptive statistics for the AUDIT in the current sample.

Table 10

*Alcohol use: Scores for AUDIT*

<table>
<thead>
<tr>
<th>AUDIT Score</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 4</td>
<td>74</td>
<td>48.1</td>
</tr>
<tr>
<td>5 – 7</td>
<td>16</td>
<td>10.4</td>
</tr>
<tr>
<td>8 – 15</td>
<td>34</td>
<td>22.1</td>
</tr>
<tr>
<td>16 – 19</td>
<td>17</td>
<td>11.0</td>
</tr>
<tr>
<td>20 +</td>
<td>13</td>
<td>8.4</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\[ M \] 7.73

\[ SD \] 7.70

Together, 65.6% of the sample had a positive screening score for either alcohol use or drug use, or both alcohol use and drug use, which consistent with previous reports that at least half of people diagnosed with an SMI have a substance use disorder (Harris & Edlund, 2005).

**9.8. Current Medication Type and Medication Adherence**

The large majority of the participants were currently taking at least one antipsychotic medication (79.2%), with some being on two antipsychotics (14.8%) or a combination of antipsychotics and other medications (39%). There were smaller
reports of people taking mood stabiliser medications (4.5%), antidepressants (8.4%) and a combination of mood stabilisers and antidepressants (1.9%). A small number (5.8% of the sample) were taking no medication at the time of the data collection. Appendix H provides a more detailed table of prescribed medications.

Table 11

*Prescribed Medication*

<table>
<thead>
<tr>
<th>Medication Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>One or more antipsychotic</td>
<td>64</td>
<td>41.6</td>
</tr>
<tr>
<td>Antipsychotic and antidepressant</td>
<td>28</td>
<td>18.2</td>
</tr>
<tr>
<td>Antipsychotic and mood stabiliser</td>
<td>19</td>
<td>12.3</td>
</tr>
<tr>
<td>Antipsychotic, mood stabiliser, and antidepressant</td>
<td>11</td>
<td>7.1</td>
</tr>
<tr>
<td>Antidepressant only</td>
<td>13</td>
<td>8.4</td>
</tr>
<tr>
<td>Mood stabilizer only</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>Mood stabiliser and antidepressant</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>None</td>
<td>9</td>
<td>5.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>154</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

A mixture modeling approach was also utilised to examine the classification of observations and cut off scores for the MARS. The Vuong-Lo-Mendell-Rubin test suggested that two categories would be sufficient for the data. Within the two groups, 51% were classified in the higher adherence group and 49% were classified with lower levels of medication adherence. Individuals who scored over 6.81 (the
minimum score for the high adherence group) were classified as having high levels of adherence. This is consistent with the previous literature which also suggests individuals with scores over 7 on the MARS would be considered highly adherent to their prescribed medications (Thompson et al., 2000).

Table 12

*Categories for Medication Adherence use*

<table>
<thead>
<tr>
<th>Level of Adherence</th>
<th>Class Counts</th>
<th>Proportion</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher adherence</td>
<td>79</td>
<td>.51</td>
<td>8.05</td>
<td>1.24</td>
</tr>
<tr>
<td>Lower adherence</td>
<td>75</td>
<td>.49</td>
<td>4.31</td>
<td>1.47</td>
</tr>
</tbody>
</table>

Using the cut off score of 7, 29.9% of the sample were highly adherent, whilst the remaining 70.1% were considered to have somewhere between low and moderate adherence. Applying a more liberal cut off score of 6 on the MARS, would suggest that 49.9% of the participants had moderate to high adherence. This number is similar to that found with the mixture modeling, with around 51% being classified in the higher adherence group. The range of reported adherence rates in this population is large and this makes the task of comparing the current sample and previous SMI populations difficult. Despite this, the adherence rates found in the current study remain consistent with the reported estimates of medication adherence in the SMI population which is around 25-55% (Fenton, Blyler, et al., 1997; Nosé et al., 2003; Young et al., 1986).

Further to this, 75.7% reported the experience of side effects by endorsing items stating that the medication made them “feel tired and sluggish” (70.8%) and/or
“weird, like a zombie” (43.5%). This is consistent with reports that 84% report side effects from antipsychotic medications (Jablensky et al., 1999).

Table 13

Medication Adherence: Scores for the MARS

<table>
<thead>
<tr>
<th>MARS Score</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>3.9</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>7.1</td>
</tr>
<tr>
<td>4</td>
<td>19</td>
<td>12.3</td>
</tr>
<tr>
<td>5</td>
<td>22</td>
<td>14.3</td>
</tr>
<tr>
<td>6</td>
<td>16</td>
<td>10.4</td>
</tr>
<tr>
<td>7</td>
<td>31</td>
<td>20.1</td>
</tr>
<tr>
<td>8</td>
<td>14</td>
<td>9.1</td>
</tr>
<tr>
<td>9</td>
<td>20</td>
<td>13.0</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>7.8</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$M = 6.23$

$SD = 2.31$
Chapter 10. Missing Data, Assumption Testing, and Screening Procedures

10.1. Outline of Chapter

This chapter details the incidence and approach of managing missing data and examines the distribution of the. This chapter also presents the results for the screening procedure for participants with acute symptoms to examine the effects on the data set. The next section in the chapter tests for contextual effects on the data across the different Mind Australia programs. The final section presents the internal consistency scores for the scales.

10.2. Missing Data

There were low levels of missing data which ranged from .6% to 1.9%, depending on the scale. Missing items per case ranged from 1.8% to of 3.6%. The highest missing data was on items completed by the Mind Australia service support. Patterns of missing data were inspected and showed no evidence that the data was not missing completely at random. Little’s chi-square statistic was not significant ($p = .945$), consistent with a random pattern. It was deemed appropriate to impute missing values through the Expectation Maximisation (EM) algorithm in SPSS version 17 (Dempster, 1977). EM is regarded as relatively robust method for lower level departure from normal data and is considered to lead to more accurate prediction of parameter estimates than when using other methods such as listwise deletion or pairwise deletion (Graham, 1996, 1997).
10.3. Checking Distributional Assumptions

Inspection of histograms, boxplots and Mahalanobis distance ($p < .001$ criterion) revealed the presence of no influential outliers on the scales. The distribution of the scores on each scale was assessed according to univariate normality. Scores on the AUDIT, DAST-10, negative affect on the PANAS, negative self-schema and negative others-schemas on the BCSS all showed some degree of negative skew. Methods used to address the non-normality of the data varied throughout the different analyses. Further assessment of test-specific assumptions and explanations of how the non-normal data was addressed is discussed for each analysis performed.

10.4. Sample Screening for Psychosis, Mania, and Disorganised Behaviour

A small number (22 participants, 14.3% of the sample) of participants displayed active psychotic phenomena, mania, or very disorganised behaviour during data collection. This subsample was compared to the remaining dataset to establish if there were any differences in responses to items.

Ten, separate, random samples of 22 participants were selected from the non-flagged participant data ($n = 132$). Each of the ten random samples selected consisted of 22 non-flagged participants was then compared with the same 22 flagged participants over ten separate MANOVAs. To combat the large number of variables, two separate analyses were conducted, one for the clinical variables and one for the psychosocial variables. The first set of ten MANOVAs explored the clinical variables (DAST-10, AUDIT, SDS, and MARS) and the second compared the psychosocial variables (RAS, ECR-S, BCSS, and PANAS).
For the clinical variables, assumption testing identified no multivariate outliers using Mahalanobis distance. A Levene's Test suggested a violation of the assumption of equal variances of error variances in the DAST-10 scale, and so a more conservative alpha level of .01 was set for determining significance for that variable (Pallant, 2005). Other assumptions for multivariate normality, homogeneity of variance-covariance matrices, multicollinearity and linearity for both clinical and psychosocial variables were not violated. Both sets of analyses showed no statistically significant differences between the scores for the flagged participants and the non-flagged participants with regard to the clinical variables and the psychosocial variables.

Overall, the psychosocial variables \( F(5, 38) = .15, p = .979; \) Wilks’ Lambda =.98) and clinical variables \( F(4, 39) = .88, p = .438; \) Wilks’ Lambda =.92) showed no significant differences between the two groups. Partial Eta squared scores for the psychosocial variables ranged from .007 to .082, and .083 to .162 for the clinical variables. Appendix I shows the results for each of the twenty MANOVAs conducted. As there were no statistically significant differences between the flagged and non-flagged samples, suggesting that both groups showed similar scores across the scales, the flagged participants were included in the data set.

10.5. Contextual Effects on the Data

To determine any contextual effects on the data, and ensure the assumption of independent observations was met, the design effect for each variable used in the study was examined independently across each of the individual Mind Australia program sites that was involved in data-collection. The mean cluster size was 5.13 (number of participants from each program) and was adequate for the analysis. The
intraclass correlations and design effects for the latent variables was calculated and are presented in Appendix J. All of the design effects were below 2 and ranged from 1.07 to 1.65, indicating no significant clustering effects on the variables across program sites.

10.6. Internal Consistency of Measures

Cronbach's alpha estimates of reliability were computed for each instrument using all of the items, and ranged from .67 to .94 (presented in Appendix K). The instruments were re-assessed for reliability following confirmatory analysis and the removal of items and are presented in the following chapter.
Chapter 11. Scale Development

11.1. Outline of Chapter

The first aim of the study was to develop measurement models to be used in the SEM and assess the goodness-of-fit of established factor structures in the current SMI sample. The following sections present the development of the measurement models for each scale.

11.2. Measurement model for the RAS

The RAS consists of 41 items measuring elements of subjective recovery (Giffort et al., 1995). Its factor structure has been suggested to contain five factors: “personal confidence and hope”, “willingness to ask for help”, “goal and success orientation”, “reliance on others”, and “no domination by symptoms” (Corrigan et al., 2004). Table 14 shows the results of CFA using the proposed factor structures from two previous authors (Corrigan, Salzer, Ralph, Sangster, and Keck, 2004; McNaught, et al., 2007).

As can be seen in the table below, a CFA on the RAS was conducted on the model proposed by McNaught et al. (2007) who used an Australian SMI sample. Indices from the CFA of this model suggested inadequate fit for the current data set (see Appendix L). A similar model was presented by Corrigan et al. (2004) using an SMI sample from the USA reported a slightly different model where item 22 was contained in the “personal confidence and hope” factor and item 5 was contained in the “goal and success orientation” factor. A CFA conducted on this proposed model also failed to meet adequate fit criteria, based on the fit statistics (presented in section
8.5.5) for the current data set (model presented in Appendix M). Hence, neither of these models were used in subsequent analyses.

Table 14

**Fit Statistics for Models Proposed by Previous Authors**

<table>
<thead>
<tr>
<th>Author</th>
<th>Reported Fit Statistics</th>
<th>Fit Statistics for the Current Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>McNaught et al. (2007)</td>
<td>$\chi^2 = 353.15$ , incremental fit index = .91, CFI = 0.87, TLI=0.90, RMSEA =0.06.</td>
<td>Bollen-Stine bootstrap $p= .01$, $\chi^2 = 480.32$, CMIN/DF = 1.95, CFI = 0.83, TLI=0.81, RMSEA =0.08</td>
</tr>
<tr>
<td>Corrigan et al. (2004)</td>
<td>non-normed index = .92, normed fit index = .91, CFI = 0.93.</td>
<td>Bollen-Stine bootstrap $p= .002$, $\chi^2 = 447.89$, CMIN/DF = 1.81, CFI = 0.85, TLI = 0.84, GFI = 0.82, AGFI = 0.77, RMSEA =0.07, SRMR = .08</td>
</tr>
</tbody>
</table>

Given the newness of the scale and the poor fit with the proposed models, further exploration was warranted to determine the best fitting structure for the RAS in the current sample. Corrigan et al. (2004) note that their proposed model only incorporated 24 of the 41 RAS items, and that the existence of additional factors in the RAS may not yet be identified. The same authors originally found eight factors in the EFA, but removed three of these factors in order to achieve adequate model fit. In
order to further explore the number of subscales and find the best fitting structure of the RAS an EFA using a ML analysis was conducted followed by a CFA.

Prior to performing the EFA, the suitability of the data for the analysis was assessed. Inspection of the correlation matrix revealed many coefficients of .3 and above, The Kaiser-Meyer-Olkin value was over .6 (Kaiser, 1974), and Bartlett’s Test of Sphericity (Barlett, 1954) reached statistical significance. As recommended by O’Connor (2000), the number of factors to extract was determined by comparison of results from four methods: parallel analysis (Horn, 1965), the Minimum Average Partial test (MAP test; Velicer, 1976), inspection of the Scree plot, and the Kaiser-Guttman criterion (Tabachnick, 2007). A three factor structure was suggested by the MAP test and a parallel analysis. Inspection of the Scree plot revealed the presence of four factors. A ML analysis with oblimin rotation showed the presence of eleven components according to the Kaiser-Guttman criterion, with eigenvalues exceeding 1. These eleven factors explained 29.6 down to 2.5 per cent of the variance. In order to ensure that parsimony was not lost with such a large number of factors, items were removed one at a time on the basis of high cross loadings (at the .20 level) from the pattern matrix until a clear factor structure was evident. This resulted in a four-factor structure that explained a total of 51.43% of the variance, ranging from 4.42% to 29.57%. The four factor structure was consistent with that suggested by the scree plot. The three-factor solution suggested by the MAP and parallel analysis would exclude the optimism and purpose factor. Due to the importance of this factor in the theoretical assumptions of the recovery concept, the four-factor solution was adopted.

The final four-factor structure showed both similarities and differences to those found by McNaught et al. (2007) and Corrigan et al. (2004). The final factor structure consisted of the two of the same factors reported by previous authors: willingness to
ask for help (3 items), and no domination by symptoms (3 items). Similar to McNaught et al. (2007), items from personal confidence and hope and goal and success orientation domains loaded onto the same factor. As such, these two factors were amalgamated and renamed “optimism and purpose” (containing 6 items). The factor “reliance on others” obtained by previous authors was not found in the current analysis. Furthermore, self-efficacy items, not included in the factor structure of previous authors (items 7, 8, 10, and 18), loaded onto a separate factor that was labeled “illness self-efficacy” (Corrigan et al., 2004; McNaught et al., 2007). The illness self-efficacy factor included items such as “I can help myself become better” and “although my symptoms may get worse, I know I can handle it”.
### Table 15

**Final Factor Structure and Item Loadings for the RAS (n = 154)**

<table>
<thead>
<tr>
<th>RAS Item</th>
<th>Optimism and Purpose</th>
<th>Willingness to ask for Help</th>
<th>No Domination by Symptoms</th>
<th>Illness Self Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>24. I'm hopeful about the future</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I have a purpose in life</td>
<td>.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I believe I can meet my current personal goals</td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. I continue to have new interests</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. I have a desire to succeed</td>
<td>.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I have an idea of who I want to become</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. I am willing to ask for help</td>
<td>- .89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. I know when to ask for help</td>
<td>-.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. I ask for help, when I need it</td>
<td>-.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Coping with my mental illness is no longer the main focus of my life</td>
<td>.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. My symptoms interfere less and less with my life</td>
<td>.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. My symptoms seem to be a problem for shorter periods of time each time they occur</td>
<td>.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I can handle it if I get sick again</td>
<td></td>
<td></td>
<td>-.88</td>
<td></td>
</tr>
<tr>
<td>7. I understand how to control the symptoms of my mental illness</td>
<td></td>
<td></td>
<td>-.56</td>
<td></td>
</tr>
<tr>
<td>18. Although my symptoms may get worse, I know I can handle it</td>
<td></td>
<td></td>
<td>-.51</td>
<td></td>
</tr>
<tr>
<td>10. I can help myself become better</td>
<td></td>
<td></td>
<td>-.46</td>
<td></td>
</tr>
</tbody>
</table>

% of Variance Explained

<table>
<thead>
<tr>
<th></th>
<th>29.57</th>
<th>9.71</th>
<th>7.73</th>
<th>4.42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eigenvalues</td>
<td>5.27</td>
<td>1.87</td>
<td>1.70</td>
<td>1.14</td>
</tr>
</tbody>
</table>

*Where no item loading is reported, there was a loading of less than .20.*
A multi-factor measurement CFA was conducted on the RAS using the factors derived from the EFA in order to examine the other goodness-of-fit indices, standardised residual covariates matrix, and modification indices. Although a separate sample would be desirable, the sample size would not allow for this. This technique of conducting an EFA and a CFA on the same data set was also used by McNaught et al. (2007). The CFA resulted in the confirmation of a four-factor solution. The standardised residual covariates matrix and modification indices suggested some redundancy in the model, and items 1, 5, 20, 29, and 30 were not adequately explaining the relationships in the data and were consequently removed for a better model fit. Discriminant validity was achieved based on an examination of the implied correlations across the scale items.

Figure 7. Standardised parameters estimated in Measurement model of RAS ($n=154$).
Inspection of the model revealed that the higher-order model fit the data well, Bollen-Stine bootstrap \( p = .696, \chi^2 (df = 40, n = 154) = 52.634, p > .087, \) CMIN/DF = 1.316, GFI = 0.945, AGFI = 0.909, TLI = 0.965, CFI = 0.975, RMSEA = .045, SRMR = .056. Each of the loadings for the lower-order factors were significant at \( p < .001, \) and well distributed across the higher-order recovery factor. The factors optimism and purpose, illness self efficacy, and no dominations by symptoms showed the highest contributions into the recovery construct, whilst the willingness to ask for help has a lower loading, but still made a good contribution. The covariances among the recovery factor suggest it adequately explains the second-order constructs.

The scale showed moderate correlations (.30 to .54) between factors, suggesting that a second-order model was appropriate to account for the intercorrelations between the recovery indicator factors. For a higher-order model to be considered, the measure should contain a higher-level factor that can account for the lower-order factors (Byrne, 1998). The second-order construct is then used to represent the shared variance among the first-order factors (Hagger & Chatzisarantis, 2005). Referring back to the literature, the recovery concept is considered to be multifaceted and in order to encapsulate each of these suggested facets, a single, higher-order latent variable for recovery was both theoretically and statistically appropriate.

The higher-order structure offered a more parsimonious model to describe the data. Further to this, two of the factors for the recovery concept only contain two items each, and using these domains as separate factors in the analysis is not ideal from a statistical standpoint. Excluding these factors from a theoretical standpoint would jeopardise the ability of the scale to represent the recovery construct. A scree plot (Appendix N) for the developed RAS scale suggested one factor, providing evidence for unidimensionality of the scale and supports its use as a composite score.
The feasibility of a composite recovery score using the items for the RAS was assessed in a one-factor congeneric model and demonstrated adequate fit.

![Diagram of the hypothesised latent construct, recovery, represented by four reflective indicators.](image)

*Figure 8.* Diagram of the hypothesised latent construct, recovery, represented by four reflective indicators.

Inspection of the model for a composite recovery measure revealed that the model fit the data well, Bollen-Stine bootstrap $p = .239$, $\chi^2 (df = 2, n = 154) = 4.700, p > .096$, $\text{CMIN/DF} = 2.349$, $\text{GFI} = 0.986$, $\text{AGFI} = 0.928$, $\text{TLI} = 0.900$, $\text{CFI} = 0.965$, $\text{RMSEA} = .094$, $\text{SRMR} = .037$. The RMSEA was slightly elevated, and it is likely that the RMSEA has been inflated due to the low sample size and degrees of freedom in the analysis (Kenny, 2011, September 4). Since other fit statistics show a good fit, no further alterations to the model were conducted. There were significant factor loadings over the separate recovery domains, and demonstrates convergent validity for the recovery construct.

The final RAS structure was compared to the original scale consisting of all 41 items and resulted in a strong Pearson correlation ($r = .91, p < .000$) providing evidence that the new structure is measuring the same construct as that of the original RAS. Furthermore, there was a strong relationship between the developed RAS
structure and scores based on factor structures determined by other authors (Corrigan et al., 2004; McNaught et al., 2007) structures ($r = .89$, $p < .000$). Although the previous reported scales and the developed RAS scales are highly correlated, the newly developed version of the scale was retained as it provides a superior model fit in the current sample and the validation of the measurement model was necessary for SEM analysis.

11.3. Measurement Model for the PANAS

The PANAS consists of 20 items which measure two factors: “positive affect” and “negative affect” (Watson et al., 1988). The proposed two-factor model based on previous research was conducted to examine goodness-of-fit for the current data. Inspection of the standardised residual covariates matrix and modification indices indicated that items 2, 3, 5, 8, 17, and 18 the current model did not adequately explain the relationships in the data and were consequently removed one at a time. To further justify the removal of some these items, it was noted that during data collection, many participants identified difficulty understanding the meaning for items 8 (“Hostile”), 17 (“Attentive”), and 18 (“Jittery”). This difficulty in comprehension for these items suggests the potential to jeopardise the validity and reliability of the measure. The single factor congeneric models both show adequate fit following the removal of these items.
Inspection of the model for positive affect revealed that the proposed model fit the data well, Bollen-Stine bootstrap $p = .483$, $\chi^2 (df = 14, n = 154) = 17.397, p > .236$, CMIN/DF = 1.243, GFI = 0.969, AGFI = 0.938, TLI = 0.985, CFI = 0.990, RMSEA = 0.040, SRMR = 0.036. The standardised factor loadings were all significant, suggesting the presence of convergent validity. Items 9 (“Enthusiastic”) and 20 (“Inspired”) showed the strongest loadings for the positive affect factor.
Inspection of the model revealed that the model for the negative affect subscale also fits the data well, Bollen-Stine bootstrap $p = .448$, $\chi^2 (df = 14, n = 154) = 20.587$, $p > .113$, CMIN/DF = 1.470, GFI = 0.963, AGFI = 0.926, TLI = 0.981, CFI = 0.987, RMSEA = .055, SRMR = .033. The standardised factor loadings were strong and all significant. Items 7 (“Scared”) and 20 (“Afraid”) were the strongest loading items for negative affect.

Next, the proposed model for the PANAS measure was examined in a multi-factor model to assess for discriminant validity across the two factors and identify the inter-factor correlation.
Figure 11. Standardised parameters estimated in measurement model for the PANAS (n =154).

Model fit was not assessed in the analysis as model fit has been established previously in the one factor congeneric models, and the purpose of the analysis was purely to identify the inter-factor correlation and establish discriminant validity. The measurement model for the PANAS showed a low inter-factor correlation of -.12,
indicating that the two domains for the measure are separate factors, and as such the two factors were used separately in subsequent analyses. The model demonstrated adequate discriminant validity across all items on both factors.

The final PANAS structure was compared to the original scale and resulted in a strong Pearson correlation \( r = .98, p < .000 \) providing evidence that the new structure is measuring the same construct as that of the original PANAS.

11.4. Measurement Model for the ECR-S

The ECR-S is a 16-item instrument designed to measure two attachment style factors: “attachment anxiety” and “attachment avoidance” (Brennan et al., 1998). A one factor congeneric model of the measure indicated that items 2, 3, 6, 8, 9, and 15 in the current model were not adequately explaining the relationships in the data and were consequently removed. The measurement models for the attachment anxiety and attachment avoidance subscales both showed good fit following the removal of these items.

*Figure 12. Standardised parameters estimated in measurement model for the ECR-S-attachment anxiety subscale (n =154).*
Inspection of the one factor congeneric model for attachment anxiety revealed that the model fits the data well, Bollen-Stine bootstrap $p = .247, \chi^2 (df = 5, n = 154) = 8.340, p > .138$, CMIN/DF = 1.668, GFI = 0.978, AGFI = 0.934, TLI = 0.961, CFI = 0.980, RMSEA = .066, SRMR = .038. The standardised factor loadings were strong and all significant. Items 12 (“I resent it when my relationship partners spend time away from me”) and 16 (“My desire to be very close sometimes scares people away”) were the strongest loading items for attachment anxiety.

![Diagram](image)

**Figure 13.** Standardised parameters estimated in measurement model for ECR-S attachment avoidance subscale ($n = 154$).

Inspection of the model revealed that the model for attachment avoidance fits the data well, Bollen-Stine bootstrap $p = .249, \chi^2 (df = 5, n = 154) = 9.729, p > .083$, CMIN/DF = 1.946, GFI = 0.976, AGFI = 0.928, TLI = 0.957, CFI = 0.979, RMSEA = .079, SRMR = .033. The standardised factor loadings were strong and all significant. Items 5 (“Just when someone starts to get close to me I find myself pulling away”), and 7 (“I get uncomfortable when someone wants to be very close to
me”) demonstrated were the strongest loading items for the attachment avoidance factor.

Next the measurement model was examined for inter-factor correlations and the discriminant validity was assessed for the two factors. Model fit was not assessed in the analysis as model fit has been established previously in the one factor congeneric models. The multi-factor measurement model demonstrated adequate discriminant validity across items. The inter-factor correlation was low indicating separate factors, and as such the two factors were use in subsequent analyses.

Figure 14. Proposed Model for ECR-S (n =154).
The final ECR structure was compared to the original scale and resulted in a strong Pearson correlation ($r = .94$, $p < .000$) providing evidence that the new ECR structure is measuring the same construct as that of the original.

11.5. Measurement Model for the Brief COPE

Previous authors (Carver, 1997) suggest that the Brief COPE consists of 28 items which yield fourteen two-item subscales: “active coping”, “planning”, “positive reframing”, “acceptance”, “humour”, “religion”, using “emotional support”, “using instrumental support”, “self-distraction”, “denial”, “venting”, “substance use”, “behavioural disengagement”, and “self-blame”. These scales can be used as separate factors or combined in several ways - such as adaptive coping and potentially dysfunctional coping styles, or emotion-focused versus problem-focused coping (Carver, 1997; Carver et al., 1989). The use of broad categories limits the clinical application of the findings by not including the more specific coping strategies. For example, targeting maladaptive approaches to coping such as denial or self-blame is likely to be easier in a therapeutic setting than targeting a more general maladaptive coping style. Further, denial at certain times in one’s recovery may not be maladaptive at all. In saying this, two indicators for each coping style may not result in a sufficient representation of the variable. Previous authors have noted some common combinations of subscales including the substantial overlapping between emotional support seeking and instrumental support seeking, and between active coping and planning (Carver, 1997; Meyer, 2001). Combining these overlapping factors allowed the Brief COPE scale to maintain the statistical strength of the conceptually broader factors whilst still offering a richness of information provided by particular coping strategies. The amalgamation of coping factors can then provide a
more focused exploration of the specific coping strategies used by an individual that may be missed by the very broad factors such as positive and negative coping style. To strengthen the psychometrics of the smaller groupings, and the validity and reliability for these scales were assessed.

An EFA was with a ML extraction used to explore how best to utilise the subscales and determine the viability of composite scores that can provide both clinical utility of the findings, and enhanced statistical strength. Inspection of the correlation matrix revealed many coefficients of .3 and above, The Kaiser-Meyer-Olkin value was over .6 and the Bartlett’s Test of Sphericity reached statistical significance. The number of factors to extract was determined by comparison of the results from the parallel analysis, MAP test, inspection of the scree plot, and the Kaiser-Guttman criterion (O’Connor, 2000; Tabachnick, 2007). Inspection of the scree plot revealed two points of change in slope suggesting a possible two factor or seven factor solution. This is consistent with reports from the authors who suggest the scale can incorporate broad categories or as individual coping subscales (Carver, 1997; Carver et al., 1989). The Map test suggests two factors using the Velicer (1976) test, and three factors with the revised version, whilst the parallel analysis suggested the presence of three factors. Using these two or three factor structures would provide broad categories of coping styles such as adaptive and maladaptive coping styles, but would not provide the specific information needed for the aims and hypotheses for the study. The seven factor solution of the individual coping styles suggested by the scree plot was retained as it was best able to examine the aims and hypotheses relating to how one copes with SMI. The Kaiser-Guttman criterion results showed the presence of seven components with eigenvalues exceeding 1: “social support” (4 items), “active coping” (5 items), “avoidance” (3 items), “spirituality” (2 items), “substance use” (2
items), “self-blame” (2 items), and “humour” (2 items). A ML analysis with varimax rotation was conducted after an oblimin rotation showed no relationship between factors. Items 3, 4, 6, 8, 9, 11, 12, 13, 14, 16, 17, 18, 20, 21, 22, 24, 26, 27, and 28 were removed due to high cross loadings (at the .20 level) across other factors. The seven factors explained a total of 53.12 per cent of the variance, ranging from 16.9 down to 5.0 per cent.

Similar to previous authors there was substantial overlap between emotional support seeking and instrumental support seeking, and between active coping and planning (Carver, 1997; Meyer, 2001). The current study also found overlap between the active coping and self-distraction items, suggesting that both planning and distraction may be a way of coping for people with an SMI. In the current EFA the planning item “I've been thinking hard about what steps to take” and distraction items “I've been turning to work or other activities to take my mind off things” and “I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping” were added to the active coping cluster, leading to a broader conceptualisation of this factor (including planning and self-distraction coping strategies). The two items for emotional support as well as the two items for instrumental support loaded onto the same factor as found by previous authors (Carver, 1997; Meyer, 2001). The denial item “I've been refusing to believe that it has happened” loaded onto the behavioural disengagement factor, and the amalgamated factor was relabeled “avoidance coping”. The remaining factors - religion, substance use, and humour – were consistent with previous authors (Carver, 1997; Meyer, 2001).
### Table 16

**EFA for Brief COPE (n =154)**

<table>
<thead>
<tr>
<th>Cope Item</th>
<th>Social Support</th>
<th>Active Coping</th>
<th>Avoidance Coping</th>
<th>Religion</th>
<th>Substance Use</th>
<th>Self-Blame</th>
<th>Humour</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. I've been getting comfort and understanding from someone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I've been getting emotional support from others</td>
<td>.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I've been getting help and advice from other people</td>
<td>.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. I've been trying to get advice or help from other people about what to do</td>
<td>.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I've been concentrating my efforts on doing something about the situation I'm in</td>
<td>.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. I've been turning to work or other activities to take my mind off things</td>
<td>.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. I've been thinking hard about what steps to take</td>
<td>.48</td>
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<tr>
<td>7. I've been taking action to try to make the situation better</td>
<td>.40</td>
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<tr>
<td>19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping</td>
<td>.38</td>
<td></td>
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<td>16. I've been giving up the attempt to cope</td>
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<td>6. I've been giving up trying to deal with it</td>
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<td>8. I've been refusing to believe that it has happened</td>
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<td>27. I've been praying or meditating</td>
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<td>22. I've been trying to find comfort in my religion or spiritual beliefs</td>
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<tr>
<td>11. I've been using alcohol or other drugs to help me get through it</td>
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<td>4. I've been using alcohol or other drugs to make myself feel better</td>
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<td>26. I've been blaming myself for things that happened</td>
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### Cope Item Table

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<tr>
<th>Cope Item</th>
<th>Social Support</th>
<th>Active Coping</th>
<th>Avoidance Coping</th>
<th>Religion</th>
<th>Substance Use</th>
<th>Self-Blame</th>
<th>Humour</th>
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<td>13. I've been criticising myself</td>
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<td>28. I've been making fun of the situation</td>
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<td>18. I've been making jokes about it</td>
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<td>1.61</td>
<td>1.47</td>
<td>1.16</td>
<td>1.06</td>
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*Items loadings less than .20 are not shown.*
The proposed CFA model based on the factors derived from the EFA was conducted across the seven factors (see Appendix O) and reliabilities for each of the subscales is presented in Appendix P. For the purpose of the current study it was decided to retain only three of coping styles for comparison with dependent variables. Subscales were selected if they contained a minimum of three indicators per factor for statistical strength, and central to the study’s aims. A CFA was then conducted on these retained factors (social support, avoidance coping, and active coping) to assess for model fit, factor loadings, and unidimensionality.

![Diagram](image)

**Figure 15.** Standardised parameters estimated in measurement model for the Brief COPE-social coping subscale (n =154).

Inspection of the model revealed that the model for social coping fits the data well, Bollen-Stine bootstrap $p = .259$, $\chi^2 (df = 2, n =154) = 2.949$, $p > .229$, CMIN/DF = 1.474, GFI = 0.990, AGFI = 0.951, TLI = 0.979, CFI = 0.993, RMSEA =.056, SRMR = .027. The standardised factor loadings were all significant, suggesting the presence of convergent validity. With item 15 (“I've been getting comfort and understanding from someone”) showing the highest loading for social coping.
Figure 16. Standardised parameters estimated in measurement model for the Brief COPE-active coping subscale (n =154).

Item 19 was removed from the active coping factor due to a poor factor loading, inspection of the model following the removal of this item revealed that the model for active coping fits the data well, Bollen-Stine bootstrap \( p = .209, \chi^2 (df = 2, n =154) = 4.384, p > .112, \) CMIN/DF = 2.192, GFI = 0.986, AGFI = 0.928, TLI = 0.930, CFI = 0.977, RMSEA =.088, SRMR = .040. The standardised factor loadings were all significant, with item 2 (“I've been concentrating my efforts on doing something about the situation I'm in”) showing the highest loading for active coping.

Figure 17. Standardised parameters estimated in measurement model for the Brief COPE-avoidance coping subscale (n =154).
The avoidance coping construct contained only three indicators and so in order to examine the goodness-of-fit, a pair of referent items (items 6 and 8) with similar item loadings were identified and their parameters were set to equality. This allowed for one degree of freedom and fit statistics to be obtained. Inspection of the model for avoidance coping fits the data well, Bollen-Stine bootstrap $p = .984$, $\chi^2 (df = 1, n = 154) = .001$, $p > .972$, CMIN/DF = 0.001, GFI = 1.000, AGFI = 1.000, TLI=1.017, CFI =1.000, RMSEA =.000, SRMR = 001. The standardised factor loadings were all significant, with item 16 (“I've been giving up the attempt to cope”) showing the highest loading for avoidance coping.

A multi-factor measurement model for coping style demonstrated adequate discriminant validity across items. Model fit was not assessed in the analysis as model fit has been established previously in the one factor congeneric models. The inter-factor correlation ranged from low to moderate indicating some relationship between social support and active coping. Since discriminant validity was achieved between these factors, they were used as independent scales in subsequent analyses.
11.6. Measurement Model for the BCSS

The BCSS contains 24-items which yields four factors relating to self- and others-schemas: “negative self” (6 items), “positive self” (6 items), “negative others” (6 items) and “positive others” (6 items). Separate one-factor congeneric models were assessed for goodness-of-fit, factor loadings, and unidimensionality.
Figure 19. Standardised parameters estimated in measurement model for the BCSS-negative self-schema subscale (n =154).

Inspection of the model revealed that the model fits the data very well, Bollen-Stine bootstrap $p = .755$, $\chi^2 (df = 9, n =154) = 8.168$, $p > .517$, CMIN/DF =.908, GFI = .984, AGFI = .963, TLI=1.004, CFI =1.000, RMSEA =.000, SRMR = .025. The standardised factor loadings were all significant, suggesting the presence of convergent validity. Item 2 (“I am worthless”) showing the highest loading for negative self-schemas.
Inspection of the model revealed that the model for the positive self-schema subscale fits the data well, Bollen-Stine bootstrap $p = .377$, $\chi^2 (df = 9, n = 154) = 14.914, p > .093$, CMIN/DF = 1.657, GFI = 0.968, AGFI = 0.925, TLI = 0.974, CFI = 0.984, RMSEA = 0.066, SRMR = 0.033. The standardised factor loadings were all significant, suggesting the presence of convergent validity. Item 10 ("I am successful") was the strongest loading item on the positive self-schema.
Figure 21. Standardised parameters estimated in measurement model for the BCSS-negative others-schema subscale (n =154).

The modification indices suggested the redundancy in items 17 and 18 and the standardised residual covariates matrix suggested that these items were not adequately explaining the relationships in the data and were consequently removed for a better model fit. Inspection of the model revealed that the model for the negative others-schema subscale fits the data very well, Bollen-Stine bootstrap p = .625, \( \chi^2 \) (df = 2, n =154) = 1.618, p > .445, CMIN/DF = 0.809, GFI = 0.995, AGFI = 0.973, TLI= 1.004, CFI = 1.000, RMSEA = .000, SRMR = .014. The standardised factor loadings were all significant, suggesting the presence of convergent validity. With items 13 (“other people are hostile”) and 14 (“other people are harsh”) being the strongest loading items on negative others-schema.
Figure 22. Standardised parameters estimated in measurement model for the BCSS-positive others-schema subscale \((n = 154)\).

Inspection of the model revealed that the model for the positive others-schema subscale fits the data very well, Bollen-Stine bootstrap \(p = .814\), \(\chi^2 (df = 9, n = 154) = 7.108, p > .626\), CMIN/DF = 0.790, GFI = 0.985, AGFI = 0.964, TLI = 1.007, CFI = 1.000, RMSEA = .000, SRMR = .023.

Next, the measurement model was examined for inter-factor correlations and to assess for discriminant validity across the four factors. Item 19 was removed due to poor discriminate validity. The model shows low correlations between positive others and negative others as well as positive-self and negative self. There were moderate correlations between positive others and positive self, and negative-self and positive self, and were low correlations between the other factors. Combining some of these factors is of little value from a theoretical standpoint, and discriminant validity was achieved and so the subscales were used as separate factors for the subsequent analyses.
Figure 23. Proposed Model for BCSS (n = 154).
A second one-factor congeneric model was done for the positive others-schema variable with item 19 removed (due to inadequate discriminant validity) to assess for fit.

![Diagram of the measurement model for the BCSS-positive others-schema subscale](image_url)

**Figure 24.** Standardised parameters estimated in measurement model for the BCSS-positive others-schema subscale ($n = 154$).

Inspection of the model revealed that the model for the positive others-schema subscale fits the data very well, Bollen-Stine bootstrap $p = .990$, $\chi^2 (df = 5, n = 154) = .799$, $p > .977$, CMIN/DF = 0.160, GFI = 0.998, AGFI = 0.994, TLI = 1.021, CFI = 1.000, RMSEA = .000, SRMR = .007. The standardised factor loadings were all significant, suggesting the presence of convergent validity. Items 21 (“other people are trustworthy”), 22 (“other people are accepting”), and 24 (“other people are truthful”) being the strongest loading items on positive others-schema.

The final BCSS structure was compared to the original scale and resulted in a strong Pearson correlation ($r = .98$, $p < .000$) providing evidence that the new BCSS structure is measuring the same construct as that of the original.
11.7. Measurement Model for the MARS

The MARS is a brief self-report measure comprising of 10 items measuring beliefs and behaviours related to non-adherence of medication (Thompson et al., 2000). As previously mentioned a mixture modeling analysis suggested a two class model to categorise the data for the MARS. Mixture modeling was also utilised to examine the probability of responses to items on the MARS across the groups. Results showed that all of the MARS items discriminate well across the groups. Items 1 to 4 differentiated particularly well between the two groups. These items refer to medication taking behaviours such as “Do you ever forget to take your medication?”

![Figure 25. Probability of responses to MARS items across two groups (n =154).](image)

Previous authors have validated a three factor solution for the MARS, with factors representing “medication adherence behaviour” (items 1 to 4), “attitude toward taking medication” (items 5 to 8), and “negative side-effects and attitudes to
psychotropic medication” (items 9 and 10) (Fialko et al., 2008; Thompson et al., 2000). Consistent with previous findings, the eigenvalues on the MARS scale suggested the presence of three factors (a scree for eigenvalues is contained in Appendix Q). The “adherence behaviour” factor (items 1 to 4) has also been found by previous authors (e.g., Fialko et al., 2008; Thompson et al., 2000) and this factor is considered to be the strongest factor to discern if someone is medication adherent (Fialko et al., 2008). Further to this, the mixture modeling analysis suggests that these first four items are best able to differentiate between the high adherence group and the lower adherence group in the current sample. This four item subscale corresponds to Morisky et al. (1986) Medication Adherence Questionnaire. It was considered unnecessary to include each of the three factors for the MARS, and the single factor was considered the adequate to address the aims and hypotheses in the current study. Items for the adherence behaviour factor included in the subscale are: “Do you ever forget to take your medication?”, “Are you careless at times about taking your medicine?”, “When you feel better, do you sometimes stop taking your medicine?”, and “Sometimes if you feel worse when you take the medicine, do you stop taking it?”. Items 5 through to 10 were removed to preserve the unidimensionality of the scale and a CFA was then conducted on this factor to assess for goodness-of-fit.
Figure 26. Standardised parameters estimated in measurement model for the MARS-adherence behaviour \((n = 154)\).

Inspection of the model revealed that the medication adherence behaviour model fits the data well, Bollen-Stine bootstrap \(p = 0.259\), \(\chi^2 (df = 2, n = 154) = 3.843, p > 0.146\), CMIN/DF = 1.921, GFI = 0.987, AGFI = 0.935, TLI = 0.941, CFI = 0.980, RMSEA = 0.078, SRMR = 0.034. The standardised factor loadings were all significant, with item 3 (“When you feel better, do you sometimes stop taking your medicine?”) being the strongest loading item for medication adherence behaviour. The one factor congeneric model demonstrated adequate discriminant validity across items.

11.8. Measurement Model for the AUDIT

The AUDIT is intended to measure three factors: alcohol consumption, alcohol dependence, and alcohol-related consequences. The probability of responses to items on the AUDIT in a mixture modeling analysis suggest that most items discriminated well across the three drinking categories suggested by the analysis. Items 4, 5, 6, 8, and 9 differentiated the problem drinkers from the other two categories, but do not differentiate the abstainers from the social drinkers. Instead these items seem to tap
into the consequences of problematic drinking patterns; i.e., “How often during the last year have you failed to do what was expected of you because of your drinking?”.

Frequency of drinking measured in item 1, feelings of guilt or remorse measured in item 7 and concerns expressed by others with regard to drinking habits differentiate the three groups. Items 2 and 3 differentiate the abstainers from the other two drinking categories.

![Graph showing probability of responses to AUDIT items across three groups (n = 154).](image)

**Figure 27.** Probability of responses to AUDIT items across three groups (n = 154).

Previous authors investigating the factor structure of the AUDIT generally agree that the scale contains two distinct factors: “alcohol consumption” (items 1 to 3) and “dependence/consequences” (items 4 to 10) (Doyle et al., 2007). A CFA was conducted on the AUDIT, and consistent with previous findings, eigenvalues suggested the presence of two factors (see Appendix R). In order to preserve the unidimensionality of the scale only one factor which could best address the aims and hypotheses of the study was retained. Findings from the mixture modeling analysis
conducted earlier on the AUDIT also suggest that items 4 to 10 could best differentiate between the problematic drinking patterns and the other two drinking patterns (abstainers and social drinkers). It was considered unnecessary to include two alcohol use predictors in the current study, and incorporating only one factor would also preserve the unidimensionality of the scale. The dependence/consequences factor is more likely to have an impact on recovery and functional disability and more central to the aims of the current study. It was decided to retain only the second factor, alcohol dependence/consequences as an indicator of problematic effects from alcohol use in the current study. Alcohol consumption items (1, 2, and 3) were subsequently removed, and the resulting model showed good fit.

Inspection of the model revealed that the alcohol dependence/consequences model fits the data well, Bollen-Stine bootstrap $p = .709$, $\chi^2 (df = 14, n = 154) =$
20.524, $p > .114$, $\text{CMIN/DF} = 1.466$, $\text{GFI} = 0.963$, $\text{AGFI} = 0.927$, $\text{TLI} = 0.979$, $\text{CFI} = 0.986$, $\text{RMSEA} = .055$, $\text{SRMR} = .034$. The standardised factor loadings were all significant, with item 5 ("How often during the last year have you failed to do what was expected of you because of your drinking?") showing the highest loading for alcohol dependence and consequences. The one factor congeneric model demonstrated adequate discriminant validity across items.

The final AUDIT structure was compared to the original scale, due to the non-normality of the data a non-parametric test was used, resulting in a very strong Spearman’s correlation ($r = .99$, $p < .000$) providing evidence that the new AUDIT structure is measuring the same construct as the original.

11.9. Measurement Model the DAST-10

The DAST-10 was designed as a brief screening instrument to identify problems with drug use over the past year based (Skinner, 1982). The probability of responses to items on the DAST-10 in a mixture modeling analysis across the three groups suggested by the analysis show that all of the items with the exception of item 1 discriminated well across the three groups. Item 1 “Have you used drugs [in the past 12 months] other than those required for medication reasons” only differentiated the high drug use group from the other two groups.
No clear factor structure for the DAST-10 has been established (Yudko et al., 2007). Previous authors note that the scale appears to be multidimensional, with one prominent factor measuring the “external consequences of using drugs” (items 1, 2, 4, 6, 7, 8, 9, 10) and the remaining two factors only contain one indicator measuring separate aspects of addiction (Cocco & Carey, 1998). The one-item-factors found by previous authors consist of item 3 (“Are you always able to stop using drugs when you want to?”) and of item 5 (“Do you ever feel bad or guilty about your drug use?”). This proposed model from Cocco and Carey (1998) was tested but showed inadequate fit (see Appendix S). Carey, Carey and Chandra (2003) correlated error terms and established a one-factor solution using a sample of psychiatric patients in India, however, no justification for the correlation of error terms could be established in the current CFA. Instead, a CFA on the full DAST-10 was conducted and items were removed until adequate fit was achieved.

Eigenvalues suggested the presence of one factor, whilst the standardised residual covariates matrix and modification indices suggested some redundancy in
items 4 and 6 and these items were not adequately explaining the relationships in the data and were consequently removed for a better model fit. In contrast to previous authors, items 3 and 5 loaded onto the factor well.

\[ \text{Figure 30. Standardised parameters estimated in measurement model for the DAST-10 (} n = 154). \]

Inspection of the model revealed that the drug use model fits the data well, Bollen-Stine bootstrap $p = .368$, $\chi^2(df = 20, n = 154) = 31.188$, $p > .053$, CMIN/DF $=1.559$, GFI $= 0.957$, AGFI $= 0.922$, TLI $= 0.963$, CFI $= 0.974$, RMSEA $=.060$, SRMR $=.041$. The standardised factor loadings were all significant, with item 9 (“Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?”) showing the highest loading for drug use. The one factor congeneric model demonstrated adequate discriminant validity across items.
The final DAST structure was compared to the original scale, due to the non-normality of the data a non-parametric test was used, resulting in a very strong Spearman’s correlation (r = .92, p < .000) providing evidence that the new DAST structure is measuring the same construct as the original.

11.10. Measurement Model for the SDS

The SDS is a composite of three items designed to measure the extent that mental illness symptoms impair functioning in “social”, “family/home life”, and “work/school life” (Sheehan, 1983). Based on previous authors, a one factor structure for functional disability across all life domains was expected (Arbuckle et al., 2009).

![Figure 31. Standardised parameters estimated in measurement model for the SDS (n =154).](image)

To examine the unidimensionality and goodness-of-fit for this construct with only three indicators, a pair of referent items were identified and their parameters were set to equality. Inspection of the model revealed that the impact of mental illness symptoms on functional disability model fits the data well, Bollen-Stine bootstrap p = .732, χ² (df = 1, n =154) = .144, p > .704, CMIN/DF = .144, GFI = 0.999, AGFI = 0.996, TLI = 1.025, CFI =1.000, RMSEA =.000, SRMR = . 007. The standardised
factor loadings were all significant, with item 1 (“To what extent does your mental health symptoms impair your functioning in your social life”) showing the highest loading for functional disability. The one factor congeneric model demonstrated adequate discriminant validity across items.

11.11. Internal Consistency of New Scales

The new scales were assessed to demonstrate internal consistency. The avoidance coping subscale showed a Cronbach alpha of .64, whilst the MARS and the active cope scales showed Cronbach alpha of .69. These were deemed sufficient and likely due to the low item numbers on the scales. The remaining scales all showed sufficient internal reliability with alpha values ranging from .75 to .89. The reliability of the scales is presented in Appendix T.

11.12. Summary of Scale Development

The new scales developed from the measurement models were used for the remainder of the analysis to ensure that the variables included are unidimensional and reflect true co-variation with no conceptual overlap. Some of the variables do not retain identical items as used in previous studies. Notably, the newly formed active coping scale derived from the Brief COPE describes items relating to active coping, planning and self-distraction strategies. A higher-order model was developed and measures the recovery concept across four domains; optimism and purpose, illness self efficacy, no dominations by symptoms, and willingness to ask for help.

Each of the newly developed scales showed adequate reliability, and very high correlations with the originals, providing evidence for their validity (see Appendix T). A summary of the removed items from the scales and the reasons for their removal
during the analysis is provided in Appendix U. Model fit statistics for the new scales are provided in Appendix V.
Chapter 12. Relationships Between Variables

12.1. Outline of Chapter

This chapter explores the relationships between the variables in the study. To explore Aim 2 (i.e., to determine if traditional clinical variables were associated with recovery and functional disability) and Aim 3 (i.e., investigate whether psychosocial variables were associated with recovery and functional disability) of the study, a correlational analysis was performed. Aim 4, to identify which of the psychosocial variables uniquely contributed to recovery and functional disability over-and-above current mood and clinical variables, was examined with two hierarchical regressions. Finally, Aims 5 and 6 were addressed by exploring the hypothesised relationships between the clinical and psychosocial variables in two SEM models.

12.2. Correlational Analysis

Correlational analysis was performed to explore the relationships hypothesised in Aims 2 and 3. This includes examining the hypothesised relationships presented in hypotheses 1 to 5 between the independent variables with regard to recovery and functional disability, and also among the clinical variables presented in Hypotheses 8 to 10. The correlations between the psychosocial variables were also explored to assess the relationships presented in Hypotheses 13 and 14, using the attachment framework. A non-parametric correlational analysis was used due to the non-normality of some of the variables. The correlation matrix reveals the expected pattern of relationships between variables, with a few notable exceptions.
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</table>

*p < .05. **p < .01. ***p < .001.
With regard to recovery and the demographic variables, there were no relationships between age and gender, but a low magnitude, significant negative correlation with education suggesting higher recovery in those with lower education attainment. There was also a significant low magnitude positive correlation between the length of time that the person had been involved in a psychosocial rehabilitation program and higher recovery scores. Similarly, there was a significant low magnitude correlation between the length of time that the person had been involved in the Mind Australia program and better functioning. There was also a low magnitude but significant correlation between higher educational achievement and functional disability. Males showed higher functional disability than females.

As expected in Hypothesis 1, there was a significant moderate magnitude negative correlation between recovery scores and lower functional disability, suggesting higher recovery scores are associated with higher functioning. There was also a significant low magnitude, correlation between recovery and higher medication adherence. In contrast to expectations in Hypothesis 1, no relationship was found between staff-reported severity ratings or hospitalisations and recovery. Also in contrast to expectations, there was no significant relationships between recovery and both drug and alcohol use.

With regard to Hypothesis 2, as expected, there was a significant, low magnitude, positive correlation between drug use and functional disability, as well as between number of hospitalisations and functional disability. Also as expected, there was a significant low magnitude negative correlation between medication adherence and functional disability. In contrast to expectations, staff reported severity and alcohol use were not significantly related to functional disability.
Other hypothesised correlations from the clinical variables include a significant moderate magnitude relationship between alcohol and drug use (Hypothesis 8) and a significant low magnitude negative correlation between medication adherence and both drug and alcohol use (Hypothesis 9). There was also significant low magnitude correlation between drug and alcohol use and younger age. With regard to Hypothesis 10, there was a significant low magnitude correlation between higher levels of medication adherence and lower hospitalisations, however, the staff-reported severity rating was not related to medication adherence. There was a significant low magnitude correlation between drug use and higher number of hospitalisations, however, alcohol use was associated with number of hospitalisations. There was a significant low magnitude positive correlation between higher staff-reported severity ratings and more hospitalisations and higher drug use, but the staff ratings were not related to alcohol use.

With regard to the psychosocial variables, the expected patterns of association presented in Hypotheses 3, 4, and 5 were found between recovery and each of the other psychosocial variables; however, there was no significant relationship between attachment anxiety and recovery scores. There was a significant moderate magnitude correlation between recovery and lower scores on negative self-schemas, and higher scores on positive self-schemas. Significant low magnitude correlations were also found between recovery and lower scores on negative others-schemas and higher scores on positive others schemas. There was a significant low magnitude negative correlation between recovery and attachment avoidance scores. With regard to the coping strategies, there was a significant low magnitude positive correlation between recovery and social coping, a significant low magnitude negative correlation between
recovery and avoidance coping, and a significant moderate positive correlation between recovery and active coping.

With regard to functional disability scores, all of the psychosocial variables showed significant relationships in the expected directions as presented in Hypotheses 3, 4, and 5; with the exception of social coping, which did not significantly correlate with the other variables. There was a significant moderate magnitude correlation between functional disability and higher scores on negative self-schemas, and lower scores on positive self-schemas. Significant low magnitude correlations were also found between functional disability and higher scores on negative others-schemas and lower scores on positive others schemas. There was a significant moderate positive correlation between functional disability and attachment avoidance scores, and a significant low magnitude positive correlation between functional disability and attachment anxiety scores. With regard to the coping strategies, there was a significant low magnitude negative correlation between functional disability and active coping, and a significant low magnitude positive correlation between functional disability and avoidance coping.

Consistent with Hypothesis 13, there was a significant low magnitude positive correlation between attachment anxiety and negative self-schema scores, and a significant moderate positive correlation between attachment avoidance and negative others-schema scores. With regard to Hypothesis 14, there was a significant moderate magnitude positive correlation between negative self-schema scores and avoidance coping and a significant low magnitude negative correlation between negative-self-schemas and active coping. Negative-schemas were not significantly associated with social coping as anticipated. As expected, positive self views were associated with all of the coping strategies in the expected directions. There was a significant low
magnitude positive correlation between positive self-schemas and social coping, and a significant moderate magnitude positive correlation between positive self-schemas and active coping. There was also a significant low magnitude negative correlation between positive self-schemas and avoidance coping. There was a significant moderate positive correlation between negative others-schemas and avoidance coping, but were unrelated to social and active coping styles. There was a significant moderate magnitude positive correlation between positive others-schemas and social coping and a significant low magnitude positive correlation between positive others-schemas and active coping. More positive views of others were not associated with avoidance coping as expected.

12.3. Contributions of Variables to Recovery Scores

A hierarchical regression was performed to determine if the psychosocial variables contributed to recovery scores over and above the clinical variables and current affect (Hypothesis 6). To test this hypothesis, current affect was entered in Step 1 to control for affect at the time of data collection. Clinical variables were entered at Step 2, and psychosocial variables at Step 3. Due to the large number of variables and limited sample size, clinical and psychosocial variables were only included as independent variables if they had a significant correlation with the RAS.

Current positive and negative affect was entered in Step one to determine the effects of the participant’s mood at the time of completing the questionnaire. The traditional clinical variable of medication adherence was entered next in the regression model. Finally, the psychosocial variables of self-schemas, others-schemas, attachment avoidance, active coping style, social coping, and avoidance coping styles were added to the analysis. The sample size \( n = 154 \) was deemed adequate, based on
Tabachnick and Fidell’s (2001) formula which recommended a minimum sample size of $n = 138$. No multivariate outliers were identified, and multicollinearity assumptions were met along with the assumptions of normality, linearity, homoscedasticity, and independence of residuals (see Appendix W).

### Table 18

**Summary of Hierarchical Regression Analysis for Recovery ($n = 154$)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
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<th></th>
<th></th>
<th>Model 2</th>
<th></th>
<th></th>
<th></th>
<th>Model 3</th>
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<td>$\beta$</td>
<td></td>
<td>$B$</td>
<td>$SE$</td>
<td>$\beta$</td>
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<td>$SE$</td>
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**$p < .01$.  ***$p < .001$**

The variables in the model produced an overall adjusted $R^2$ of .43 ($F [8,142] = 11.49, p < .001$) for the prediction of recovery scores. Step 1 ($F [2,151] = 29.15, p < .001$) was significant whilst Step 2 ($F [1,150] = 20.23, p > .05$), was not significant.

At Step three, when all variables were considered together, the strongest unique predictors of recovery scores were active coping style ($\beta = .29$) and negative view of self-schema ($\beta = -.25$). As hypothesised in Hypothesis 6, the psychosocial variables
added in Step 3 explained a further 18% of the variance when the effects of current
affect, and medication adherence were statistically controlled for.

12.4. Contributions of Variables to Functioning Scores

To further explore the clinical and psychosocial variables with regard to their
impact on functioning, a second hierarchical regression was performed to test
Hypothesis 7, using functional disability (as measured with the SDS) as the dependent
variable. Clinical and psychosocial variables were only included in the model if they
showed a statistically significant correlation with functional disability. Sample size (n
=154) was deemed adequate, no multivariate outliers were identified, and
multicollinearity assumptions were met along with the assumptions of normality,
linearity, homoscedasticity, and independence of residuals (see Appendix X).
### Table 19

**Summary of Hierarchical Regression Analysis for Functional Disability (n = 154)**

<table>
<thead>
<tr>
<th>Variable</th>
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*p < .05.  **p < .01.  ***p < .001

The variables in the model produced an overall adjusted $R^2$ of .31 for the prediction of impact on functional disability scores. Step 1 ($F [2,151] = 18.99, p < .001$), Step 2 ($F [3,148] = 11.06, p < .001$), and Step 3 ($F [8,140] = 6.38, p < .001$) were all significant. At Step 3, when all variables were considered together, the strongest unique predictors of functional disability after controlling for negative affect was number of hospitalisations. None of the psychosocial variables were identified as significant unique predictors in the regression, although collectively and in accordance with Hypothesis 7, the psychosocial variables added in Step 3 explained a further 10% of the variance when the effects of current affect, and traditional clinical outcome...
variables were statistically controlled for. The traditional clinical variables (medication adherence) explained a further 7% of the variance once current affect had been controlled for.

12.5. **Structural Equation Modeling**

Further to the findings from regression analyses, SEM models were developed to explore interrelationships between predictors of recovery scores and functional disability. SEM was used to test possible predictive relationships and determine how well the observed data fits the hypothesised models. The first model tests the hypothesised model with relation to the clinical variables presented in aim five. The second model test the attachment theory model for the psychosocial variables and recovery and functioning outcomes presented in aim six. The measurement models validated through CFA were fitted into a structural path model using latent constructs.

The MARS, Brief COPE, and DAST contained fewer than 5 response options which violate the assumption of continuous variables for the Maximum Likelihood (ML) estimation in SEM analyses. To address the ordinal nature of some of these scales as well as the non-normality in the data, and limited small sample size, items were parcelled to form composite scores prior to fitting the data to a structural equation model (Bollen, 1989; Kishton & Widaman, 1994; Nasser & Takahashi, 2003). Assumptions for the item parceling technique includes the unidimensionality of the items being parcelled (Bandalos, 2002). The assumption of unidimensionality was assessed during the testing and adaptation of measurement models and was met for each scale used in the SEM.

Discriminant validity of the scales was assessed by a comparison of each of the items for the latent variables across each of the other variables used in the SEM.
models. Based on the structure coefficients, the factors all displayed discriminant validity (see Appendix Y). Reliability was assessed for each of the new scales using Cronbach’s alpha along with the calculation of composite variables scores from items retained in the measurement models. All scales exhibited adequate reliability statistics ranging from .69 to .87 (see Table 20). Finally, the regression coefficients and the measurement of error variances associated with each construct in the model was calculated based on the reported alpha using Munck’s (1979) formulae.

Table 20

<table>
<thead>
<tr>
<th>Single indicator</th>
<th>M</th>
<th>SD</th>
<th>Reliability (α)</th>
<th>Regression coefficient $SD \sqrt{α}$</th>
<th>Error variance $SD^2 (1 – α)$</th>
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<td>1.13</td>
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<td>.81</td>
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<td>2.82</td>
<td>.69</td>
<td>2.34</td>
<td>2.47</td>
</tr>
</tbody>
</table>
The regression coefficients and error variances obtained for the scale composite variables in Table 20 were used as fixed parameters in the single indicator models. Models included both measures of functional disability and recovery as dependent variables.

12.5.1. Clinical variables hypothesis. The first SEM model was developed to test the hypothesised relationships between the clinical variables and recovery and functional disability presented in aim five. Because causality between many of the clinical variables has not been established, directionality between many of the clinical variables could not be assumed. It remains unclear whether substance use and lower medication adherence can lead to more severe symptoms or vice versa. For the purposes of the current study, it was hypothesised that medication adherence and substance use would mediate the relationship between illness severity and recovery and functional disability (Hypothesis 12). It is acknowledged that alternative plausible configurations of the data may be valid. For instance, an alternative configuration using severity of illness as a mediating variable can be seen in Appendix Z. However, the model presented below has the advantage of determining if medication adherence can act as a mediator between illness severity and recovery. Medication adherence was considered to be a more malleable factor than illness severity, and more useful in clinical practice.

Staff severity ratings were considered as a separate factor to number of hospitalisations after a low intercorrelation suggested that a latent variable for severity using both measures was not appropriate. Staff severity rating was removed along with alcohol and drug use as they did not contribute to the model.
The above figure shows the significant relationships in the model for clinical variables, recovery, and functional disability. A non-significant trend ($p < .057$) was found for the relationship between functional disability and medication. One multivariate outlier was identified using Mahalanobis distance, but as the model showed good fit with similar paths with and without the outlier, this observation was retained. As there was significant multivariate kurtosis ($Mardia's \text{ coefficient} = 9.82, t = 8.79$) and a limited sample size, the Bollen-Stine bootstrapping procedure was utilised, showing good fit (Bollen-Stine bootstrap $p = 1.00$). Other goodness-of-fit statistics also indicate a good fit, $\chi^2 (df = 1, n = 154) = 2.388, \ p > .122$, CMIN/DF = 2.388, GFI = 0.992, AGFI = 0.923, TLI = 0.874, CFI = 0.979, RMSEA = .095, SRMR = .038.
In contrast to expectations in Aim 5, modeling of the relationships could only provide limited new information to explain the hypothesised relationships than that provided by the regression and correlational analyses. Few of the clinical variables were associated with functioning or recovery and could only account for a small proportion of the variances (both 13%). The direct and indirect effects of clinical variables on functional disability are presented below.

Table 21

*Standardised Direct, Indirect, and Total Effects of Psychosocial Variables on Impact of Mental Illness Symptoms on Recovery (n =154)*

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect (Lower Bounds)</th>
<th>Total Effect (Upper Bounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication adherence</td>
<td>.37***</td>
<td>-</td>
<td>.37**</td>
<td>.20</td>
</tr>
<tr>
<td>Hospitalisations/</td>
<td>-</td>
<td>-.10**</td>
<td>-.10**</td>
<td>-.21</td>
</tr>
<tr>
<td>Illness severity</td>
<td>-</td>
<td></td>
<td>-.21</td>
<td>-.03</td>
</tr>
</tbody>
</table>

* 95% Confidence Interval.
** p < .01.

As predicted in Hypothesis 11, higher medication contributed to recovery scores in the SEM model and showed the highest contribution with a significant direct effect on recovery scores. However, substance use did not contribute. There was also a smaller significant effect (p<.052) from the number of hospitalisations in the previous 12 months. Further testing was conducted to test the mediational hypotheses (Hypothesis 12) and showed that medication adherence mediated the relationship between severity of illness and recovery (when using number of hospitalisations in the
previous 12 months as a proxy for illness severity), but not functioning. Substance use did not mediate the relationship between illness severity and recovery, and was not associated with recovery or functional disability scores as expected.

For the clinical variables and functional disability scores, the number of hospitalisations in the previous 12 months showed the highest contribution with a significant direct effect on functional disability scores. More hospitalisations in the previous 12 month period were associated with a higher impact of mental illness symptoms on functioning. In other words, the more severe the illness the more impact there is on one’s ability to function. There was also a non-significant trend effect \( (p<.052) \) from medication adherence on functional disability scores, with higher medication adherence resulting in lower functional disability. Medication did not mediate the relationship between illness severity and functional disability as expected in Hypothesis 12.

Figure 33. Mediating relationship between number of hospitalisations, medication adherence, and recovery \((n =154)\).
12.5.2 Psychosocial variables hypothesis. The second SEM model was developed to test the hypothesised relationships between the psychosocial variables and recovery and functional disability presented in aim six. Based on attachment theory, it was hypothesised that attachment experiences would lead to the development of schematic beliefs (Hypothesis 13), which then interact with coping style (Hypothesis 14). It was also expected that all of these variables would influence recovery and functional disability (Hypothesis 15). In line with the \textit{a priori} attachment framework, it was hypothesised schematic beliefs would mediate the relationship between attachment style and recovery and functional disability (hypothesis 16) and that coping style would mediate the relationship between schematic beliefs and recovery and functional disability (Hypothesis 17). A structural equation model reflecting the hypothesised relationships is presented below.

Table 22

\textit{Standardised Direct, Indirect, and Total Effects of Psychosocial Variables on Impact of Mental Illness Symptoms on Functional Disability (n =154)}

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect</th>
<th>Total Effect (Lower Bounds)(^a)</th>
<th>Total Effect (Upper Bounds)(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication adherence</td>
<td>-.22</td>
<td>-</td>
<td>-.22</td>
<td>-.39</td>
<td>-.04</td>
</tr>
<tr>
<td>Hospitalisations/</td>
<td>.24*</td>
<td>.06*</td>
<td>.30**</td>
<td>.13</td>
<td>.44</td>
</tr>
<tr>
<td>Illness severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) 95\% Confidence Interval.

\(^*\) \textit{p} < .01.
Negative others-schema, and positive others-schema were removed from the model as they showed no significant paths with other variables. Active coping style was the only coping style variable to significantly contribute to the model, and avoidance coping and social coping were removed from the model. It is noted that the model presented contains a complex series of relationships. Due to the potential for over-modeling, Appendix AA contains two smaller models broken down into the hypothesised attachment relationships with coping style as well as a model showing the relationships between schema, coping, recovery, and functioning (without attachment style). The larger, more complex model was included in the main text due to the richness of information that is of theoretical interest to the literature.

Figure 34. Influence of attachment style, schemas, and coping on recovery and functioning (n =154).
No multivariate outliers were identified using Mahalanobis distance. An assessment of normality demonstrated significant multivariate kurtosis (Mardia’s coefficient = 4.81, t = 2.66), and the Bollen-Stine bootstrapping procedure was employed as a measure of fit resulting in a non-significant adjusted chi-squared p value (Bollen-Stine bootstrap p = .836), indicating good fit. Other goodness-of-fit statistics further indicate a good fit, $\chi^2 (df = 9, n = 154) = 5.684, p > .771$, CMIN/DF = .632, GFI = 0.989, AGFI = 0.967, TLI = 1.031, CFI = 1.000, RMSEA = .000, SRMR = .027. Significant paths are depicted in the presented model. However, a non-significant trend (p = .058) for the relationship between attachment avoidance and functioning is also presented. The model explained 31% of the variance in negative self-schema scores but less of the variance in positive self-schema scores (12%). A good proportion of variance was explained in active coping style scores (27%) as well as a high proportion of functional disability scores (45%), and a very substantial proportion of the variance for recovery scores (63%).

The presence of significant relationships between attachment style and self-schemas provide evidence for the hypothesised relationships using an attachment theory framework. It suggests that attachment experiences and cognitive self-schemas are important elements underpinning active coping style as well as recovery and functional disability. The direct, indirect, and total effects of psychosocial variables on recovery scores are presented below.
Table 23

*Standardised Direct, Indirect, and Total Effects of Psychosocial Variables on Recovery (n = 154)*

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect (Lower Bounds)</th>
<th>Total Effect (Upper Bounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment avoidance</td>
<td>-</td>
<td>-.32**</td>
<td>-.32**</td>
<td>-.46</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>-</td>
<td>-.10</td>
<td>-.10</td>
<td>-.22</td>
</tr>
<tr>
<td>Positive self-schema</td>
<td>-</td>
<td>.25***</td>
<td>.25***</td>
<td>.13</td>
</tr>
<tr>
<td>Negative self-schema</td>
<td>-.51**</td>
<td>-</td>
<td>-.51**</td>
<td>-.65</td>
</tr>
<tr>
<td>Active coping</td>
<td>.48**</td>
<td>-</td>
<td>.48**</td>
<td>.29</td>
</tr>
</tbody>
</table>

*a 95% Confidence Interval.

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

As found in the previous regression analysis, negative self-schemas and active coping style were the strongest direct predictors of recovery scores. Positive self-schema and attachment avoidance also provided significant, indirect contributions to recovery scores.

Further information about the indirect effects of psychosocial variables on recovery showed four mediating relationships with recovery. As expected, both negative self-schema and positive self-schema fully mediated the relationship between attachment avoidance and recovery. Active coping style partially mediated the relationships between positive self-schema and recovery as well as negative-self and recovery. The mediation models are displayed below.
Figure 35. The mediating relationship between attachment avoidance, negative self-schema, and recovery ($n = 154$).

Figure 36. The mediating relationship between attachment avoidance, positive self-schema, and recovery ($n = 154$).
In line with expectations, both negative and positive-self views mediated the relationship between attachment avoidance and recovery. This suggests that self-schemas can influence the relationship between an avoidant attachment style and recovery. Higher positive self-schemas can enhance recovery whilst higher negative self-schemas reduce recovery. In contrast to expectations, attachment anxiety did not display this same pattern.

Also congruent with the hypothesised relationships, active coping style partially mediated the relationships between positive self-schema and recovery as well as negative-self and recovery. The mediation models are displayed below.

*Figure 37.* The partial mediation between positive self-schema, active coping, and recovery (*n* =154).
Figure 38. The partial mediation between negative self-schema, active coping, and recovery (n = 154).

The partial mediation suggests that an active coping style has some influence on the relationship between self-schema’s and recovery.

The direct and indirect effects between the psychosocial variables and functioning from the SEM analysis showed that attachment avoidance and negative self-schema were the strongest predictors of higher functional disability. Positive self-schema and active coping also made significant contributions to lower functional disability scores. Attachment anxiety did not contribute to the functional disability scores.
Table 24

*Standardised Direct, Indirect, and Total Effects of Psychosocial Variables on Impact of Mental Illness Symptoms on Functional Disability (n = 154)*

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect</th>
<th>Total Effect (Lower Bounds)</th>
<th>Total Effect (Upper Bounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment avoidance</td>
<td>.20</td>
<td>.25**</td>
<td>.45**</td>
<td>.21</td>
<td>.64</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>-</td>
<td>.09</td>
<td>.09</td>
<td>-.01</td>
<td>.22</td>
</tr>
<tr>
<td>Positive self-schema</td>
<td>-</td>
<td>-.11*</td>
<td>-.11*</td>
<td>-.25</td>
<td>-.01</td>
</tr>
<tr>
<td>Negative self-schema</td>
<td>.44**</td>
<td>-</td>
<td>.44**</td>
<td>.16</td>
<td>.65</td>
</tr>
<tr>
<td>Active coping</td>
<td>-.22*</td>
<td>-</td>
<td>-.22*</td>
<td>-.43</td>
<td>-.02</td>
</tr>
</tbody>
</table>

*95% Confidence Interval.

*p < .05, **p < .01, ***p < .001.

Further explorations showed that there were two full mediating relationships, and one partial mediation in the data. As expected, negative self-schema mediated the relationship between attachment avoidance and functional disability, whilst positive self-schema partially mediated the relationship between attachment avoidance and functional disability. Finally, negative self-schema (but not positive self-schema) fully mediated the relationship between attachment anxiety and functional disability. In contrast to expectations, coping style did not mediate the relationships between schemas and functional disability as active coping style was not significantly associated with functional disability in the mediation model.
Figure 39. The mediating relationship between attachment avoidance, negative self-schema, and functional disability ($n = 154$).

Figure 40. The partial mediation between attachment avoidance, positive self-schema, and functional disability ($n = 154$).
Figure 41. The mediating relationship between attachment anxiety, negative self-schema, and functional disability ($n = 154$).
13.1. Outline of Chapter

The following chapter presents a summary of the results found in the current study in relation to the aims of the study. This chapter does not include a comparison of the current findings in the context of previous literature, which will be presented in subsequent chapters.

13.2. Demographics and Sample Screening

The demographic data suggest that the sample is representative of the wider SMI population. The demographic information contained in the current sample was consistent with the Mind Australia annual report (Mind Australia, 2008), as well as the Australian National Mental Health Survey of 3,800 Australians who had a psychotic disorder (Jablensky et al., 1999). Educational attainment was substantially lower for the current sample than the general Australian population. There was some heterogeneity in the sample with regard to SMI diagnosis; however, the majority (71%) had been diagnosed with a psychotic illness. There were no significant clustering effects in the data across recruitment sites, supporting the assumption of independent observations.

Participants who displayed active psychotic phenomena, mania, extremely disorganised behaviour or other symptoms which may have jeopardised the reliability and validity of their responses were flagged and their data compared to the remaining sample. No significant differences in overall levels of response were found suggesting that both groups showed similar scores across the scales and as such the data from the flagged participants were included in the sample for data analysis.
There was high prevalence of reported substance use in the current sample, consistent with SMI populations, with 65.6% of the sample reaching a positive screening score for either alcohol or drug use, or both alcohol and drug use. Specifically, 27% of the sample was experiencing symptoms from their drug use which are likely to be indicative of a drug use disorder, whilst 57.8% of the sample had some drug involvement in the previous 12 months. For alcohol use, 41.7% were at risk of alcohol problems or currently experiencing of alcohol problems.

Most of the participants (94%) were currently taking prescribed medications: 79% were taking at least one antipsychotic medication, with smaller instances of other forms of medication. Around 30% of the sample was considered to be highly adherent to their prescribed medication, and 49.9% were considered to have moderate to high adherence. With regard to side effects, three quarters of the sample endorsed items referring to negative effects of medications.

13.3. Aim 1: Scale Development

Each scale was assessed using models proposed by previous authors. The published factor structures for the RAS did not fit the current sample, however a four-factor and a higher-order “recovery” construct was identified and a new factor structure and measurement model was developed. The poor fit for the proposed models may be due to differences between samples in the various studies. The resulting structure showed a high correlation to the original RAS scale.

An EFA was also conducted on the Brief COPE to determine the viability of composite scores. Subscales were subsequently combined and validated through CFA. Other scales were consistent with models proposed by previous authors, although some items were removed due to poor discriminant validity or to obtain
adequate fit. These new scales were used in the study due to their superior construct validity in the current sample whereby the measures reflect true co-variation with no conceptual overlap. The process of scale development also enabled these concepts to be used as latent variables in the SEM analysis which then could account for measurement error and also provides a goodness-of-fit for the theoretical model for the sample data (Bollen, 1989).

13.4. Aims 2 and 3: Correlations

Correlations generally showed the expected pattern of relationships with some exceptions. Recovery was not significantly associated with age, gender, drug or alcohol use, number of hospitalisations or staff report severity ratings. For the psychosocial variables, there was a low magnitude significant negative correlation between recovery and attachment avoidance, but not between recovery and attachment anxiety. There was a low magnitude significant correlation between recovery and lower educational attainment and similarly between higher functional disability and higher educational attainment.

As hypothesised, there was a moderate magnitude significant correlation between lower functional disability and higher recovery. Each of the other clinical variables with the exception of alcohol use and staff reported severity ratings also showed a low magnitude significant correlation with functional disability in the expected directions. Functional disability scores showed significant relationships with the psychosocial variables in the expected directions with the exception of social coping. The hypothesised relationships between the psychosocial variables were consistent with the attachment framework, with some exceptions between some of the coping styles and schemas.
The expected relationships between clinical variables was also found with the exceptions of the staff-reported severity rating not being related to medication adherence or alcohol use, and alcohol use not being associated with a higher number of hospitalisations.

13.5. Aim 4: Regression Analyses Predicting Recovery and Functional Disability

A hierarchical regression analysis found that current affect, medication adherence, and psychosocial variables accounted for an adjusted 43% of the variance in recovery scores. As hypothesised, psychosocial variables contributed to the prediction of recovery over-and-above that of the clinical variables and current affect. Higher active coping scores, and negative self-schema were the best predictors of recovery scores. With regard to functional disability, no psychosocial variable made a unique contribution above that of the variance from current affect and clinical variables, although collectively the psychosocial variables did predict an additional 10% of disability variance over-and-above that of the mood and clinical variables. After controlling for negative affect, number of hospitalisations was the best predictor of functional disability, and all of the variables accounted for an adjusted 31% of the variance.

13.6. Aims 5 and 6: Structural Equation Models

SEM was used to further explore the data and the relationships between the independent variables and recovery and functional disability. As found in the regression analyses, the clinical variables did not account for a large proportion of the variance in functioning or recovery scores. However, the SEM did show that
medication adherence mediated the relationship between hospitalisations and recovery.

With regard to the psychosocial variables, the presence of significant relationships between attachment style and self-schemas supports the hypothesis that attachment experiences and self-schemas are important elements underpinning active coping style as well as recovery and functional disability. The model explained a high proportion of functional disability scores, and a very substantial proportion of the variance for recovery scores. Information about the indirect effects of psychosocial variables on recovery suggests a complex array of mediating relationships. As expected, both negative self-schema and positive self-schema fully mediated the relationship between attachment avoidance and recovery. Active coping style partially mediated the relationships between positive self-schema and recovery as well as negative-self and recovery. Negative self-schema (but not positive self-schema) fully mediated the relationship between attachment anxiety and functional disability.

With regard to functional disability, attachment avoidance, and negative self-schema were the strongest predictors of higher functional disability, whilst active coping and positive self-schema predicted outcomes with smaller effect sizes. As expected, negative self-schema mediated the relationship between attachment avoidance and functional disability, whilst positive self-schema partially mediated the relationship between attachment avoidance and functional disability.
Chapter 14. Discussion of Sampling, Sample Demographics, and Methodology

14.1. Outline of Chapter and Discussion

The findings from the current study are discussed below over several sections, and should be understood within the context of the previous literature.

The first section briefly revisits the current aims and theoretical framework used in the current study. The sampling approach and methodology are discussed the following section and include an analysis of the sampling and specific methodological issues relating to SMI populations and the reliability of self-report techniques. Next, the findings for demographic information that is of particular interest to SMI populations are discussed, including age and gender, educational attainment, substance use, and medication adherence rates.

A discussion on recovery as a construct in SMI and the use of the RAS will follow. The next section details the findings with regard to clinical variables as predictors of recovery in the context of previous research. This is followed by a discussion about the utility of attachment as a framework for understanding recovery and a discussion of the findings for the psychosocial variables in relation to recovery. Following this, other interrelations between the each of the clinical variables as well as the psychosocial variables are explored in the context of previous findings. Finally, the implications for SMI research and treatment interventions are discussed, as are the limitations of the study.
14.2. Restatement of Aims

The current study utilised a relatively new quantitative scale measuring recovery – the RAS – in order to contribute to the growing theory and knowledge of recovery. One purpose of the current study was to examine the utility of measuring the recovery concept using a subjective quantitative scale. Furthermore, this study aimed to investigate the factors associated with subjective recovery and functional disability in SMI using traditional clinical variables alongside psychosocial variables.

While a plethora of factors is likely to contribute to recovery, the current study incorporated a selection of factors from two main research fields in recovery research. The first were the traditional clinical factors selected on the basis of their prominence in mental health treatment settings and empirical evidence seen in traditional outcome studies assessing symptom severity and functional disability. In addition, psychosocial factors were selected for inclusion in the current study based on the theoretical framework of attachment theory. These factors were attachment style, self- and others-schemas, and coping style.

The first aim for this study was to develop measurement models to be used in the SEM and assess the goodness-of-fit of established factor structures for each scale in the current SMI sample. The second aim was to investigate whether traditional clinical variables (severity of illness as reported by staff, number of hospitalisations, medication adherence, and substance use) were associated with recovery and functional disability. The third aim was to investigate whether the selected psychosocial variables (attachment style, self- and others-schemas, and coping style) were associated with recovery and with functional disability. The fourth aim was to identify variables that could uniquely contribute to recovery and functional disability scores, over and above that of current mood. The fifth aim was to develop a model of
the hypothesised associations between traditional clinical factors and each of recovery and functional disability. Finally, the sixth aim was to develop a model for the associations between psychosocial variables and their relationships with recovery and functional disability.

14.3. Sampling Approach

The definition of what constitutes an SMI varies from study to study, which poses a challenge for comparing research findings in the recovery area. It is important to report the specific criterion used from study to study in order to facilitate cross-study comparisons so as to ensure that the research findings are attributed to the appropriate population. The current study defined SMI as a mental illness for which the impact on the person was severe enough to require support from psychiatric rehabilitation support services.

The heterogeneous sample in this study is more broadly reflective of the SMI population in the general community rather than acute clinical populations recruited from inpatient or outpatient psychiatric services. Participants were not in need of acute care (i.e., hospitalisation) at the time of data collection; however there were some who were observed to be experiencing acute symptoms. The range of diagnoses and presentations infers that the sample was likely to include those at differing stages of recovery, giving the study more variance and leverage to explore the contributing factors. The heterogeneous sample also assisted to reduce the impact of the clinician’s illusion bias (Cohen & Cohen, 1984), which can occur where a sample consists exclusively of people experiencing more chronic presentations that are not reflective of the larger population.
Using this sampling approach the current study was also able to capture a larger range of diagnoses and variability in recovery, which can then be generalised across a wider population. The current heterogeneous sample did not exclusively consist of one diagnostic group as used in some other studies (e.g., Carr, 1988; Tooth et al., 2003). Further, those with co-morbid substance use, personality disorder, or acute symptoms were not excluded from the current study, as has been done in some SMI research (e.g., Tooth et al., 2003). Instead, the sample contained primarily those with a psychotic illness, but also included other diagnoses which had a serious impact on the participant’s life and required support from Mind Australia mental health services. This included those with personality disorders, developmental disorders, major depressive disorder, and anxiety disorders that were often co-morbid with other disorders. As such, the generalisability of the findings is reflective of the SMI population within the psychiatric disability support services in Victoria, Australia.

Using a heterogeneous sample such as an SMI sample is also advantageous in that it eliminates the need to differentiate between diagnostic groups (which can present its own challenges). However, it cannot capture differences in recovery processes between diagnostic groups. Despite this loss of information, broader samples do allow research to focus on the commonalities of the recovery process, and findings could potentially be extrapolated to a large range of disabilities. It is highly likely that many of the processes involved in recovery from SMI are parallel to the process of those recovering from other physical disabilities such as quadriplegia or life altering events such as trauma.

This heterogeneous sampling method has also been used by numerous other authors in the SMI literature (e.g., Green et al., 2008; Hendryx et al., 2009). For example the sample contained in Corrigan and Phelan’s (2004) and Corrigan et al
(2004) studies on recovery and SMI included a similar sample of consumers with DSM-IV diagnoses such as schizophrenia, bipolar disorder, or major depressive disorder with significant functional disability. Similarly, Meyer (2001) included a sample of people with schizophrenia, major depressive disorder, bipolar disorder, schizoaffective disorder, and psychotic disorder not otherwise specified in his study of coping and SMI. The current sample did not contain those who have recovered without any clinical support, something that could be of interest to the recovery literature; however, access to this population remains a challenge.

With this in mind, there was still a good degree of variability in recovery scores, and the sample contained people with low levels of recovery as well as those with higher levels of recovery. None of the participants reported “no” level of recovery, whilst only one participant endorsed all of the recovery items on the RAS favorably. This suggests that participants were engaged in the recovery process to differing degrees.

The episodic nature of SMI and the non-linear nature of recovery indicate that recovery is likely to fluctuate, and external factors such as stressors are likely to play a role (Anthony, 1993; Hoffmann & Kupper, 2002). The cross-sectional design of the current study is unable to capture this process, and longitudinal studies are needed to explore these fluctuations of recovery over time. The current study could, however, identify factors associated with recovery at one point in time.

14.4. Reliability and Validity of Self-Reported Data in SMI Populations

Previous authors have suggested a range of factors (see section 3.6 for descriptions) that could limit the reliability of self-report data in SMI populations (Dickerson, 1997; Flinn, 2005; Gulliksen, 1987). Many of these issues were
addressed directly or indirectly in the current study. Firstly, questionnaires were selected for their short length and ease of understanding, and the researcher was present during data collection to provide assistance. Secondly, as suggested by Eisen (1995), the purpose of the study was clearly explained to participants and efforts were made to build rapport with the participants. From a qualitative standpoint, many consumers were keen to contribute to the study and appeared to take great care in their responses. There were particularly low instances of missing data, which may be attributable to participants taking great care in responding to the items as well as the accessibility of assistance provided by the researcher. Interestingly, the highest number of missing data was on the items completed by service support staff rather than items completed by participants. Further to this, the high rate of reported substance use and low medication adherence suggest the presence of open and honest responses from participants and indirectly suggests there was a low response bias such as modification of responses based on a desire to please.

Participants displaying overt active phenomena such as psychotic and manic symptoms, or disorganised behaviour were also noted. Comparisons between these participants and the rest of the sample were surprisingly unremarkable. Due to sample size limitations, invariance testing could not be conducted. It remains of interest to the literature to determine if those presenting with acute and active symptoms are indeed invariant to those who are not. The results of the present study are consistent with findings from MacCarthy et al (1986) who found that those with severe psychiatric illnesses provided accurate responses. Although the flagged participants appeared to be experiencing greater difficulties completing the questionnaires and required more support, it was evident that even those displaying active symptoms could provide accurate responses.
This finding has wider implications for research into SMI where it is common practice to exclude participants with active psychosis or mania or cognitive impairment (e.g., Chiba et al., 2010; Tooth et al., 2003). In light of this finding, the rationale behind the implementation of exclusionary criteria for these participants needs to be revisited and further explored in order to justify this practice. Allowing the inclusion of those presenting with acute symptoms is likely to produce data that is useful and more representative of the SMI population, and also help address the difficulties seen in recruitment for this population.

14.5. Sample Demographics and Recovery and Functional Disability

14.5.1. Age and gender. There was no relationship between age and either recovery or functional disability scores. This finding is not consistent with previous longitudinal research which suggests outcomes improve with age (Harrow et al., 2005). This finding may be attributable to the sample, which contained mostly younger participants. It is likely that those who may have been involved in the service at a younger age and who have successfully recovered were not represented in the sample. However this finding was also reported by Hendryx et al. (2009) who found no relationship between the RAS and age.

There were no gender differences on recovery scores. This was consistent with findings reported by Hendryx et al. (2009) who found no relationship between the RAS and gender. There was a modest difference found for gender and functional disability, with males showing slightly higher functional disability. Consistent with this, Grossman et al. (2006) found that males with a psychotic disorder showed lower functioning. These gender differences only applied to those with psychotic SMI (and not to those with non-psychotic SMI). It is possible that gender differences do exist in
recovery and other outcome measures for those with psychotic SMI but not non-psychotic SMI and these differences may have been diluted in the current study due to the heterogeneous sample.

14.5.2. Educational attainment. Substantially less people in the current study had completed secondary education, or an undergraduate or postgraduate degree, than those in the general population (ABS, 2008). Similar findings were found in the National Survey of Mental Health and Wellbeing conducted from 1997 to 1998 for people living with psychotic illnesses. The patterns of education attainment continue to be substantially lower in this population, and have remained largely unchanged over the past ten years. The ramifications for this include a disadvantage for literacy and employment opportunities (Jablensky et al., 1999; Stein, 2005). There was a low but significant negative correlation between educational attainment and recovery, as well as a positive correlation with functional disability scores. Similar findings were reported by Sheehan, Harnett-Sheehan, and Raj (1996) using the SDS, who found that functional disability scores were higher in those with higher education. This suggests that higher education is reflected in lower recovery and higher functional disability. It is possible that those engaging in further education are under increased stress, which may result in lower recovery and functional disability. Previous research has shown that those with an SMI express concern with regard to the stressful environment of academic settings and the potential to trigger illness symptoms (e.g., Stein, 2005). Further, the presence of distressing symptoms or medication side effects is likely to have a great impact on a person’s educational functioning. These findings may be more reflective of a lack of support in the educational system itself. People with an SMI do express a desire to engage in further education, and supported education
programs are needed to allow those with an SMI the opportunity to continue their educational aspirations (Bellamy & Mowbray, 1998; Cook & Solomon, 1993; Kessler et al., 1995; Stein, 2005). Supported education which can provide a flexible environment has been found to facilitate empowerment for those with an SMI (e.g., Bellamy & Mowbray, 1998) and may still be a positive influence on a person’s recovery.

14.5.3. Substance use rates. There was a high incidence of substance use with both alcohol and illicit drug use. The rates of substance use were much higher in the current sample than the general population (which is around 5%; Australian Bureau of Statistics, 2007) with two thirds of the study’s sample reporting a risk of either drug or alcohol problems. Substance use was associated with a younger age, a finding which has been consistently reported in research (Addington & Addington, 2007). Just over half of all participants reported using illicit substances in the past 12 months, again much higher than the proportion of the general Australian population who report using illicit drugs in a 12-month period (which is around 13 to 15%; Australian Institute of Health and Welfare, 2005, 2008). High rates of substance use in the SMI population have been well documented and still need to be adequately addressed (Addington & Addington, 2007; Harris & Edlund, 2005; Jablensky et al., 1999).

14.5.4. Medication adherence rates. The large majority of participants in the current study were currently taking at least one antipsychotic medication, or a combination of different antipsychotics or antipsychotics and other medications. Supervision of medication adherence in the sample only occurred if the person had been issued with a Community Treatment Order (CTO), which was conducted through
an external mental health service. Some participants were on depot medication, which is administered via injection by mental health clinicians, and clients were required to attend their mental health clinic to receive their depot medications. Ziguras et al. (2001) found that depot medication did not impact on adherence rates, as the person on depot medication is still generally required to seek out clinical services for its administration. As such, the large majority of people in the sample were independently responsible for adhering to some or all of their prescribed medications.

On the basis of findings using the MARS, medication adherence in the current sample was low, with less than one third of the sample classified as highly adherent to their prescribed medication. Applying a more liberal cut off score of 6, nearly half of the sample could be considered to have moderate to high medication adherence. Both of these cut off scores are consistent with previous findings of medication adherence which is reported to range from 25 to 55% in this population (Fenton, Blyler, et al., 1997; Nosé et al., 2003; Young et al., 1986).

Antipsychotic medications, including the newer medications, have a reputation for side effects which many describe as intolerable (Hansen et al., 1997; Lieberman et al., 2005). The negative subjective experience of taking medications including intolerable side effects, or perceived inefficacy of the medications, has been associated with greater non-adherence (Hansen et al., 1997; Liberman & Kopelowicz, 2005). Consistent with this, over half of the participants in the current study reported that their medication made them feel tired and sluggish or like a “zombie”, whilst three quarters reported non-adherence if it made them “feel worse”.
Chapter 15. Recovery as a Construct in SMI

15.1. Outline of Chapter

This chapter presents a discussion of the findings relating to the “recovery” construct. The term “recovery” was used in this study to encompass a personal process, less concerned about an outcome, but which incorporates personal comfort and a sense of meaning and gratification in one’s life despite the limitations of the enduring disability (Andresen et al., 2003; Corrigan & Phelan, 2004; Davidson, Lawless, et al., 2005; Deegan, 1988; Ralph & Corrigan, 2005; Ralph, 2000a; Sells et al., 2004).

The current chapter explores the findings for recovery contained in the current study and in relation to previous research. The first section presents a discussion of findings for the first aim with respect to the structure of the RAS in the current study in the context of previous findings. The following section explores the utility of using clinical variables to predict recovery. The next section explores the findings with regard to the psychosocial variables.

15.2. Measurement Model for the RAS

The first aim for the study was to develop measurement models for the scales used in the study. The RAS (Giffort et al., 1995) may provide a way forward following a call for “psychometrically sound measures of the subjective dimensions of recovery such as empowerment and hope” in the literature (Andresen et al., 2010; Bellack, 2006, p. 438). This scale incorporates the process model of recovery encapsulating themes such as hope and self-determination, and is then used to measure recovery as a dependent variable (Andresen et al., 2010; Campbell-Orde et
al., 2005; Giffort et al., 1995). The RAS is still in its developmental stage, and is of central importance for the current study. As such, the current study provides a discussion of the use of the RAS as a quantitative measure for recovery, and findings on its factor structure.

Consumer writings and qualitative studies serve a vital function for understanding the recovery as a process. Whilst qualitative methods offer a rich source of information, quantitative techniques also have much to offer the recovery literature. Quantitative approaches are especially important to provide empirical research for recovery oriented mental health services and to help identify factors associated with recovery on a large scale (2007). To further enrich the recovery literature, a psychometrically sound recovery measure which incorporates the subjective experience of recovery has been required (Andresen et al., 2010; Slade & Hayward, 2007). The current study utilised the RAS for this purpose: as a subjective measure of recovery.

In the current study, there was adequate discriminatory validity between the RAS and the other scales used in the study. For instance, items on the RAS were loaded distinctly onto the RAS and not onto other psychosocial scales including those assessing functional disability (the SDS), coping (the Brief COPE), attachment (the ECR), schemas (the BCSS), or clinical factors (MARS, AUDIT, and DAST). This provides evidence for discriminant validity of the RAS, and suggests that the measurement of recovery using the RAS can provide unique information in relations to SMI.

Other measures similar to the RAS (e.g., Empowerment Scale, subjective component of Lehman’s Quality of Life interview, short version of the Social Support Questionnaire, and the Rosenberg Self-Esteem Scale) have been used in studies to
establish concurrent validity (Campbell-Orde et al., 2005; Ralph et al., 2000). The correlation between impact on functional disability (using the SDS), coping (using the BRIEF Cope) and recovery in the current study provides further evidence of concurrent validity for the RAS. Divergent validity for the RAS has also been established with traditional outcome measures which assess functioning and symptoms such as the Health of the Nation Outcome Scales, and the Kessler-10 (McNaught et al., 2007). The current study contributes to this by showing a non–significant association between the RAS and both the number of hospitalisations, and objective report of severity of illness.

The factor structures for the RAS suggested by previous authors (Corrigan et al., 2004; McNaught et al., 2007) did not show adequate fit in the current sample. Instead, a new model was implemented which showed good fit and conceptual clarity in the current sample. There was a high correlation between the original RAS, previous authors’ RAS factor structures (Corrigan et al., 2004; McNaught et al., 2007) and the measurement model used in the current study, indicating that the same recovery construct is being measured. The differences in sample characteristics between studies are likely to explain the different RAS structures. In their exploration of the RAS, McNaught et al. (2007) used an Australian sample from area health services in Queensland, NSW, and three Victoria non-government organisations. Participants were included if they had a psychotic illness and were considered to have high support needs. Although the McNaught et al. (2007) sample was similar to the current one in they included Australian non-government organisations, they also recruited from area health services, whereas the current sample was recruited entirely from a non-government organisation. The McNaught et al. (2007) sample also contained a higher proportion of males (98 men and 58 women, compared to 81 men
and 73 women in the current sample). The mean age of participants in the McNaught et al. (2007) sample was slightly older compared to the current study ($M = 39$ compared to $M = 30$), but with a similar age range (19 to 68 compared with the current study ages ranged from 18 to 62). The McNaught et al. (2007) sample excluded those with cognitive impairments such as dementia, moderate or severe intellectual disability or brain injury. The current sample did contain participants with intellectual disabilities, although they were able to complete the measures.

In another study assessing the RAS, Corrigan et al. (2004) obtained a sample which consisted of consumers from the American Centre for Mental Health Services who had a DSM-IV Axis I diagnosis of schizophrenia, bipolar disorder, or major depression, which resulted in significant functional disability. This sample was similar to the current sample in that it included people with a range of diagnoses. However, the current sample was of different nationality, with a range of ethnicities. Furthermore, the mean age of participants in the Corrigan et al. (2004) sample was older compared to the current study ($M = 41.8$ compared to $M = 30$), with a somewhat longer age range (18 to 78 compared with the current study ages ranged from 18 to 62). The Corrigan et al. (2004) sample also had a higher proportion of females (60.1% compared to 47.4% in the current study).

The perceptions of recovery in people with SMI are likely to be influenced by a range of sociocultural factors. The utilisation of the RAS in a range of samples enables the factor structure to be assessed across different populations, and it is possible that different structures will continue to appear. The recovery process and its structure may also differ with between diagnostic profiles. Further research to examining differences among diagnostic groups could provide further insights into recovery for specific forms of SMI, and also across a broader range of mental illness.
Despite the differing factor structure to those reported by previous authors, the model identified by the current study incorporated themes consistent with the recovery literature including hope, illness self-efficacy, not being dominated by symptoms, and social support. Previous authors (e.g., McNaught et al., 2007) have noted that not all of the elements of recovery have been captured by the RAS and further exploration of the factors was warranted. The EFA conducted in the current study obtained a new factor containing items relating to illness self-efficacy such as “I understand how to control the symptoms of my mental illness”, “I can handle it if I get sick again” and “I can help myself become better”. This new factor is consistent with recovery literature which highlights the role of managing symptoms, self-managed care, and taking personal responsibility for one’s recovery (Andresen et al., 2003; Corrigan, 2006; Deegan, 2003; Ralph & Corrigan, 2005; Ralph, 2000b; The National Institute for Mental Health in England, 2004). Although the RAS includes the factor “no domination by symptoms”, which refers to the impact of symptoms on a person’s life, this factor does not directly address a person’s ability to manage illness symptoms. Given the recovery literature often focuses on symptom management, rather than symptom remission, this new factor can provide unique information concerning the management of symptoms.

Consistent with previous literature (e.g., Corrigan et al., 2004; McNaught et al., 2007), the current study found high correlations between the RAS factor confidence and hope, and the factor goal success orientation. As such, these factors were combined to form a new factor in the current study, labeled “optimism and purpose”. There are similarities in the items across these factors, for example the item “I believe I can meet my current personal goals” from the goal, success orientation factor can theoretically correspond to the item “I have a purpose in life” from the confidence and
hope factor. Thus, combining these factors was justified on both a statistical and theoretical basis.

Furthermore, there have been concerns reported about the “reliance on others” factor contained in the RAS which may be reflective of marital status rather than social support (McNaught et al., 2007). This factor was excluded in the final RAS structure in the current study due to poor loadings in the EFA, however social support is still considered to be an important theme in recovery literature and was captured in the RAS “willingness to ask for help” factor.

A total recovery score was obtained and compared to the variables in the current study. Unfortunately, an analysis across the RAS domains could not be explored, due to a limited number of items on the “no domination of symptoms” and “willingness to ask for help” factors on the RAS. It remains of interest to the literature to further examine the potential predictors of the individual recovery domains. The RAS domains each provide unique information on factors related to recovery and offer further insights into the process of recovery.

Although the findings of the current study suggest that the RAS may not be an all-encompassing measure of the recovery construct, the RAS does offer a brief assessment which provides a range of useful information tapping into more than just functioning and symptom severity seen in many of the traditional outcome measures of recovery (Andresen et al., 2010; Lloyd et al., 2010; McNaught et al., 2007). It also provides clinically useful and specific information not captured by existing quality of life, functioning, and symptom severity measures. Instead, the RAS captures information about how symptoms are managed and the subjective impact of an SMI (Andresen et al., 2010; McNaught et al., 2007). For the current study, this subjective
information provides a unique perspective for the exploration of the links between recovery and both traditional clinical and psychosocial variables.

15.3. How Useful are Clinical Variables in Predicting Recovery?

Few studies have assessed the traditional clinical factors using subjective recovery-oriented measures, and it is of interest to the recovery literature to see how these traditional clinical variables contribute to recovery as a process (Andresen et al., 2010; Davidson et al., 2009). The following section explores the findings from the current study presented in Aim 2 (relationships between clinical variables and recovery and functional disability), Aim 4 (hierarchical regression with affect, clinical variables, and psychosocial variables), and Aim 5 (SEM relationships between clinical and other latent variables).

Overall, findings from the current study suggested that recovery was significantly associated with higher medication adherence, lower illness severity as measured by less hospitalisations, and greater functional disability. Neither drug or alcohol use, nor other indicators of illness severity (such as staff report), were found to be significantly associated with recovery. Further, none of the clinical variables significantly contributed to the variance in recovery scores over and above that of the psychosocial variables. Details of these relationships in the context of previous research are discussed below for each of the clinical variables.

15.3.1. Substance use and recovery. The absence of a significant relationship between substance use and recovery was not anticipated in the current study. There are several speculative explanations for this finding: (a) measurement error, (b) the presence of type II error, or (c) the genuine absence of a relationship.
The lack of any significant relationship with recovery in this study raises questions about the measurement of substance use. Assurance for the validity of the measurement were found with the expected pattern of relationships between drug and alcohol use, medication adherence, age, and hospitalisations (Addington & Addington, 2007; Pristach & Smith, 1990; Zeidonis & Fisher, 1994). It is possible that some elements of substance use are related to recovery, but were not captured in the measurement of drug and alcohol use in the current study.

To further explore this finding, the clinical literature was reviewed to determine if similar results have been reported. It does not appear that the relationship between recovery and substance use has been specifically measured and no direct comparisons with previous research could be made. Comparisons with other studies looking at the impact of substance use on more traditional outcomes in SMI populations did show discrepancies and contradictions in findings. Cocco and Carey (1998) found no relationships between the drug use (using the DAST-10) and global assessment of functioning. Further to this, they found only modest relationships between drug use and a range of psychological conditions including positive symptoms, depression, anxiety, interpersonal sensitivity, and somatisation. Fowler et al. (Fowler, Carr, Carter, & Lewin, 1998) found high rates of substance use among patients with schizophrenia in Australia, but did not find any increased risk for suicide or hospitalisation. Addington and Addington (2007) also found no significant differences between those who did and did not misuse alcohol or drugs on positive or negative symptoms, depression or quality of life in a three-year follow-up study for early psychosis. The only exception was for those who regularly used cannabis, who showed higher levels of positive symptoms across each of the three year follow-ups and higher levels of depression at the one year follow-up. Petersen et al. (2008) found
that substance abuse predicted poorer outcomes in a univariate analyses, but that this association became insignificant in a multivariate analyses for all outcome variables with the exception of psychotic symptoms. Mauri et al. (2006) found some support for the effects of substance use in those with schizophrenia, reporting that substance use predicted higher scores of unusual thought content and hostility. They also reported that substance use predicted lower scores for depressed mood, and found no significant differences between the substance use group and the non-substance use group with respect to conceptual organisation and hallucinations. In contrast to this, Havassy et al. (2000) reported that people experiencing an SMI who were substance-dependent showed lower levels of quality of life and greater psychological distress than those who were not substance dependent.

Differences in measurement and classification of substance use may explain these contradictory findings. The current study, like that of Cocco and Carey (1998), used the DAST-10 to measure substance use, whereas Havassy et al. (2000) used a diagnostic tool to identify substance dependence. From these findings it may be posited that substance dependence impacts significantly on subjective outcomes, whilst substance use or abuse may not. Since substance dependence was not directly assessed in the current study, it remains for future research to explore these relationships.

Although substance use may play a role in recovery, the magnitude and direction of this relationship and the mechanisms behind it still require a substantial amount of investigation before any conclusions can be drawn. This research is further complicated by the large range of factors involved with substance use, including length and quantity of use, and type of substance(s) used (Mauri et al., 2006), which
also likely to interact with contextual and internal factors (Kassel et al., 2007) creating even further difficulties in establishing a clear relationship.

Further investigation into causality is also still needed. It remains unclear if substance use is a consequence of SMI (e.g., is a form of self-medication to cope with SMI symptoms), or if substance use contributes to the incidence of SMI, or if both these processes occur (Addington & Addington, 2007; 1996). There is evidence in the literature for both of these processes (Addington & Addington, 2007; 1996).

It remains important to establish precisely what impact substance use has on people experiencing an SMI, and how this might influence their ability to recover. Even if substance use does not directly affect the subjective experience of recovery from SMI, it could be hypothesised that substance use inhibits recovery via other factors yet to be explored. In saying this, the association between substance use and increased symptom severity as well as physical health problems mean that the high rates in the SMI population still need to be addressed (Mauri et al., 2006; Zeidonis & Fisher, 1994).

15.3.2. Medication adherence and recovery. The current study found evidence for the association between recovery and medication adherence. Medication adherence was significantly associated with higher recovery scores; however, it did not contribute over and above that of the other psychosocial variables in the regression models. In the SEM analysis, medication adherence mediated the relationship between number of hospitalisations (used as a possible indicator of illness severity) and recovery. Results suggest that, out of all the clinical variables explored in the current study, medication adherence had the most influence over recovery, although the psychosocial variables showed larger effects.
The strength of the relationship between medication adherence and recovery is likely to have been influenced by the complex nature of medication as a treatment for SMI. As previously suggested, for some people at some points in their recovery, medication acts as a facilitator to recovery, whilst for other people at other stages it creates a barrier to recovery (Deegan & Drake, 2006; Harrow & Jobe, 2005). Subjective experiences of distressing side effects in medications, perceived coercion, or the perceived ineffectiveness are frequently cited by those with SMI (Lieberman et al., 2005; Marder et al., 1993; Roe et al., 2009), and are likely to reduce the effectiveness of medication as a recovery tool. That is, for some participants, medication may have been helpful in their recovery, but for others it makes recovery more difficult (Roe et al., 2009). The current findings for the relationship between medication adherence and recovery may have been depleted due to differences in the sample with regard to the subjective experience of taking prescribed medications. Further, there is likely to be a range of other psychosocial variables impacting on the relationship between recovery and medication adherence which were not accounted for in the current study.

Whilst clinical evidence for the effectiveness of medications in the treatment of SMI is ample (e.g., Davis, Chen, & Glick, 2003; Lieberman et al., 2005; Pristach & Smith, 1990; Ziguras et al., 2001), there is also evidence that those with an SMI can experience recovery without the need for continuous medication (e.g., Bola, 2006; Fenton & McGlashan, 1987; Harding & Zahniser, 1994; Harrow & Jobe, 2005; Harrow & Jobe, 2007; Harrow et al., 1997). As suggested by previous authors, medications may better serve those with an SMI if used as a temporary tool to reduce acute symptoms (Fenton & McGlashan, 1987; Harrow & Jobe, 2007).
The role of medication adherence is complex and there are many factors likely to determine its role in recovery from SMI (Deegan & Drake, 2006; Roe et al., 2009). As such, medication adherence needs to be considered within the context of the person’s attitudes, particularly their reasons for any non-adherence (Corrigan, Liberman, & Engel, 1990; Roe et al., 2009). Non-adherence to medications can be seen by clinicians as a result of poor judgment or insight (Bellack, 2006; Roe et al., 2009), however, qualitative report suggest that an individual’s decision to cease taking medication reflects a rational assessment process of the perceived benefits versus costs of taking the medication (Davidson et al., 2009; Roe et al., 2009; Rosenheck et al., 1997). For example, if medication is perceived to act as a barrier to personal goals or life roles such as employment or meaningful activities then non-adherence is more likely (Deegan, 2005; Roe et al., 2009). It has been suggested that incorporating the SMI into the person’s sense of self is an important element in recovery, and this will also influence the person's decisions with respect to taking medications (Usher, 2001). Gaining a better understanding of the subjective experience of illness and symptoms is an important step when considering how medication may help recovery (Usher, 2001). Clinicians should also remain open to the possibility that one’s decision to cease medication in order to achieve a meaningful life may also be an essential step to recovery and a way of demonstrating self-determination and personal choice (Deegan, 2005; Roe et al., 2009).

More research is needed to explore the role of medical interventions designed to optimise recovery rather than reduce psychiatric symptoms. Furthermore, a collaborative approach between the patient and prescriber is needed to determine what the best approach is for each individual (Corrigan et al., 1990; Davidson et al., 2009; Green et al., 2008). This collaboration should include an multidimensional
assessment of contextual factors such as the subjective experience of taking medications, family characteristics, the clinician-patient relationship, patient characteristics and beliefs, and the treatment delivery system (Corrigan et al., 1990).

15.3.3. Severity of illness and recovery. Objective severity of illness was assessed in the current study using two methods: staff report, and number of hospitalisations in the past 12 months. Whilst these two factors were positively correlated with each other, neither variable was significantly associated with recovery. In the SEM analysis, number of hospitalisations showed an indirect effect on recovery that was mediated by medication adherence. This suggests that there may be some indirect influences of illness severity on recovery through other variables such as medication adherence.

Previous research has also suggested that severity of illness is not consistently related to recovery. The RAS total score has been found to have an inverse relationship with the expanded version of the Brief Psychiatric Rating Scale, a measure of psychiatric symptoms including depression, anxiety, and psychotic phenomenon, but the relationship did not meet the Bonferroni corrected significance level (Corrigan et al., 1999). Further, Jonsson and Nyman (1984) found that overt psychotic symptoms showed no relationship to outcome in people with schizophrenia (Jonsson & Nyman, 1984). Similarly, McNaught et al. (2007) also found no relationship between the total RAS scale and the functional disability subscale of the clinician administered Health of the Nation Outcome Scale. In contrast to this, lower scores on the RAS have been associated with the presence of greater psychiatric symptoms as measured by The Behavior and Symptom Identification Scale (Chiba et
al., 2010). However, this finding was based on a Japanese sample and these findings may be attributable to cultural differences.

This presents a rather perplexing relationship between recovery and illness severity. While beyond the scope of this study, it is possible that illness severity as indicated by number of hospitalisations and staff report is not actually relevant to recovery, as suggested by the non-significant association found in this and several earlier studies. That is to say, people can recover and lead a fulfilling life regardless of the severity of their illness. It appears that one cannot infer that lower illness severity is indicative of the presence of recovery or vice-versa, but rather, that illness severity and recovery act independently of one another. This supports the fundamental notion of recovery - that one can lead a fulfilling life despite the presence of ongoing illness symptoms. It is also possible that the relationship between illness severity and recovery is dependent on other factors such as medication adherence suggested in the current study, as well as a range of other clinical and psychosocial variables not accounted for in the current study. Longitudinal studies examining the relationship between illness severity and recovery would be of interest to further explore this relationship.

Alternatively, it may be that the objective severity ratings of staff report and number of hospitalisations may not accurately reflect the individual’s experiences, that is, may not be a reliable and valid measure of illness severity. This idea was explored by Dickerson (1997) who suggested that staff are not privy to their clients’ subjective experiences and can only make inferences based on objective information obtained from treatment settings. Even the number of hospitalisations may not accurately depict severity of illness, but rather the capacity of a person’s sociocultural context or their personal capacity to effectively manage their illness. This discussion
only serves to highlight the difficulty that is reported in the SMI literature when comparing objective and subjective measures in SMI (McGlashan, 1984). Another example is the National Survey of Mental Health and Wellbeing survey (Jablensky et al., 1999) which found the majority of those with a psychotic illness could be considered to have an objectively poor quality of life, however, a high number reported subjective satisfaction with life. It would be of further interest to directly compare the objective accounts of recovery from key groups such as carers and family with subjective accounts by consumers to examine how congruent these accounts are.

Another possible explanation for the apparent non-association between objective measures of illness severity and recovery may be attributed to the experience of being diagnosed with an SMI. It is possible that the experience of being labeled with an SMI may decrease one’s expectations of positive outcomes and functional ability. Consequently, one’s perceptions of recovery are relatively higher after diagnosis because one’s expectations of outcome have been lowered. From an objective perspective, a person may appear to have impaired functioning and low levels of recovery, however the person themselves may believe that they are functioning well considering the pessimistic prognosis of their illness.

These findings pose a challenge in research where many studies rely on objective ratings for outcome based on symptoms and functioning. These outcomes are unlikely to capture the essence of recovery as a personal process. The highly personal nature of recovery as a process requires subjective report, as many aspects of recovery are not easily accessible to an objective observer. If the goal for recovery is to live a meaningful and satisfying life, inferences gathered from an objective observer may never truly encapsulate the lived experience (Dickerson, 1997). Even if the person’s beliefs about their illness or recovery might be considered to be
delusional, it could still be considered as a valid interpretation (Fowler et al., 1995). Ultimately, it is this subjective experience of the person experiencing SMI and the distress associated with the symptoms that need to be the focus, and whilst objective ratings can be used as comparisons, these rating may become largely obsolete and irrelevant in the new recovery paradigm.

15.3.4. Functional disability and recovery. Functional disability is a commonly used outcome variable used for SMI and as such was used alongside recovery to explore any differences between the two constructs. Recovery and subjective functional disability scores were moderately correlated suggesting that the measures are related, but distinct, constructs and evidence for divergent validity between functioning and recovery was demonstrated. Previous authors have also demonstrated divergent validity between the RAS and traditional outcome measures used in Australia which assess functioning and symptoms such as the Health of the Nation Outcome Scales (a clinical outcome measure) and the Kessler-10 (a global measure of psychological distress) (McNaught et al., 2007). Authors suggest that the RAS can provide additional and distinct information which is not captured by these traditional outcome measures (McNaught et al., 2007).

Comparisons between these two dependent variables show that the profiles were very similar, and suggest that although they are distinct factors, both recovery and functional disability are largely influenced by the same processes. In saying this, there were some differences worth noting. After controlling for current affect, the number of previous hospitalisations was the strongest unique predictors of functional disability in the regression model. For recovery, active coping style and negative view of self-schema were the strongest unique predictors. This is not particularly
surprising, and suggests that a higher number of hospitalisations best predicted functional disability, which could be extrapolated to suggest that those with more severe illness have higher functional disability. Whilst for recovery, the strongest predictors were, like the recovery concept, of a psychosocial nature. There were also differences in the relationships between the two variables in the SEM models. Active coping and negative self-schema (the strongest predictors of recovery in the regression model), showed direct relationships with both variables, whilst hospitalisations showed a direct effect on functioning and an indirect effect on recovery scores that was mediated by medication adherence. These findings suggest that on the whole, both functional disability and recovery showed similar relationships with variables measured in the study; however, severity of illness (as indicated by number of hospitalisations) differentiated between functional disability and recovery scores.

15.3.5. Summary of findings between recovery and clinical variables.

In sum, recovery was associated with many of the clinical variables assessed in the current study. Medication adherence was the strongest predictor of recovery scores from the clinical variables. The clinical variables did not significantly contributed to the variance in recovery scores over and above that of the psychosocial variables. In contrast to expectations, neither drug or alcohol use, nor other indicators of illness severity (such as staff report), were found to be significantly associated with recovery. The previous section also presented comparisons between recovery scores and functional disability scores, suggesting a similar pattern of relationships among variables.
15.4. Attachment as a Useful Framework in Recovery and an SMI

Attachment theory was used as a conceptual framework to examine the hypothesised relationships between psychosocial variables and also examine their relationship to recovery. Findings suggest that attachment style (namely attachment avoidance) as well as schemas considered to originate from one’s early interpersonal experiences, do influence recovery from SMI. Although causality cannot be established in the current study, findings may provide correlational support for the associations between potential underlying etiological pathways relating to attachment, schemas, and coping (Mikulincer & Shaver, 2006). In the same way that SMI is determined by both biological and environmental factors, the current study suggests that recovery from SMI is not purely biological, and interpersonal and schematic factors play integral roles.

The following section explores the findings from the current study presented in Aim 3 (relationships between psychosocial variables and recovery and functional disability), Aim 4 (hierarchical regression with affect, clinical variables, and psychosocial variables), and Aim 6 (relationships between psychosocial and other latent variables using SEM).

15.4.1. Attachment theory and cognitive theory. Using the BCSS, the current study found that attachment styles interrelated with cognitive schemas in the expected directions presented in Hypothesis 13, providing support for the integration between attachment theory and cognitive theory proposed by previous authors (e.g., Fowler et al., 2006; Mason et al., 2005; Platts et al., 2002; Sander, 2001). Specifically, in the current study high attachment anxiety was associated with negative evaluations of self, whilst high attachment avoidance was associated with negative
evaluations of others. This finding is congruent with attachment theory and findings in previous attachment research (Mikulincer & Shaver, 2006). These findings replicate that of other clinical and non-clinical populations (Platts et al., 2002) and highlight the relevance of both attachment and cognitive frameworks within SMI populations.

15.4.2. Attachment variables: Attachment style, schemas, and coping. The SEM model presented in the current study was consistent with Hypotheses 13 and 14, and supports the theoretical assumption that early attachment experiences act as an antecedent to evaluations of the self, and that these self-schemas then contributed to an active coping style. Exploration of the relationships between schemas and coping style found that, as expected, avoidance coping was related to negative evaluations of the self and also to lower positive evaluations of self. These findings were similar to those of previous authors who found avoidance coping styles to be associated with negative evaluations of self in those with a psychotic disorder (Drayton et al., 1998; Tait et al., 2004). For the other coping styles, the current study found that a more positive evaluation of the self and others was associated with higher levels of social coping. This makes theoretical sense, as a person who has more positive appraisals of others and themselves is more likely to engage in social activity. Similarly, negative appraisals of self and others have established links with social isolation (Fowler et al., 2006). Other findings in the current study were that, as expected, participants with positive evaluations of the self and others were more likely to engage in active coping, whilst those with a negative view of self were less likely to engage in active coping. This further supports the notion suggested by previous authors (e.g., Davidson &
Strauss, 1992; Tait et al., 2004) that healthy self-views can help a person with an SMI cope more effectively with their SMI.

15.4.3. Psychosocial variables and recovery. Congruent to the hypotheses presented in Aim 3, all of the psychosocial variables in the current study, with the exception of attachment anxiety, were found to be significantly associated with recovery. Also as hypothesised in Aim 4, two of the psychosocial variables (active coping and negative self-schemas) contributed to the prediction of recovery over-and-above the clinical variables and current affect. Findings for the hypothesised model presented in Aim 6 also showed that negative self-schema and active coping showed a direct relationship with recovery, whilst attachment avoidance and positive-self views showed an indirect effect on recovery. This section explores these results and compares them to previous findings.

As expected, those who a priori, have positive self-constructs and positive evaluations of others as well as those without negative evaluations of themselves and others, were more likely to show higher recovery scores. Cognitive schemas relating to self-views were more strongly associated with recovery than those relating to evaluations of others. As expected, both negative self-schema and positive self-schema fully mediated the relationship between attachment avoidance and recovery. This suggests that those who are more securely attached (or less avoidant in their attachments) are more likely to hold more positive self-evaluations, less likely to hold negative self-evaluations, and more likely to be hopeful and better manage the symptoms and effects of their illness. These findings are consistent with the recovery literature which frequently highlights the importance of self-concepts in recovery.
As expected, attachment avoidance was found in the current study to be associated with recovery. However, there was an absence of the expected relationship between recovery and attachment anxiety. Both avoidance and anxiety are considered to be orthogonal dimensions of attachment. Attachment anxiety describes anxiety about separations, fear of abandonment, or anxiety with respect to insufficient love. Avoidance attachment describes an avoidance of intimate relationships, adaptive dependency on others, and the expression of emotion to others (Mikulincer & Shaver, 2006). From this, it could be assumed that greater avoidance of intimate relationships and appropriate social dependency, and lesser appropriate expression of emotion play a greater detrimental role in discouraging recovery than does anxiety about separations, fear of abandonment, or insufficient love (Mikulincer & Shaver, 2006). Further research is warranted to replicate this finding and explore the reasons behind this finding.

15.5. Coping and Recovery

Each of the coping strategies examined in the current study were associated with recovery in the hypothesised directions. Active coping appears to be particularly important and was the only coping style to significantly contribute to recovery in the regression and SEM models.

The Brief COPE scale used in the study provided a focused evaluation of specific coping strategies. Unfortunately, the subscales of religion, humour, and self-blame could not be explored due to low item numbers. Of particular interest in the recovery literature is the concept of using spirituality or religion (Huguelet et al.,
2009), as well as humour (Witzum et al., 1999), as a form of coping and these areas warrant further research. The relationships found between the coping styles and recovery is discussed below.

15.5.1. Social support. Previous research has suggested that those with an SMI who report larger or more satisfactory support networks have a better quality of life and higher recovery rates (Corrigan & Phelan, 2004; Corrigan et al., 2004; Hendryx et al., 2009). The current study found some support for this. Whilst, social support was related to higher recovery rates, it did not contribute above that of the other psychosocial variables. This suggests that although social support is related to recovery, there may be other factors such as specific types of social support not accounted for in the current study. Carver et al. (1989) suggests that social support may not always be adaptive, and is likely to be dependent on many individual factors. Further research is warranted to examine what kinds of social supports may be conducive to recovery and which may inhibit it (Coyne & Racioppo, 2000).

15.5.2. Avoidance coping. Avoidance coping involves the initiation of behavioural or cognitive strategies intended to avoid or delay confrontation with a stressor (Carver et al., 1989). This coping strategy is utilised by many people with an SMI, however, was found in the current study to be negatively associated with recovery, suggesting that it may serve as an ineffective strategy. This is consistent with previous literature suggesting that avoidance coping is associated with poorer quality of life, resilience, and social functioning (Drayton et al., 1998; Tait et al., 2004; Thompson et al., 2003). Findings were also similar to Boschi et al. (2000) who discovered that those who identified active rather than avoidant coping as the most
useful form of coping showed better outcomes. In the current study avoidance coping did not significantly contribute to recovery above that of the other variables in the regression and SEM models.

15.5.3. Active coping. Active coping style was the strongest unique predictor of recovery scores among both clinical and psychosocial variables. This is consistent with previous literature which has highlighted the relationship between active coping and recovery and functioning (Boschi et al., 2000; Hoffmann & Kupper, 2002; Tooth et al., 2003). The presence of a partial mediation between self views and recovery suggests that an active coping style can impact on the relationship between how a person perceives themselves and their ability to recover. Positive self views may foster active coping strategies and consequently enhance recovery, and more negative evaluations of the self appear to inhibit active coping attempts and recovery. This finding is consistent with schema theory which posits that the formation of adaptive or maladaptive internal working models results in the implementation of adaptive or maladaptive coping strategies (Crittenden, 1992).

In the current study, active coping incorporated items from the active coping subscale as well as planning (e.g., “I’ve been thinking hard about what steps to take”), and one distraction item (“I’ve been turning to work or other activities to take my mind off things”). Each of these approaches to coping are congruent with the problem-focused coping described by Lazarus and Folkman (1984) that incorporated active coping, planning, and support seeking. Although distraction is not typically considered as being under the active coping umbrella, it is a strategy often successfully implemented by those with an SMI and is also encouraged by many clinicians to manage symptoms (Farhall et al., 2007; Fowler, Garety, et al., 1998; Haddock et al., 1998; Knudson & Coyle, 1999; Ritsner et al., 2003). The use of
distraction techniques, such as engaging in activities, could be considered within the conceptualisation of active coping, and it was not surprising that it was found in the current study to be loaded with the active coping items. This may be a particularly relevant finding for those with an SMI and especially the current sample who were engaged in a mental health service where the use of distraction is likely to have been acquired or enhanced through treatment interventions.

The concept of active coping taps into discussions in the recovery literature such as taking an active role in treatment, planning, and goal setting, all of which are areas that can be targeted in a therapeutic setting. Consumer literature has referred to the importance of a strengths-based approach in recovery which focuses on the individual’s strengths and coping mechanisms in order to establish hope, build a positive sense of identity separate to psychiatric labels, manage symptoms, establish a support system, and find meaning and purpose (Deegan, 2003; Tooth et al., 2003). Tooth et al. (2003) reported a range of factors identified by consumers as central to the recovery process. The two most commonly reported factors were those closely related to the active coping construct including a determination to get better, and finding ways to manage illness. In addition to these qualitative reports, active coping was the strongest predictor of recovery scores in the current study. From this, it could be speculated that engaging in active coping is one of the central ingredients in the process of recovery from SMI. The recovery process itself draws on self-determination and skills of self-management, and is based on the assumption that individuals with an SMI have the desire to set their own goals and have control over how to achieve them (Carpenter, 2002; Ralph & Corrigan, 2005).

A sense of control is certainly a theme that is often referred to in the recovery literature as well as the coping literature (Deegan & Drake, 2006; Hendryx et al., 2009; Schmutte et al., 2009; Strack et al., 2007; Usher, 2001). Hoffmann and Kupper
(2002) suggest that playing an active role in treatment and taking control of one’s own life are integral components of the recovery process. According to coping theory, a person is more likely to engage in this form of coping when they feel that they have the control to manage the stressor (Hatfield, 1993). In light of such previous findings, as well as the findings from the current study, it could be concluded that those with an SMI should be active participants in their own treatment, and that interventions promoting a sense of control in consumers in order to enhance their active coping attempts may lead to greater recovery.

15.6. Summary of Chapter

The preceding findings support the previous literature with evidence of high rates of substance use, low rates of medication adherence, and low rates of educational attainment in the current sample, which has been well established in this population. This chapter included a discussion of the findings related to the use of the RAS to measure recovery. It also presented the findings for the relationships between clinical variables and recovery, and suggests functional disability is related to recovery, and that medication adherence was the strongest predictor of recovery scores from the clinical variables. This section also discussed the findings with regard to the psychosocial variables using an attachment framework, and suggests that findings are consistent with attachment theory. Finally, an array of relationships exists between the psychosocial variables and recovery, and active coping style and self-schemas were found to be the strongest predictors and recovery.

16.1. Outline of Chapter

This chapter presents the findings of the relationships between a range of other variables examined in the current study. This includes a discussion of the findings regarding the relationship between functional disability and each of the psychosocial and clinical variables. It also provides a more detailed discussion for the interrelationships between the clinical and psychosocial variables among each other.

16.2. Functional Disability and Other Indicator Variables

Functional disability, as measured by the SDS, was used alongside recovery as a more traditional outcome variable for SMI populations. Higher scores on the SDS are indicative of higher levels of functional disability across social and occupational domains as a result of mental illness symptoms. Findings relating to the SDS, the clinical and psychosocial variables are presented below.

16.2.1. Severity of illness and functional disability. As hypothesised, number of hospitalisations was found to be related to functional disability. It was also the strongest unique predictor of functional disability in the regression model. Using hospitalisations as a proxy for severity of illness, it suggests that those with a more severe illness are also more likely to have more functional disability across social and occupational domains. This is consistent with previous authors who have found higher functional disability scores in those with a higher number of previous hospitalisations (Sheehan et al., 1996). The direction of this relationship remains
unclear, and further research should explore the possibility of a reciprocal relationship.

16.2.2. Medication adherence and functional disability. A plethora of clinical trials have consistently shown efficacy for anti-psychotic medication in reducing symptoms and relapses, and in optimising outcomes, for those with SMI (Coldham, 2002; Ziguras et al., 2001). As hypothesised, medication adherence was found to be associated with lower functional disability; however this relationship did not contribute over and above that of the other variables in the regression analysis. This provides some support for previous reports of efficacy of medication in treating SMI (e.g., Ziguras et al., 2001) but indicates that the relationship between functional disability and medication adherence is not as powerful as for other variables.

16.2.3. Substance use and functional disability. The expected relationship was found between functional disability and drug use, with higher drug use being associated with higher functional disability. This is consistent with previous research reporting relationships between poor functioning outcomes and drug use (Mueser et al., 1992). However, drug use did not contribute to the variance in functional disability scores over and above that of the other variables in the model. This implies that although drug use may play a role in functional disability, other variables (namely illness severity) are more influential. Alcohol use was not found to relate to functional disability, suggesting either a genuine absence of a relationship, or the presence of extraneous variables not captured in the current study. Further research is needed before any interpretation of this finding can be clarified.
16.2.4. Attachment style and functional disability. For the psychosocial variables, the current findings suggest that, as hypothesised, those with less secure attachment styles were more likely to have functional disabilities as a result of their mental illness. Attachment avoidance had a direct and indirect effect (mediated by both self-schemas) on functional disability, whilst attachment anxiety was mediated by negative self-schemas. This is consistent with reports that interpersonal difficulties are associated with higher functional disabilities (e.g., Leon et al., 1997), and suggests that self-views influence the relationship between attachment insecurity and functioning outcomes. These relationships further support the relevance of attachment style in SMI populations.

16.2.5. Cognitive schemas and functional disability. For the cognitive schema variables, the current study found that, as hypothesised, those with a less negative view of self and others and a more positive view of self and others were more likely to have less functional disability in social, family, and occupational areas as a result of their mental illness. This is consistent with findings from previous authors who have found associations between negative self- and other-evaluations and greater severity in psychotic symptoms and distress (Addington & Tran, 2009; Barrowclough et al., 2003; Fowler et al., 2006; Kuipers, Garety, et al., 2006; Smith et al., 2006). Further, the SEM results showed that negative self-schemas had a direct impact on functional disability, whilst positive self-schemas showed an indirect influence on functional disability. This suggests that self-schemas are particularly important in functioning outcomes.
16.2.6. **Coping style and functional disability.** As hypothesised, active coping was found to be associated with lower functional disability, whilst avoidance coping was associated with higher functional disability. This is similar to the findings of Boschi et al. (2000) who found that those who identified active rather than avoidant coping as the most useful form of coping showed better psychosocial functioning. In contrast to expectations, social coping was found not to be related to functioning outcomes. Corrigan and Phelan (2004) found that social support was largely unrelated to psychiatric symptoms. It has been suggested in the coping literature that social support it is not always helpful and may also act as a diversion and barrier to adjustment and coping (Carver et al., 1989; Parker & Endler, 1992). The relationship remains unclear from this study, and further research is needed to examine what kinds of social coping may promote higher functioning.

16.3. **Relationships between Clinical Variables**

Following from discussion on the findings with regard to functional disability and the independent variables, the following section presents findings for the relationships between the clinical variables among themselves.

16.3.1. **Severity of illness and clinical variables.** Using hospitalisations as a measure of illness severity may not necessarily provide an accurate depiction of illness severity due to a larger number of people being treated in a community setting (Bebbington et al., 2006). The number of hospitalisations in the current study did show a relationship with staff-reported severity ratings, as well as functional disability. It is possible, however, that the staff-reported severity rating was influenced by how many hospitalisations their client had had. Results also suggest
that those who were younger were more likely to have been hospitalised in the past 12 months, which is consistent with the early age of onset for psychotic illness (Jablensky et al., 1999). Those who had been receiving services for longer periods showed lower numbers of hospitalisations, which is congruent with expectations. Higher number of hospitalisations was also associated with drug use, consistent with the literature which suggests that those with drug use are more likely to have more severe symptoms and more likely to be hospitalised (Addington & Addington, 2007; Bartels, 1993; Mauri et al., 2006). Further, lower medication adherence was also associated with a higher number of hospitalisations, which is also supported by previous literature suggesting that non-adherence is associated with more severe symptoms and more hospitalisations (Fenton, Blyler, et al., 1997; Fialko et al., 2008; McEvoy et al., 1984). Albeit not a perfect measure, the relationships to the other variables in the study suggest that number of hospitalisations can provide some indication of severity of illness.

16.3.2. Substance use and clinical variables. As expected, people who engaged in alcohol use were found to be also more likely to engage in drug use. This finding was consistent with previous research (e.g., Pristach & Smith, 1990). Also consistent with previous research, age was found to be associated with drug and alcohol use, with the younger participants more likely to engage in substance use (Australian Bureau of Statistics, 2007; Mauri et al., 2006). Other findings consistent with previous literature (e.g., Coldham, 2002; Pristach & Smith, 1990; Ziguras et al., 2001), were that those with higher medication adherence were less likely to abuse alcohol or drugs. Further, those who engaged in drug use were found to be more likely to be hospitalised and more likely to be rated as having a more severe mental
illness by support staff. This is consistent with previous studies reporting an association between co-morbid substance use and hospitalisations, and that substance use may worsen the course of schizophrenia and schizophrenia-like disorders (Addington & Addington, 2007; Bartels, 1993; Mauri et al., 2006; Petersen et al., 2008; Wilkins, 1997).

Alcohol use also showed the expected relationships with age and medication adherence as reported above regarding drug use. However, the same relationships between severity indicators (i.e., hospitalisations, staff report) were not found with regard to alcohol use. The reasons behind this are beyond the scope of this study, but it does suggest that alcohol use and drug use may have differing influences over illness severity. It is possible that alcohol use is deemed more socially acceptable than drug use, and thus is perceived to have a lesser impact on illness severity. Further research is needed to further investigate these relationships.

16.3.3. Medication adherence and clinical variables. In the current study, medication adherence was positively associated with age, suggesting that older participants were more adherent to their prescribed medications, which is consistent with previous research (e.g., Ziguras et al., 2001). High adherence was also associated with a lower number of hospitalisations in the past 12 months, suggesting that medications may reduce illness severity. This is consistent with previous research suggesting that those with lower adherence are more likely to be hospitalised and show lower functioning (e.g., McEvoy et al., 1984).
16.4. Psychosocial Variables and Traditional Clinical Variables

The following sections provide details of the findings in the current study between the clinical variables (severity of illness, substance use, and medication adherence) and the psychosocial variables (attachment style, schemas, and coping).

16.4.1. Attachment style and substance use. Neither the anxious nor the avoidant attachment style was found to be associated with substance use, which is in contrast to research findings which have found higher rates of substance use in those with insecure attachments (Caspers et al., 2005; Kassel et al., 2007). Different measurement approaches and samples are possible explanations for these differences. Furthermore, the samples used by Caspers et al. (2005) and Kassel et al. (2007) were not from an SMI population. Replication of these findings is needed within the SMI population before any clear conclusions could be drawn.

16.4.2. Attachment style and medication adherence. Medication adherence was not found to be related to attachment style in the current study. There is a range of studies reporting interactions between therapeutic alliance and medication adherence (e.g., Mueser et al., 2002; Weiss et al., 2002); however, there is a limited amount of recent literature specifically relating medication adherence to attachment style in SMI from which to compare these results. One study by Lecomte et al. (2008) examined the relationship between trauma and medication adherence partially supports the findings of the current study. They found that people with an SMI and a history of physical abuse had a poorer therapeutic alliance with their clinician (which was attributed to difficulties in attachment) and poorer medication adherence. However, they did not find the same relationship with other forms of childhood
trauma. Further, they did not find any significant relationship between therapeutic alliance and medication adherence. The relationship between attachment and medication adherence is likely to be influenced by a range of other variables and further research is needed to clarify this relationship (Coldham, Addington, & Addington, 2002; Lecomte et al., 2008).

16.4.3. Attachment style and illness severity. Interrelations between attachment style and illness severity suggest that those with attachment avoidance or anxiety were more likely to have been admitted to hospital in the past 12 months. Using hospitalisations as a proxy for severity of illness suggests that those with attachment avoidance are more likely to have more severe symptoms, or vice versa. This is consistent with attachment literature in SMI populations which have found that insecure attachments are associated with more severe schizophrenia symptoms (Dozier et al., 1999; 1997; Mikulincer & Shaver, 2006) and schizotypy symptoms (Berry, Band, Corcoran, Barrowclough, & Wearden, 2007). Further, those with a history of abuse and difficulties with the therapeutic alliance are more likely to be re-hospitalised (Mueser et al., 2002).

16.4.4. Schemas and severity of illness. Findings from the current study suggest that negative-self evaluations and negative evaluations of others are associated with a higher number of hospitalisations. The causality of these associations remains unclear. It is possible that a more negative sense of self and others results directly or indirectly in more hospitalisations and illness severity. Alternatively, it may be the case that more hospitalisations result in negative views of self and others. Prospective exploration of directionality is needed to gain an understanding of this finding.
16.4.5. Schemas and medication adherence. Negative views of self and less positive views of self were found to be associated lower levels of medication adherence. This suggests that self-perception is important for engagement with treatment. There is a range of factors likely to play a role in this relationship. For example, the societal stigma and potential self stigma attached to SMI may influence how a person interacts with their medication regime (Corrigan et al., 1990; Usher, 2001). If taking medication simply acts as a reminder that one is sick and in this way poses a challenge to one’s self-esteem, then one would be less likely to take medication (Deegan & Drake, 2006; Usher, 2001).

Medication adherence was also found to be associated with negative evaluations of others, which might be attributable to a negative evaluation towards others including prescribing clinicians. This finding remains consistent with cognitive models suggested by other authors who propose an association between paranoid beliefs and negative evaluations of others (Bentall & Swarbrick, 2003; Chadwick et al., 1996; Freeman et al., 2002; Garety et al., 2001; Trower & Chadwick, 1995).

16.4.6. Schemas and substance use. In the current study, those with lower positive-self evaluations and more negative views of others were more likely to engage in alcohol use. Further, those with less positive evaluations of others were more likely to engage in drug use. Since both forms of substance use were not consistently correlated with either negative- or positive-self or others evaluations, it is difficult to interpret this finding as a whole. It does provide some support for previous suggestions that negative attachment experiences contribute to the developmental path of substance use disorders via self- and others-schemas (Caspers et al., 2005),
particularly in the case of alcohol use. However, drug use seems to only relate to evaluations of others, rather than the self. This finding is congruent with Kassel et al. (2007) who found little direct variance between drug use frequency and dysfunctional attitudes. The authors concluded that drug use is not particularly influenced by dysfunctional self-beliefs. A range of extraneous variables are likely to influence this relationship and further investigation into cognitive schemas and substance use is needed to draw conclusion from the current findings.

16.4.7. Coping and traditional clinical variables. With respect to coping, those who engaged in avoidance coping were found to be more likely to engage in alcohol use, and were less likely to adhere to medications. This is congruent with research suggesting that alcohol use is an avoidance behaviour used to cope with unwanted emotional states (Cooper, 1994; Spencer et al., 2002). This theory could be further explicated to include medication adherence, suggesting that non-adherence to prescribed treatments is also form of avoidance coping, whereby a person may be resistant to confronting treatment measures due to its association with the illness. This would be consistent with research suggesting that those who use avoidance coping are less likely to engage with treatment (Tait et al., 2004).

Other findings in the current study suggested that social coping did not influence any of the indicators of illness severity. This is congruent with findings from (Corrigan & Phelan, 2004) who found that for the most part, social support was not significantly associated with psychiatric symptoms. Furthermore, neither social coping nor active coping was found in the current study to be related to illness severity, substance use, or medication adherence. In line with suggestions by Corrigan and Phelan (2004), it remains unclear how social support relates to symptom
remission; further, it is unclear from the current study how active coping and social support interact with substance use and medication adherence.
Chapter 17. Implications of Findings, Limitations, Future Directions, and Conclusions

17.1. Outline of Chapter

The implications of the current study as well as of previous findings can be viewed from several levels. This chapter examines the implications of the current and previous findings from an individual and therapeutic level, as well as from a contextual, social, and policy level. The current chapter also examines the limitations of the current study, and suggests direction for future research.

17.2. Implications at an Individual and Therapeutic Level

The pessimistic outlook for those experiencing an SMI that perceives any intervention as futile is now well and truly outdated. The recovery movement has provided hope for people with an SMI and challenges the Kraepelinian perspective of SMI. Consumer stories from the recovery literature and empirical evidence both suggest that utilising internal and external resources can facilitate recovery and further suggest that people with an SMI can and do lead fulfilling lives (Hanson et al., 2002). Identifying the kinds of factors that could facilitate recovery is an important question with a potentially infinite number of dimensions. Empirical research and findings from the recovery-paradigm approach is now examining this question in order to design treatment approaches which facilitate recovery, as distinct from symptom amelioration alone (Miller, Brown, Pilon, Scheffler, & Davis, 2010).

The following sections provide a discussion of integrating the psychosocial variables into the existing medical framework for the treatment of those with SMI. It also presents a discussion of the importance of incorporating the subjective experience
of the consumer, and psychosocial variables in treatment. Finally, the section proposes treatment approaches that can address these variables and show utility for those with SMI.

17.2.1. **Incorporating psychosocial factors into the medical framework.** The multifaceted nature of the consumer-driven notion of recovery demands an integrated biopsychosocial framework during assessment, formulation, treatment, and measurement (Davidson & Strauss, 1995). To date, there has been a strong focus on the biological underpinnings of psychotic disorders namely, biochemical dysfunction, and subsequently treatment largely focuses on pharmacotherapy to correct these abnormalities (Gold, 2007). While there is support for the use of medications in the current study, a purely biological approach can only ever address one element of recovery. It is now accepted that recovery is much more complex, and involves much more than a person’s biology.

Integrating psychosocial factors, such as those presented in the current study, into the existing medical framework can provide a more comprehensive treatment approach to assist the recovery process. The current study provides further evidence for the role of psychosocial variables in recovery and suggests that although traditional clinical variables such as medication are playing a role in recovery from SMI, they are not adequate to predict the subjective experience of recovery. Interventions targeting psychosocial variables (particularly those relating to active coping and self-schemas) are likely to make a significant contribution to recovery, over and above the contributions of traditional clinical variables.

The addition of psychosocial factors into treatments in no way should exclude or minimise the role of the clinical variables in a treatment setting. For example,
although substance use did not contribute to subjective recovery in the current study, the exceptionally high rates of substance use in this population still needs to be addressed. The National Survey of Mental Health and Wellbeing is a national study conducted in Australia between 1997 and 1998 which recommended a national program to aid in the reduction and prevention of substance in SMI populations. It has been more than 10 years since this finding and the problem continues. The high prevalence of comorbid substance use in SMI populations highlights the essential role of a dual diagnosis approach and the need for further integration of services to provide a collaborative treatment for both mental health and substance abuse for those with an SMI (Corrigan, 2006; Laudet et al., 2000).

Whilst recovery focused services should continue to address substance use, it is important to explore the individual’s reasons for their use, and then allow the individual to determine what and how they wish to be supported. For example, if substance use is providing social opportunities for an individual with SMI, then treatment interventions could target social integration by helping patients find peers with whom they do not feel the need to participate in substance use. But ultimately, the individual should guide the role of the mental health service or clinician and the support that is provided. Similarly, the reasons for non-adherence to medications should also be used to guide treatments.

The most essential element in order to incorporate psychosocial components into the medical framework is that the identification of a barrier to recovery and the support provided is not imposed by the mental health service or clinician, but rather directed by the individual experiencing an SMI. After all, it is the consumers’ needs that should be central to the intervention, and not the needs of the service itself.
17.2.2. Incorporating subjective experiences into treatment. The subjective nature of recovery means that any integrated framework must consider the subjective needs of a consumer (Anthony, 1993; Fowler et al., 1995; Gold, 2007). Not surprisingly, the subjective accounts of people with an SMI have been found to be reliable and consistent, even in the midst of acute symptoms (MacCarthy et al., 1986).

Creating a collaborative approach to treatment which is reflective of the consumer’s subjective vision of recovery and not unilaterally imposed by a practitioner needs to be carefully considered if treatment interventions or programs are to be successful (Fowler et al., 1995). Anthony (1993) suggests that the path to recovery lies within each consumer and that a mental health practitioner alone is unable to provide the key to his or her recovery. For example, not all people who experience auditory hallucinations will encounter distress and impairment as a result, and so not all will need or benefit from intervention regarding this (Farhall & Gehrke, 1997; Fowler et al., 1995). Only when distressing symptoms are creating an obstacle to the recovery process, do they need to be addressed (Anthony, 1993).

Furthermore, treating distressing symptoms with both psychological interventions alongside pharmacotherapy can offer hope of recovery for the many who find medications to be inefficient or intolerable, and may also be important for those who have symptoms which are resistant to medications (Farhall & Gehrke, 1997). When medications are prescribed, care should be taken in the patient-clinician alliance to enhance adherence. Clinician characteristics such as the presence of an aversive interpersonal style, belief of a poor prognosis, and a disregard for patients’ dissatisfaction have all been reported to be barriers to adherence (Corrigan et al., 1990). Similarly, qualitative reports suggest that a lack of shared decision-making between practitioner and patient contributes to negative associations with the
medication and the prescriber, as well as increased non-adherence (Deegan & Drake, 2006; Roe et al., 2009; Usher, 2001). Understandably, this often results in a perception of medication as an uncontrollable or coercive process (Roe et al., 2009). Such coercion and undermining of self-efficacy are likely to lead to more negative self-perceptions in individuals affected by SMI and, consistent with the results of this study, will likely undermine recovery processes. Care must be taken in the practitioner-patient relationship to foster a collaborative approach to medication administration in order to avoid these negative associations and facilitate self-directed treatment (Deegan & Drake, 2006; Roe et al., 2009).

17.2.3. Factors conducive to recovery. It is impossible to teach recovery per se; however, therapeutic interventions can assist those with SMI to address the subjective barriers to recovery and also strengthening existing resources. Recovery literature suggests that addressing these barriers and enhancing existing strengths promotes wellness and recovery, buffers against relapse, and gives a sense of autonomy to the individual in the context of their mental illness (Fowler et al., 1995; Usher, 2001). Findings from the current study suggest that attachment experiences, schemas, and coping style are important features to address within a treatment framework.

Findings from the current study suggest that attachment experiences should be considered during the assessment and formulation process. These experiences are important as they are often associated with negative self-evaluations and linked with the content of delusions and hallucinations in psychosis (Fowler, Garety, et al., 1998). This includes the exploration of any significant historical trauma or negative attachment experiences, and in particular addressing any attachment avoidance in a
therapeutic setting. Promoting secure interactions within the therapeutic setting can enable a person to develop more adaptive attachment relations, stable social supports, and may also reduce the impact of resistance to therapeutic change and recovery (Eagle, 2003; Mikulincer & Shaver, 2006). Consumer authors have also highlighted the importance of a strong and hopeful therapeutic alliance with a “practitioner who refused to give up hope” in their recovery journey (Deegan, 1988; Geller, 2000; Liberman & Kopelowicz, 2005, p. 735). A secure therapeutic attachment that is based on a trusting long-term relationship can provide a stable base for collaboration and instill a sense of optimism and hope for recovery (Deane & Kavanagh, 2010; Liberman & Kopelowicz, 2005). A strong alliance can facilitate the consumer to take action towards recovery, and may also shield them from relapse (Fowler et al., 1995; Liberman & Kopelowicz, 2005).

The current study also suggests that understanding the origins of negative or maladaptive schemas and how they contribute to the experiences of SMI symptoms may also be helpful for those who have experienced disruptive early attachment experiences such as abuse or trauma (Fowler, Garety, et al., 1998; Jackson et al., 1999; Kuipers, Bebbington, et al., 2006). Challenging and modifying unhelpful schematic beliefs utilising techniques such as CBT, has been found to be beneficial in a range of populations including SMI and can result in better outcomes and reduce the risk of relapse (Chatterton, 2007; Deane & Kavanagh, 2010; Fowler, Garety, et al., 1998; Fowler et al., 1995; Gumley et al., 2006; Jackson et al., 1999; Kuipers, Garety, et al., 2006; Oestrich, 2007). Similar to the current findings, Barrowclough (2003) suggested that negative evaluations of the self are more strongly associated with outcome than positive evaluations of self, and should be targeted in treatment. Recovery literature encourages individuals to establish a sense of self that is separate
from that of the illness (Usher, 2001). That is, a person needs to reconstruct their self-
views as a person who has the experience of an SMI, rather than identifying with
illness-saturated labels such as “schizophrenic” or “mental patient” (Fowler et al.,
1995). This may help reduce the occurrence of self-blame and a sense of failure, and
promote a sense of control over the illness (Fowler et al., 1995; Usher, 2001).

Finally, the current study suggests that an active coping style may prove useful
to those in recovery from SMI. There is corroborating evidence for this suggesting
that enhancing adaptive coping using treatments such as CBT can improve outcomes
for people with SMI (Farhall, Gierlicz, Shawyer, & Trauer, 2003; Farhall et al., 2007;
Kuipers et al., 2002; Meyer, 2001). Boschi et al. (2000) suggest that treatment
interventions which foster a sense of hope encourage clients to cope and can promote
self-efficacy, whilst a loss of hope can to lead to a breakdown in active coping
strategies (Fowler et al., 1995; Hoffmann & Kupper, 2002). As mentioned earlier,
those with an SMI use a diverse range of strategies to cope with their experiences.
Individual assessment is needed as not all coping strategies will work for all people
recovering from SMI (Farhall, 2007; Somerfield & McCrae, 2000). In saying this,
there seems to be a common link between active coping and recovery across the
sample, and its practical utility in a therapeutic setting makes this a useful finding.

17.2.4. Treatments conducive to recovery. There are a range of treatment
approaches for those with SMI that address key elements mentioned in the recovery
literature, and also include the psychosocial variables found to be associated with
recovery in the current study.

Therapeutic programs based on Cognitive-Behavioural Therapy (CBT) already
incorporate many of the factors associated with recovery assessed in the current study,
including schemas and coping (Farhall et al., 2007; Fowler, Garety, et al., 1998). CBT focuses on the modification of dysfunctional beliefs in order to elicit behaviour change, symptom reduction, and enhance coping skills have been found to be beneficial the treatment of a range of psychological disorders (Farhall & Cotton, 2002; Gaudiano, 2005). Recently, CBT has been adapted to treat psychotic disorders and other SMI (Fowler, Garety, et al., 1998; Gaudiano, 2005; Kuipers, 2005; Mueser & Noordsy, 2005; Tarrier, 2005a, 2005b). CBT programs for psychosis and SMI vary in their specifics, but typically provide education about symptoms and diagnosis, and the interaction between thoughts and behaviours. The antecedents of symptoms (including delusions and hallucinations) and psychotic episodes are explored and maladaptive thoughts and behaviours are addressed through cognitive restructuring, reality testing, behavioural activation, and exposure exercises (Chadwick et al., 1996; Fowler, Garety, et al., 1998; Fowler et al., 1995; Gaudiano, 2005; Kingdon & Turkington, 1994). Further, CBT programs address negative symptoms through social skill straining, and also examine relapse prevention techniques (Fowler, Garety, et al., 1998; Gaudiano, 2005).

CBT programs for SMI also provide the examination and modification of negative self-evaluations, which both the recovery literature and the current study have found to be an important factor in recovery (Hall & Tarrier, 2003). Further, self-beliefs or schemas are suggested to be connected with the content and maintenance of delusional beliefs and hallucinations in psychotic illness and contribute to the emotional distress as a result of these symptoms (Fowler, Garety, et al., 1998). CBT enables these beliefs to be identified, and their origins to be understood within the context of their earlier experiences, where they may have once served as functional mechanisms (Fowler, Garety, et al., 1998). These beliefs are then re-evaluated and
modified to reflect self concepts which are more adaptive (Fowler, Garety, et al., 1998). There is evidence of efficacy in these programs including Schema-focused CBT (Turkington, 2000) and CBT programs targeting self-esteem in those with psychosis has been associated with symptom reductions and improved social functioning (Hall & Tarrier, 2003; Oestrich, 2007).

Approaches such as CBT for SMI are designed to promote a better understanding of the consumer’s situation through an explorative rather than a didactic approach, as the latter can be counter-therapeutic and disempowering (Fowler, Garety, et al., 1998; Fowler et al., 1995). While such CBT programs do exist, further refining and evaluation is still required (Farhall et al., 2007; Jackson et al., 1999; Tarrier, 2005a). CBT approaches for SMI tend to be somewhat complex and the specific components of the interventions are not often assessed for their effectiveness independently (Deane & Kavanagh, 2010; Gaudiano, 2005). As such the evidence base for the CBT approach in SMI is variable and limited (Deane & Kavanagh, 2010; Gaudiano, 2005).

More recently, some CBT programs are including mindfulness and Acceptance and Commitment Therapy (ACT) techniques to help manage SMI symptoms (Gaudiano, 2005; Kuipers, 2005). These techniques encourages one to notice the presence of symptoms such as auditory hallucinations, without attempting to change, avoid, or resist it (Hayes, Strosahl, & Wilson, 1999). This process is suggested to change the relationship between negative thoughts or psychotic phenomenon, without changing the content (Bach & Hayes, 2002). This metacognitive awareness has been found to reduce believability of hallucinations and reduce relapse rates in those with psychosis (Bach & Hayes, 2002; Gaudiano & Herbert, 2006). ACT also encourages the pursuit of self-directed goals through the exploration of personal values (Bach &
The focus on acceptance of symptoms and self-directed goals in ACT parallels key features in the recovery movement literature suggesting that one can achieve a meaningful life despite the presence of ongoing symptoms. Further research and controlled trials are needed to determine the efficacy of ACT in combination and isolation of CBT interventions (Gaudiano, 2005).

Cognitive Analytic Therapy (CAT) may also offer contributions in the treatment of SMI, as it encompasses psychosocial variables including cognitive concepts of the self and others, and also attachment perspectives (Kerr, Birkett, & Chanen, 2003). CAT was designed as a time-limited therapy which can be incorporated cost-effectively into the public mental health system (Denman, 2001). It incorporates principles from psychodynamic psychotherapy, and cognitive psychology (Denman, 2001; Rees, 2000). CAT provides insights into the origins of a person’s maladaptive schemas and coping attempts based on a narrative account of developmental experiences, and these maladaptive patterns are then reformulated (Denman, 2001). It uses cognitive explanations for psychotic phenomenon, suggesting that these features are reflections of underlying cognitive processes and maladaptive beliefs (Kerr et al., 2003). CAT also provides an opportunity for the examination of target problems resulting from trauma, making it relevant to those with SMI populations (given the high incidence of trauma) (Kerr et al., 2003). It is similar to concepts of recovery, in that one of its core features is collaboration and active participation in therapy by the client (Denman, 2001; Rees, 2000). Further, the narrative elements to the approach provide an opportunity for validation of their experiences, and create new meaning to their experiences (Kerr et al., 2003), both of which are important components to recovery (Anthony, 1993; Deegan, 2003; Schrank & Slade, 2007; Wisdom et al., 2008). CAT provides a promising framework for the treatment of...
SMI, and further controlled evaluations are needed to determine its effectiveness (Kerr et al., 2003).

Newer developed programs such as low intensity CBT interventions as well as use of modern technologies such as e-therapy can also provide a cost effective way to provide necessary mental health services and ensure services are accessible across the community (Bennett-Levy et al., 2010). Training mental health staff in low intensity CBT techniques would allow for a broad utility of this approach across services (Bennett-Levy et al., 2010). Low intensity CBT can be facilitated by a broad range of mental health staff who have been trained in the core features of CBT derived from empirical research. This form of CBT can be provided in a case management setting has been suggested as an intervention to promote recovery in those with an SMI (Deane & Kavanagh, 2010). This approach is consistent with the recovery approach with its emphasis on autonomy, therapeutic relationships, and self-directed goals (Farhall et al., 2003). The approach endeavors to harnesses motivation generated from the expectation of recovery to work towards self-determined goals (Deane & Kavanagh, 2010).

It is important that, irrespective of the treatment approach, that psychosocial variables are emphasised, and that the person is supported to ensure integration into the community and improve the meaningfulness of the person’s life.

17.3. Implications at a Contextual, Social, and Policy Level

The implications of the current study can also be considered from a contextual, social and policy level. This includes implications for the design of mental health systems and the evaluation of mental health outcomes. The implications can also be
considered from a wider context examining where the recovery construct fits into developments occurring across social sciences.

17.3.1. Creating a mental health system that is conducive to recovery. If mental health services continue to endorse recovery as a new standard, the inclusion of new approaches that are aligned with the recovery vision into the existing system will be of great value. The existing system will need to refocus from symptom reduction to subjective improvements of consumers’ quality of life through policy formation and enhanced training of professionals. The idiosyncratic nature of recovery, and the support required poses a clear challenge to mental health services. Ensuring that they are flexible enough to provide this individualised support whilst still maintaining a consistent service is a difficult balance, but not unachievable.

The current mental health system has already demonstrated an ability to adapt to change and developments in society and empirical research (Anthony, 1993). Deinstitutionalisation into community-based settings required a dramatic shift in the approach to treatment for those with an SMI. Now, mental health services are being re-conceptualised with a recovery focus (Commonwealth of Australia, 2009). Because the recovery vision for the mental health system is still in its infancy, evidence-based programs which have successfully integrated a multidimensional model of SMI do not yet exist (Davidson et al., 2009). Programs which promote a person-centred, strengths-based, collaborative, and empowering approach are considered to be recovery-oriented (Davidson et al., 2009). The implementation of a recovery vision requires many considerations including properly trained professionals, appropriate assessment tools, appropriate professional supervision arrangements, peer
support programs, empirically based treatment approaches, workplace and educational engagement, staff training, and supportive management structures.

The training of mental health staff including psychiatrists, psychologists, social workers, occupational therapists, and nurses needs to incorporate the recovery vision. This will involve teaching the biomedical, behavioural and social aspects of mental illness not as independent functions of each other but as a dynamic context with the subjective experiences of the consumer at the centre of the picture.

It is widely noted that the presence of support persons for people in recovery who “believe in” and “stand by” them acts as a powerful facilitator to recovery (Anthony, 1993). The presence of these values held by staff and clinicians who work with people experiencing a SMI is something that can be implemented without large-scale systemic change. Training staff to be aware of their own role in facilitating recovery and the kinds of interpersonal skills required to provide encouragement and understanding to consumers is likely to make a difference in people’s recovery (Anthony, 1993). The existing mental health system must also support their staff and consumers to embrace the recovery movement through ongoing training and adequate supervision.

Extending existing programs such as peer support and mentoring programs can also help develop recovery-based service delivery. These programs provide consumer mentors to those with SMI and give first-hand accounts of the possibilities of recovery (Deegan, 2003; Peebles et al., 2007). Further to this, the promotion of social inclusion is a central theme in recovery literature, and programs need to facilitate engagement with the broader community (Davidson et al., 2006). Engagement with the broader community not only reduces the burden on services, it also enables one to engage with
people and services that are not based on the commonality of illness but on other common human interests (Davidson et al., 2006).

Ultimately, it is the clinicians and staff working in the mental health system who need to ensure they are working in a way that is helpful to the people they are supporting to recover. This means holding a positive outlook for the people they work with, listening and understanding the person’s barriers, and working collaboratively to determine what support is needed.

17.3.2. The measurement of recovery and outcomes. Mental health systems and research alike will also need to adjust the way recovery is monitored and evaluated. Most outcome studies and measures in mental health systems utilise measures which assess symptom reduction, neuropsychological performance, and reduction in hospitalisations (Davidson et al., 2009). Subjective improvements can only be inferred from these measures but are not analogous to the subjective experience of the SMI or the ability to live a meaningful life (Davidson et al., 2009). For many, the current outcome measures are only capturing dimensions which may have at best only a partial impact on a person’s recovery experiences and therefore need to be broadened in scope (Davidson et al., 2009). The shift from symptom reduction to personal recovery now requires measures which can allow for a range of recovery domains such as hope, self-efficacy, pursuing personal goals, and taking control of one’s treatment (Davidson et al., 2009). This approach offers a rich source of information which can more accurately assess recovery compared to measures of symptom severity or functioning alone.
17.3.3. Recovery in the wider context. Developments in the biomedical and neuroscience disciplines during the 1990s resulted in this period being proclaimed the “decade of the brain” (Bush, 1990, July 17). This period provided great contributions to the current understanding of brain structures in a range of mental problems including various SMIs, and was based on biological models of disorders. The decade between 2000 and 2010 was proclaimed the “decade of behavior”, with initiatives directed at the behavioural and social sciences (American Psychological Association, n.d.). During this time, psychosocial models of disorders were at the forefront of research activity and subsequent applications. These multidisciplinary initiatives aimed to address some of the challenges facing society and ultimately improve public health and wellbeing (American Psychological Association, n.d.).

It is anticipated that the current decade of 2011 – 2020 will attempt to integrate findings from the previous two decades and achieve a greater unity between the biomedical and psychosocial sciences. It is important that the lessons from past decades be integrated in order to provide a more comprehensive understanding of both an individual and our society as a whole. Empirical findings which integrate elements from social and medical science can then serve as a guide for multidimensional approaches to improving public health and wellbeing. For SMI, this will involve systemic change, new policy formation, and a cultural shift within the existing mental health system.

The recovery paradigm offers a convenient platform for the integration of biomedical, psychological, and social sciences. The recovery paradigm does not imply a biological or psychosocial origin of disorder or treatment approach (Anthony, 1993), but manages to encompass both into one vision. The recovery movement is already attempting to integrate consumer stories of recovery into the empirically based
methods of the scientific approach (Bellack, 2006). Further integration of the biomedical aspects of SMI, such as the role of medications, alongside the behavioural and social dimensions is needed. Such integration needs to be present in the assessment and formulation process, treatment interventions, and the evaluation phase to ensure the multidimensional nature of SMI and recovery are encapsulated throughout the process.

In addition to integrating biopsychosocial concepts, the recovery movement is occurring in parallel to other trends in the psychological literature such as the positive psychology movement (e.g., Csikszentmihalyi & Gillham, 2000), and the emphasis on promoting resilience against illness (e.g., Luthar et al., 2000). These concepts are reminiscent of the recovery process in that they focus on hope in the face of adversity rather than on pathology, and emphasise adaptation in order to lead a meaningful existence, rather than alleviating illness (Davidson et al., 2009). All of these concepts provide an alternative perspective on illness and suggest new approaches aimed at enhancing quality of life. For those with an SMI, these constructs encourage a focus on strengths and adaptation, rather than a deficits approach which may perpetuate stigma and dysfunction.

17.3.4. Society, SMI, and recovery. On a societal level, the consequences of SMI can be more difficult to overcome than the primary symptoms of the SMI itself, and these obstacles also need to be addressed to facilitate recovery. Factors such as discrimination, loss of life roles, stigma, and disempowerment can substantially inhibit recovery, and may continue long after illness symptoms have been overcome (Anthony, 1993). Addressing these factors can occur both on a systemic and an individual level. Dealing with issues like stigma and discrimination associated with
SMI in our society is a challenging yet not impossible prospect, as the success of campaigns to address the stigma of depression have demonstrated (Beyondblue, 2004, August 25). Addressing other contextual factors such as loss of life roles, negative-self views, and disempowerment can be done within a treatment setting by exploring these issues on an individual level. An awareness of these contextual and systemic factors is essential when considering the whole picture of recovery from SMI.

17.4. Limitations of Study

While the findings in the current study can provide suggestions and implications for the recovery and treatment literature in SMI populations, there are several limitations. First, the sample size in the current study is noted as a limitation. It is generally recommended that when items are removed from a scale, this new scale should then be tested in another independent sample (Anderson & Gerbing, 1984). A larger sample would have allowed the creation of two independent samples to confirm the factor structure for the RAS. The current study would benefit from a larger sample and replications are encouraged. In addition, the study had a cross-sectional design; hence, causality cannot be established between variables. Further, the study’s naturalistic and non-experimental design could not account for a potentially wide range of confounding variables.

The RAS can present a challenge for participants who are in the initial stages of recovery as it relies on participants having understanding and insight into their illness and illness management (McNaught et al., 2007). Further, the self-report nature of many of the study’s variables, suggests the possibility of a social desirability bias in the data. Recovery is likely to be perceived as a positive attribute by the participants, and it is possible that rather than capturing a person’s actual level of recovery,
measures may have captured a level of recovery that participants would like to have, or be perceived as having, achieved. The presence of the researcher at the time of data collection may have also contributed to response bias in the data.

The diagnostic heterogeneity of the sample is both a strength and limitation in the current study. Although it allows for findings to be generalised across a wider population, there may be variability in the findings for different diagnostic groups. Further, the diagnostic assessments were not based on a structured interview with validated measures, and instead it was assumed that the participant’s clinical practitioner had made an accurate diagnosis.

Further to this, the sample was obtained from an organisation that embraces the recovery framework and, as such, the responses provided by participants in the current study may not be representative of those in the broader community of people with SMI. It is of interest for future research to replicate the current findings in the general psychiatric community, including those who are not in a service operating from a recovery framework.

Although this study found evidence of the clinical variables being significantly related to recovery, the psychosocial variables exhibited generally stronger associations with recovery. These findings may be due to the conceptual proximity of the psychosocial and recovery measures so that the findings may have been partially reflective of tautology between factors rather than representative of a relationship between distinct variables (Coyne & Racioppo, 2000). This limitation may be particularly relevant to the coping and recovery scales, although items on both scales were carefully considered to ensure discriminant validity was achieved.

In consideration of these limitations, the results presented are viewed as preliminary, and replication of these findings is needed before any definitive
relationships can be accepted. Nonetheless, the findings are encouraging and do suggest that the reliability of data collected in the population is dependable, even if there are acute symptoms present. Further they can provide a wide range of implications for future research and clinical interventions.

17.5. Future Research Directions

The findings from the current study are preliminary, and there is still much to do in the recovery literature. Further research should continue to operationalise recovery and develop a standard for the measurement of this concept. Both qualitative and quantitative approaches to this are needed, and can offer their own unique contributions (Bellack, 2006; Campbell-Orde et al., 2005; Davidson et al., 2008). Consideration for mixed method designs in recovery research could further enhance the current understanding of the subjective components of recovery, whilst also examining how best to measure this across a wider sample.

Only a limited range and number of variables were explored in the current study. Future research should also explore the external processes involved in recovery including availability of resources such as access to clinical services, accommodation, employment, and the density and availability of social support. Future research should examine other groups including participants of differing ages, demographics and cultures, and also explore recovery in participants with specific diagnoses. In addition, comparisons using homogenous samples are needed to provide insight into recovery differences across diagnoses, demographics, and other factors. Further, comparisons between those in early stages of recovery and those already recovered would also provide useful information regarding what factors promote or inhibit recovery.
With regard to the clinical variables, more research is needed to examine the role of medication as a tool for optimising recovery rather than solely examining its efficacy in reducing psychiatric symptoms. In light of the unexpected absence of any relationship found in the current study between substance use and recovery, future research is warranted to determine whether or not substance plays a role in recovery for those with an SMI. Further, it is vital to gain an understanding of the motivations and reasons behind substance use in SMI populations, and if there is any relationship exist between different types of substances and patterns of use in relationship to recovery.

Longitudinal research is also needed to explore the nature of recovery as a dynamic process, as it is likely to fluctuate over time for any one individual (Anthony, 1993; Hoffmann & Kupper, 2002). The extent to which recovery fluctuates and what influences this fluctuation could provide valuable insights into both the recovery process and relapse prevention. For example, if medication non-adherence is linked to relapse in recovery, as is seen in traditional clinical outcome studies, this can be targeted in interventions to buffer against relapse. Further, longitudinal research can establish causality between factors such as attachment, cognitive schemas, and coping with respect to recovery.

As a concept, recovery offers a platform for the integration of psychosocial variables with the clinical variables more often examined in outcome research. Traditional clinical variables have been found to influence symptom severity outcomes in SMI, however these findings have not been replicated using subjective measures of recovery. The RAS also provides an opportunity for the evaluation of intervention programs. The RAS can provide an additional source of clinically relevant information concerning the effectiveness of treatments such as CBT, which
may not currently be accessed by more traditional measures of recovery. For example, successful treatment intervention may not achieve remission of symptoms, however efficacy of the intervention can be demonstrated if a person’s ability to manage these symptoms has been enhanced. This process will not be captured using outcome measures which are based on symptom severity or frequency. Measures that can represent the subjective ability to manage an SMI and the impact it has on the person’s life will provide a more complete picture for mental health services.

A surprising finding in the current study related to the intact reliability and validity of the responses for those participants presenting with acute symptomotology or severe cognitive impairments. This raises an important question with respect to the rationale behind the implementation of exclusionary criteria for acute presentations in many research studies. Further research is needed to replicate this finding and explore the ramifications for research into SMI. Further research should examine the justifications behind these exclusionary criteria and assess if they are necessary.

17.6. Conclusion

Recovery involves creating a new meaning and purpose in life following the often devastating effects of SMI. For mental health services, targeting psychosocial variables (particularly those relating active coping and self views) are likely to make a great contribution to a person’s recovery. This is in no way suggesting that clinical variables are not important, but rather that the excessive focus on them occurs at the expense of psychosocial variables. This study suggests that in the same way that SMI can be determined by interactions between biological and environmental factors, recovery is not simply a biological process, but rather a multidimensional experience, that incorporates subjective and environmental factors. The recovery paradigm in our
Australian mental health service offers a unitary vision and a platform to integrate both biological and psychosocial aspects of disorders to optimise recovery and outcomes. The current findings stress the importance of the subjective experiences in assessment, formulation, treatment, and outcome measurement for those experiencing an SMI. These subjective experiences will ensure that the true needs and aspirations of consumers are being heard so we can provide support on along their own personal recovery journey.
References


Carver, C. S. (1997). You want to measure coping but your protocol's too long:

Consider the Brief COPE. *International Journal of Behavioral Medicine, 4*(1), 92-100.


Contributions of attachment style and perceived social support to lifetime use of illicit substances. *Addictive Behaviors, 30*, 1007-1011.


Chiba, R., Miyamoto, Y., & Kawakami, N. (2010). Reliability and validity of the Japanese version of the Recovery Assessment Scale (RAS) for people with


environment on psychosis. *Journal of Psychological Trauma, 6*(2/3), 65-85.

compliance in schizophrenia: Empirical and clinical findings. *Schizophrenia

schizophrenic patients. *The American Journal of Psychiatry, 144*(10), 1306-
1309

subtype, and suicidality in patients with schizophrenia spectrum disorders.

(2008). A large-scale validation study of the Medication Adherence Rating
Scale (MARS). *Schizophrenia Research, 100*(1), 53-59.

consumers with severe mental illness living in group home settings.
*Dissertation Abstracts International Section A: Humanities and Social
Sciences, 65*(11), 4115.

Fogarty, J. S. (1997). Reactance theory and patient noncompliance. *Social Science and
Medicine, 45*(8), 1277-1288.

*American Psychologist, 55*(6), 647-654.

(2005). Prevalence and Risk Factors for Homelessness and Utilization of
Mental Health Services Among 10,340 Patients With Serious Mental Illness in


collaborative project, the international study of schizophrenia. New York, NY: Oxford University Press.


among adults with severe and persistent mental illness. *Psychological Assessment, 12*(2), 186-192.


*American Psychologist, 41*, 813-819.


Appendices
Appendix A

Ethics Clearance Letter for Swinburne

To: Ms Erin Holloway, FLSS
cc Prof Michael Kyrios/Dr Greg Murray, FLSS

Dear Erin

SUHREC Project 0607/213 Exploring Recovery from Serious Mental Illness
Prof M Kyrios FLSS Ms Erin Holloway Dr Greg Murray

Further to the ethics clearance for the modified project issued on 30 August 2007, your most recent request to modify the above project protocols further (as per your email of 14 September 2007 with attached revised survey instrument) was put to the Chair of SUHREC for consideration.

I am pleased to advise that the further modified project has been approved in line with ethics clearance conditions previously communicated and reprinted below.

Please contact me if you have any queries about on-going ethics clearance and if you need a signed ethics clearance certificate. The SUHREC project number should be cited in communication.

As before, best wishes for the project.

Yours sincerely

Keith Wilkins
Secretary, SUHREC
Appendix B

Ethics Clearance Letter for Mind Australia (Formally known as Richmond Fellowship)

30th Oct 2005

TO WHOM IT MAY CONCERN

Re: Research proposal of Erin Holloway

This letter confirms that the Richmond Fellowship of Victoria has granted permission to Erin Holloway to conduct a research project using data derived from RFV program clients.

We understand that Ms Holloway’s research will involves interviewing RF clients using a number of measurement tools, and that no RF clients will be identified or identifiable during the course of her project, or in the project report. RF clients will give their informed consent to their involvement in the project, which may be withdrawn at any time.

We understand that Ms Holloway’s project has received approval from the Swinburne University Ethics Committee.

Yours Sincerely

Malcolm Morgan
Richmond Fellowship of Victoria
Services Director
Appendix C

Plain Language Information Statement

Invitation to Participate in a Research Project

PROJECT INFORMATION STATEMENT

“Exploring Recovery from Serious Mental Illness”

18th May 2007

Investigators:
- Miss Erin Holloway (Swinburne University).
- Prof. Michael Kyrios (Project Supervisor, Lecturer, Swinburne University).
- Dr. Greg Murray (Secondary Project Supervisor, Lecturer, Swinburne University).

You are invited to participate in a research project being conducted by Swinburne University, in conjunction with the Richmond Fellowship, and the Victorian State Department of Human Services. This information sheet describes the project in straightforward language. Please make sure that you understand its contents before deciding whether to participate.

This project has been approved by the Swinburne’s Human Research Ethics Committee (SUHREC) in line with the National Statement on Ethical Conduct in Research Involving Humans and The Richmond Fellowship Research Ethics Committees.

Who is involved in this research project?
This project is being conducted by Erin Holloway as part of the requirements of a Doctorate in Clinical Psychology. The project is supervised by Prof. Michael Kyrios and Dr. Greg Murray.

Who is invited to participate in this study?
This project is seeking individuals who:
(a) are aged between 18 to 55 years;
(b) have a current serious mental illness;
(c) are part of a Victorian Richmond Fellowship residential or outreach programs;

What is the project about? What are the questions being addressed?
The idea of recovery is becoming very popular in mental health services. It is the result of a shift from more medical ideas to more personal ideas of what it means to recover from mental illness, that is, it focuses on what it means for you to recover. Recovery puts a more positive spin on mental illness and suggests that people suffering from mental illness can go on to live a fulfilling life. This study examines some of the personal factors involved in your recovery.

If I agree to participate, what will I be required to do?
If you agree to participate in this project, you will be asked to fill out a package of questionnaires at your Richmond Fellowship location in small groups.

The questionnaires will ask you about:
- How your mental illness affects your day-to-day life;
- How you cope with your mental illness;
- Your experiences in close relationships;
- Your use of substances (drugs and alcohol);
- Your medication use and adherence;
- Information about your thought processes and;
- Your idea’s about your mental illness;

The questionnaire package should take you approximately 30 minutes (or less) to complete. Your questionnaire will then be collected by the researcher and stored in a safe place where only the researchers can access it.

Information from your case file will also be accessed. The researcher will only access the following information: Length in Program, Diagnosis, Medication type and dose, and number and length of hospitalisations in the past 12 months.

We will also make some observational ratings of any manic or psychotic symptoms, and ask a support worker about the severity of your illness.

At the completion of the questionnaire you shall receive $10 for the time taken in participating in the project.
Appendix D

Participant Consent Form

CONSENT FORM FOR PARTICIPATING IN A RESEARCH PROJECT

“Exploring Recovery from Serious Mental Illness”

Investigators:

Miss Erin Holloway (Swinburne University; Doctorate Student, Swinburne University).

Prof. Michael Kyrios (Project Supervisor, Professor, Swinburne University).

Dr. Greg Murray (Secondary Project Supervisor, Senior Lecturer, Swinburne University).

1. I consent to participate in the project, the particulars of which - including details of the Questionnaire - have been explained to me in the Project Information Statement. I have been given a copy of that explanation to keep. Any questions I have asked have been answered to my satisfaction.

2. I authorise the investigator in the above project to use with me the tests and procedures referred to in the information sheets.

3. I acknowledge that:
   (a) I have been informed that I am free to withdraw from the project at any time and to withdraw any identifiable unprocessed data previously supplied
   (b) The project is for the purpose of research and not for treatment
   (c) I have been informed that the confidentiality of the information I provide will be safeguarded in the following ways:
      • Information from the study will be kept confidential by storing it under code numbers rather than names, so no-one will be able to identify you.
      • Records will be maintained in locked cabinets and on computers requiring passwords for access.
      • The only people with access to your information are the three researchers named at the head of this information sheet.
   (d) Confidentiality is subject to legal requirements (subpoena, freedom of information, mandated reporting)
   (e) Research data collected for the study may be published or provided to other researchers on the condition that anonymity is preserved and that I cannot be identified.

4. I also authorise the investigator in the above project to ask my support worker at the Richmond Fellowship about the severity of illness.

5. I also authorise the investigator in the above project to access the following information out of my Richmond Fellowship case file:
   (a) The length of time I have been in this program
   (b) My diagnosis
   (c) My current medication
   (d) My history of hospitalisations over the past 12 months.

Participant signature: __________________________ Date: ________________
## Information from Case Files and Support Worker: To be filled out by Researcher

### 1. DIAGNOSIS

#### PSYCHOTIC DISORDERS
- [ ] Schizophrenia- Paranoid, Disorganised, Catatonic, Undifferentiated
- [ ] Schizoaffective Disorder
- [ ] Schizophreniform Disorder
- [ ] Substance Induced Psychotic Disorder
- [ ] NOS/Other

#### MOOD DISORDERS
- [ ] Major Depressive Disorder
- [ ] Bipolar II
- [ ] Dysthymic Disorder
- [ ] Substance Induced Mood Disorder
- [ ] Bipolar I
- [ ] NOS/Other

#### ANXIETY DISORDERS
- [ ] Panic Disorder With / Without Agoraphobia
- [ ] PTSD
- [ ] Social Phobia
- [ ] GAD
- [ ] OCD
- [ ] NOS/Other

#### PERSONALITY DISORDERS
- [ ] BPD
- [ ] ASPD
- [ ] Narcissistic
- [ ] HPD
- [ ] Avoidant
- [ ] Paranoid
- [ ] Dependent
- [ ] Schizoid
- [ ] Obsessive-Compulsive
- [ ] Schizotypal
- [ ] NOS

#### PERVERSIVE DEVELOPMENTAL DISORDERS
- [ ] Autistic Disorder
- [ ] Aspergers Disorder
- [ ] NOS/Other

### 2. LENGTH IN PROGRAM:
- Date of Entry: __________________
- Length in Program: __________________

### 3. HOSPITALISATIONS:
- Number of Hospitalisations in the past 12 months: __________________
- Length of stay:

  1) __________  2) __________  3) __________  4) __________

### 4. Support Worker Rating of Severity (0-10) - “How severe do you think (insert name)’s Mental Illness is on a scale of 0 to 10, 0 being not severe at all, 10 being extremely severe?”

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Marked</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

### 5. Support Worker Rating of Severity (0-10) - “How severe do you think (insert name)’s positive symptoms are (i.e hallucinations, delusions, racing thoughts, hostility, accelerated motor behaviour or a very labile mood)?”

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Marked</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

### 6. Support Worker Rating of Severity (0-10) - “How severe do you think (insert name)’s negative symptoms are (i.e. blunted affect, emotional and social withdrawal, apathy, poor rapport, experiencing little or no pleasure, poor social functioning, concrete or inflexible thinking)?”

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Marked</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
### 7. Medication Type

<table>
<thead>
<tr>
<th>Medication Type</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abilify <em>(see aripiprazole)</em></td>
<td></td>
</tr>
<tr>
<td>Aricept <em>(donepezil)</em></td>
<td></td>
</tr>
<tr>
<td>Aripiprazole</td>
<td></td>
</tr>
<tr>
<td>Amisulpride</td>
<td></td>
</tr>
<tr>
<td>Avanza</td>
<td></td>
</tr>
<tr>
<td>Ativan <em>(see lorazepam)</em></td>
<td></td>
</tr>
<tr>
<td>Benzodiazepine</td>
<td></td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td></td>
</tr>
<tr>
<td>Citalopram</td>
<td></td>
</tr>
<tr>
<td>Clozapine</td>
<td></td>
</tr>
<tr>
<td>Depot injections</td>
<td></td>
</tr>
<tr>
<td>Donepezil <em>(see Aricept)</em></td>
<td></td>
</tr>
<tr>
<td>Dozic <em>(see haloperidol)</em></td>
<td></td>
</tr>
<tr>
<td>Epilim <em>(see sodium valproate)</em></td>
<td></td>
</tr>
<tr>
<td>Fluoxetine</td>
<td></td>
</tr>
<tr>
<td>Flupenthixol</td>
<td></td>
</tr>
<tr>
<td>Faverin <em>(see fluvoxamine)</em></td>
<td></td>
</tr>
<tr>
<td>Fluvoxamine</td>
<td></td>
</tr>
<tr>
<td>Haloperidol Haldol / Haldol Decanoate</td>
<td></td>
</tr>
<tr>
<td>Largactil <em>(see chlorpromazine)</em></td>
<td></td>
</tr>
<tr>
<td>Lorazepam</td>
<td></td>
</tr>
<tr>
<td>Lithium / Liskonum / Litarex</td>
<td></td>
</tr>
<tr>
<td>Moclobemide</td>
<td></td>
</tr>
<tr>
<td>Mirtazapine</td>
<td></td>
</tr>
<tr>
<td>Nefazodone</td>
<td></td>
</tr>
<tr>
<td>Olanzapine</td>
<td></td>
</tr>
<tr>
<td>Quetiapine</td>
<td></td>
</tr>
<tr>
<td>Paroxetine</td>
<td></td>
</tr>
<tr>
<td>Reboxetine</td>
<td></td>
</tr>
<tr>
<td>Risperidone</td>
<td></td>
</tr>
<tr>
<td>Seroquel <em>(see quetiapine)</em></td>
<td></td>
</tr>
<tr>
<td>Sertraline</td>
<td></td>
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<tr>
<td>Sodium valproate</td>
<td></td>
</tr>
<tr>
<td>Solian <em>(see amisulpride)</em></td>
<td></td>
</tr>
<tr>
<td>Valproate / Valproic acid <em>(see sodium valproate)</em></td>
<td></td>
</tr>
<tr>
<td>Venlafaxine</td>
<td></td>
</tr>
<tr>
<td>Zyprexa <em>(see olanzapine)</em></td>
<td></td>
</tr>
<tr>
<td>Zoloft <em>(see sertraline)</em></td>
<td></td>
</tr>
</tbody>
</table>

**OTHER**
Appendix F
Questionnaire Booklet

Note: This questionnaire has been resized to fit the current document

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Please rate how you feel right now by circling the appropriate number.

Use the following scale to record your answers.

(1) = Very slightly or not at all  (2) = A little  (3) = Moderately  (4) = Quite a bit  (5) = Extremely

<table>
<thead>
<tr>
<th>Very slightly or not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interested</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Distressed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Excited</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Upset</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Strong</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. Guilty</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. Scared</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Hostile</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Enthusiastic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Proud</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Irritable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. Alert</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. Ashamed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. Inspired</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. Nervous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. Determined</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. Attentive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. Jittery</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. Active</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. Afraid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Recovery Questionnaire: Exploring Recovery from Mental Illness

Please tick the appropriate box or write in the space provided for each question. Try not to miss any questions, and answer them as truthfully as you can. Remember your answers are kept private, and anonymous.

1. Your Age

2. Your Gender
   Male [ ] Female [ ]

3. Your highest level of education
   [ ] I finished Year 9
   [ ] I finished Year 10
   [ ] I finished Year 11
   [ ] I finished Year 12
   [ ] I finished TAFE course
   [ ] I finished University Degree
   [ ] I finished Post-graduate studies

The following statements concern how you generally feel in close relationships (e.g., with romantic partners, close friends, or family members). Respond to each statement by indicating how much you agree or disagree with it. Circle the number using the following rating scale:

1 = Disagree Strongly ........................................ 4 = Neutral/Mixed ........................................... 7 = Strongly Agree

1. I prefer not to show others how I feel deep down. 1 2 3 4 5 6 7
2. I worry about being rejected or abandoned. 1 2 3 4 5 6 7
3. I am very comfortable being close to other people. 1 2 3 4 5 6 7
4. I find that my partners don’t want to get as close as I would like. 1 2 3 4 5 6 7
5. Just when someone starts to get close to me I find myself pulling away. 1 2 3 4 5 6 7
6. I worry that others won’t care about me as much as I care about them. 1 2 3 4 5 6 7
7. I get uncomfortable when someone wants to be very close to me. 1 2 3 4 5 6 7
8. I worry a fair amount about losing my close relationship partners. 1 2 3 4 5 6 7
9. I don’t feel comfortable opening up to others. 1 2 3 4 5 6 7
10. I get frustrated if relationship partners are not available when I need them. 1 2 3 4 5 6 7
11. I try to avoid getting too close to others. 1 2 3 4 5 6 7
12. I resent it when my relationship partners spend time away from me. 1 2 3 4 5 6 7
13. I am nervous when another person gets too close to me. 1 2 3 4 5 6 7
14. I worry about being alone. 1 2 3 4 5 6 7
15. I feel comfortable sharing my private thoughts and feelings with others. 1 2 3 4 5 6 7
16. My desire to be very close sometimes scares people away. 1 2 3 4 5 6 7
To what extent does your mental health symptoms impair your functioning in:

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Marked / Lots</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Your social life.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Your family and home life.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Your ability to work or go to school.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Below is a list of statements that describe how people sometimes feel about themselves and their lives. Please read each one carefully and circle the number to the right that best describes the extent to which you agree or disagree with the statement. Circle only one for each statement and do not skip any items.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have a desire to succeed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I have my own plan for how to stay or become well.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I have goals in life that I want to reach.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I believe I can meet my current personal goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I have a purpose in life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Even when I don't care about myself, other people do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I understand how to control the symptoms of my mental illness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I can handle it if I get sick again.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I can identify what triggers the symptoms of my mental illness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I can help myself become better.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Fear doesn't stop me from living the way I want to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I know that there are mental health services that do help me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. There are things that I can do that help me deal with unwanted symptoms.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I can handle what happens in my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. I like myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. If people really knew me, they would like me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. I am a better person than before my experience with mental illness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. Although my symptoms may get worse, I know I can handle it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. If I keep trying, I will continue to get better.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. I have an idea of who I want to become.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. Things happen for a reason.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. Something good will eventually happen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. I am the person most responsible for my own improvement.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. I'm hopeful about the future.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>25. I continue to have new interests.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26. It is important to have fun.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tr>
<tr>
<td>27. Coping with my mental illness is no longer the main focus of my life.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>28. My symptoms interfere less and less with my life.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>29. My symptoms seem to be a problem for shorter periods of time each time they occur.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>30. I know when to ask for help.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>31. I am willing to ask for help.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>32. I ask for help when I need it.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>33. Being able to work is important to me.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>34. I know what helps me get better.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>35. I can learn from my mistakes.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>36. I can handle stress.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>37. I have people I can count on.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>38. I can identify the early warning signs of becoming sick.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>39. Even when I don't believe in myself, other people do.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>40. It is important to have a variety of friends.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>41. It is important to have healthy habits.</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Please respond to the following statements circling the answer which best describes your behaviour or the attitude you have held toward your medication in the past week.

1. Do you ever forget to take your medication? YES NO
2. Are you careless at times about taking your medicine? YES NO
3. When you feel better, do you sometimes stop taking your medicine? YES NO
4. Sometimes if you feel worse when you take the medicine, do you stop taking it? YES NO
5. I take my medication only when I am sick. YES NO
6. It is unnatural for my mind and body to be controlled by medication. YES NO
7. My thoughts are clearer on medication. YES NO
8. By staying on medication, I can prevent getting sick. YES NO
9. I feel weird, like a 'zombie', on medication. YES NO
10. Medication makes me feel tired and sluggish. YES NO
These items deal with ways you've been coping with the stress in your life since you found out you had a mental illness. There are many ways to try to deal with problems. These items ask what you've been doing to cope. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. Don't answer on the basis of whether it seems to be working or not - just whether or not you're doing it. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

<table>
<thead>
<tr>
<th>I haven't been doing this at all</th>
<th>I've been doing this a little bit</th>
<th>I've been doing this a medium amount</th>
<th>I've been doing this a lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I've been turning to work or other activities to take my mind off things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. I've been concentrating my efforts on doing something about the situation I'm in.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. I've been saying to myself &quot;this isn't real&quot;.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. I've been using alcohol or other drugs to make myself feel better.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. I've been getting emotional support from others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. I've been giving up trying to deal with it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. I've been taking action to try to make the situation better.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. I've been refusing to believe that it has happened.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. I've been saying things to let my unpleasant feelings escape.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. I've been getting help and advice from other people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. I've been using alcohol or other drugs to help me get through it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. I've been trying to see it in a different light, to make it seem more positive.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. I've been criticising myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. I've been trying to come up with a strategy about what to do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. I've been getting comfort and understanding from someone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. I've been giving up the attempt to cope.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. I've been looking for something good in what is happening.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. I've been making jokes about it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20. I've been accepting the reality of the fact that it has happened.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>21. I've been expressing my negative feelings.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22. I've been trying to find comfort in my religion or spiritual beliefs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23. I've been trying to get advice or help from other people about what to do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24. I've been learning to live with it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>25. I've been thinking hard about what steps to take.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>26. I've been blaming myself for things that happened.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>27. I've been praying or meditating.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>28. I've been making fun of the situation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
This questionnaire lists beliefs that people can hold about themselves and other people. Please indicate whether you hold each belief (NO or YES). If you hold the belief then please indicate how strongly you hold it by circling a number (1–4). Try to judge the beliefs on how you have generally, over time, viewed yourself and others. Do not spend too long on each belief. There are no right or wrong answers and the first response to each belief is often the most accurate.

**MYSELF**

<table>
<thead>
<tr>
<th>Belief</th>
<th>Believe it slightly</th>
<th>Believe it moderately</th>
<th>Believe it very much</th>
<th>Believe it totally</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am unloved.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. I am worthless.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. I am weak.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. I am vulnerable.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. I am bad.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. I am a failure.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. I am respected.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8. I am valuable.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. I am talented.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10. I am successful.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11. I am good.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12. I am interesting.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**OTHER PEOPLE**

<table>
<thead>
<tr>
<th>Belief</th>
<th>Believe it slightly</th>
<th>Believe it moderately</th>
<th>Believe it very much</th>
<th>Believe it totally</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Other people are hostile.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14. Other people are harsh.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15. Other people are unforgiving.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16. Other people are bad.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17. Other people are devious.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>18. Other people are nasty.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19. Other people are fair.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20. Other people are good.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21. Other people are trustworthy.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22. Other people are accepting.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>23. Other people are supportive.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>24. Other people are truthful.</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The following questions concern information about your use of Alcoholic beverages during the past 12 months. Carefully read each statement and decide if your answer is "Yes" or "No". Then, circle the appropriate response beside the question. If you have difficulty with a statement, then choose the response that is mostly right.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often do you have a drink containing alcohol?</td>
<td>Never, Monthly or less, 2-4 times a month, 2-3 times a week, 4 or more times a week</td>
</tr>
<tr>
<td>2. How many drinks containing alcohol do you have on a typical day when you are drinking?</td>
<td>Not applicable, 1 or 2, 3 or 4, 5 or 6, 7 to 9, 10 or more</td>
</tr>
<tr>
<td>3. How often do you have four or more drinks on one occasion?</td>
<td>Never, Less than monthly, Monthly, Weekly, Daily or almost daily</td>
</tr>
</tbody>
</table>
4. How often during the last year have you found that you were not able to stop drinking once you had started? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily
---|---|---|---|---|---
5. How often during the last year have you failed to do what was expected of you because of your drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily
6. How often during the last year have you needed a drink the first thing in the morning to get yourself going after a heavy drinking session? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily
7. How often during the last year have you had a feeling of guilt or remorse after drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily
8. How often during the last year have you been unable to remember what happened the night before because of your drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily
9. Have you or someone else been injured because of your drinking? | No | - | Yes, but not in the last year | - | Yes, during the last year
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down? | No | - | Yes, but not in the last year | - | Yes, during the last year

The following questions concern information about your potential involvement with drugs **not including alcoholic beverages** during the past 12 months. Carefully read each statement and decide if your answer is "Yes" or "No". Then, circle the appropriate response beside the question. Remember that the questions do not include alcoholic beverages. Please answer every question. If you have difficulty with a statement, then choose the response that is mostly right.

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you used drugs other than those required for medical reasons?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>2. Do you abuse more than one drug at a time?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>3. Are you always able to stop using drugs when you want to? <em>(If you never use drugs, answer “Yes”)</em></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>4. Have you had &quot;blackouts&quot; or &quot;flashbacks&quot; as a result of drug use? <em>(If you never use drugs, choose &quot;No&quot;.)</em></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>5. Do you ever feel bad or guilty about your drug use? <em>(If you never use drugs, choose &quot;No&quot;.)</em></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>6. Does your spouse (or parents) ever complain about your involvement with drugs?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>7. Have you neglected your family because of your use of drugs?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>8. Have you engaged in illegal activities in order to obtain drugs?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>9. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>10. Have you had medical problems as a result of your drug use <em>(e.g., memory loss, hepatitis, convulsions, bleeding, etc.)</em>?</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

** Thank-you very much for taking the time to fill in these questionnaires. **
## Mental Illness Diagnoses

### Primary Diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>79</td>
<td>51.30</td>
</tr>
<tr>
<td>Schizoaffective</td>
<td>19</td>
<td>12.34</td>
</tr>
<tr>
<td>Psychotic Illness NOS</td>
<td>6</td>
<td>3.90</td>
</tr>
<tr>
<td>Substance Induced Psychosis</td>
<td>2</td>
<td>1.30</td>
</tr>
<tr>
<td>Delusional Disorder</td>
<td>2</td>
<td>1.30</td>
</tr>
<tr>
<td>Schizophreniform</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Bipolar 1</td>
<td>3</td>
<td>1.95</td>
</tr>
<tr>
<td>Bipolar 2</td>
<td>8</td>
<td>5.19</td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>9</td>
<td>5.84</td>
</tr>
<tr>
<td>Panic Disorder</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Social Phobia</td>
<td>4</td>
<td>2.60</td>
</tr>
<tr>
<td>Obsessive Compulsive Disorder</td>
<td>2</td>
<td>1.30</td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder</td>
<td>6</td>
<td>3.90</td>
</tr>
<tr>
<td>Borderline Personality Disorder</td>
<td>8</td>
<td>5.19</td>
</tr>
<tr>
<td>Aspergers</td>
<td>3</td>
<td>1.95</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100</td>
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</tbody>
</table>

### Secondary Diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No diagnosis</td>
<td>110</td>
<td>71.43</td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>17</td>
<td>11.04</td>
</tr>
<tr>
<td>Panic Disorder</td>
<td>2</td>
<td>1.30</td>
</tr>
<tr>
<td>Social Phobia</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder</td>
<td>2</td>
<td>1.30</td>
</tr>
<tr>
<td>Borderline Personality Disorder</td>
<td>10</td>
<td>6.49</td>
</tr>
<tr>
<td>Aspergers</td>
<td>3</td>
<td>1.95</td>
</tr>
<tr>
<td>Cerebral Palsy</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Acquired Brain Injury</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Mild Intellectual Disability</td>
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<td>2.60</td>
</tr>
<tr>
<td>Moderate Intellectual Disability</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Bulimia Nervosa</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Anorexia Nervosa</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100</td>
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</tbody>
</table>

### Third Diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No diagnosis</td>
<td>150</td>
<td>97.40</td>
</tr>
<tr>
<td>Anorexia Nervosa</td>
<td>2</td>
<td>1.30</td>
</tr>
<tr>
<td>Personality Disorder NOS</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Trichotillomania</td>
<td>1</td>
<td>.65</td>
</tr>
<tr>
<td>Total</td>
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<td>100</td>
</tr>
</tbody>
</table>
Appendix H

Prescribed Medications

<table>
<thead>
<tr>
<th>Medication Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>One antipsychotic</td>
<td>49</td>
<td>31.8</td>
</tr>
<tr>
<td>One antipsychotic and one antidepressant</td>
<td>26</td>
<td>16.9</td>
</tr>
<tr>
<td>One antipsychotic and one mood stabiliser</td>
<td>11</td>
<td>7.1</td>
</tr>
<tr>
<td>Two antipsychotics</td>
<td>15</td>
<td>9.7</td>
</tr>
<tr>
<td>Two antipsychotic one mood stabiliser</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td>Two antipsychotics and one antidepressant</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Two antipsychotics and one mood stabiliser</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>One antipsychotic, one mood stabiliser, and one antidepressant</td>
<td>15</td>
<td>9.7</td>
</tr>
<tr>
<td>One mood stabiliser</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Two mood stabilisers</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>One antidepressant</td>
<td>10</td>
<td>6.5</td>
</tr>
<tr>
<td>Two antidepressants</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>One antidepressant and one mood stabiliser</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>None</td>
<td>9</td>
<td>5.8</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Appendix I

MANOVA comparisons between flagged and non-flagged participants

<table>
<thead>
<tr>
<th>Sample</th>
<th>Psychosocial Variables</th>
<th>Clinical Variables</th>
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<td>1</td>
<td>$F(5, 38) = .15, p=.979$; Wilks’ Lambda =.98</td>
<td>$F(4, 39) = .88, p=.438$; Wilks’ Lambda =.92</td>
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<td></td>
<td>Partial Eta Squared =.019</td>
<td>Partial Eta Squared =.083</td>
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<td>2</td>
<td>$F(5, 38) = .56, p=.730$; Wilks’ Lambda =.93</td>
<td>$F(4, 39) = 1.88, p=.134$; Wilks’ Lambda =.84</td>
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<td>Partial Eta Squared =.069</td>
<td>Partial Eta Squared =.161</td>
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<td>3</td>
<td>$F(5, 38) = .57, p=.721$; Wilks’ Lambda =.93</td>
<td>$F(4, 39) = 1.01, p=.413$; Wilks’ Lambda =.91</td>
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<td></td>
<td>Partial Eta Squared =.070</td>
<td>Partial Eta Squared =.094</td>
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<tr>
<td>4</td>
<td>$F(5, 38) = .20, p=.961$; Wilks’ Lambda =.98</td>
<td>$F(4, 39) = 1.54, p=.209$; Wilks’ Lambda =.86</td>
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<td>Partial Eta Squared =.025</td>
<td>Partial Eta Squared =.137</td>
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<td>5</td>
<td>$F(5, 38) = .68, p=.643$; Wilks’ Lambda =.92</td>
<td>$F(4, 39) = 1.84, p=.141$; Wilks’ Lambda =.84</td>
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<td>Partial Eta Squared =.082</td>
<td>Partial Eta Squared =.159</td>
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<td>6</td>
<td>$F(5, 38) = .05, p=.998$; Wilks’ Lambda =.99</td>
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<td>Partial Eta Squared =.141</td>
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<td>7</td>
<td>$F(5, 38) = .10, p=.992$; Wilks’ Lambda =.99</td>
<td>$F(4, 39) = 1.53, p=.212$; Wilks’ Lambda =.86</td>
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<td>Partial Eta Squared =.136</td>
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<td>8</td>
<td>$F(5, 38) = .38, p=.862$; Wilks’ Lambda =.95</td>
<td>$F(4, 39) = 1.45, p=.236$; Wilks’ Lambda =.87</td>
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<td>Partial Eta Squared =.047</td>
<td>Partial Eta Squared =.129</td>
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<tr>
<td>9</td>
<td>$F(5, 38) = .10, p=.992$; Wilks’ Lambda =.99</td>
<td>$F(4, 39) = 1.88, p=.133$; Wilks’ Lambda =.84</td>
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<td>Partial Eta Squared =.013</td>
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<td>Partial Eta Squared =.079</td>
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Appendix J

Intraclass Correlations and Design Effects for Latent Variables

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<th>Variable</th>
<th>Intraclass Correlation</th>
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<td>Recovery</td>
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<td>Functioning</td>
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<td>1.54</td>
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<tr>
<td>Severity Rating</td>
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<td>1.58</td>
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<tr>
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<td>1.37</td>
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<tr>
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<td>1.65</td>
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<td>Negative Others Schema</td>
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<td>Attachment Anxiety</td>
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<td>Avoidance coping</td>
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<td>Social coping</td>
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<td>Drug Use</td>
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<td>Medication Adherence</td>
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<td>1.41</td>
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<td>Alcohol Use</td>
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Descriptive Statistics and Cronbach’s Alpha Estimates of Reliability Scales ($n = 154$)

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<th>Scale</th>
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<th>Minimum and Maximum</th>
<th>Cronbach’s $\alpha$</th>
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<td>PANAS</td>
<td>35.70</td>
<td>12.91</td>
<td>6 - 74</td>
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<td>ECR-S</td>
<td>65.69</td>
<td>15.22</td>
<td>19 - 104</td>
<td>.80</td>
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<td>8.70</td>
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<td>.74</td>
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<td>32 - 100</td>
<td>.81</td>
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<td>BCSS</td>
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<td>12.91</td>
<td>6 - 74</td>
<td>.77</td>
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<td>2.31</td>
<td>1 - 10</td>
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<td>7.70</td>
<td>0 - 32</td>
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<td>Staff Severity Rating</td>
<td>15.17</td>
<td>6.36</td>
<td>1 - 30</td>
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Appendix L


Figure L1. Model for the Recovery Assessment Scale Proposed by McNaught, Caputi, Oades, & Deane (2007) (n =154). An inspection of the model revealed a poor model fit, Bollen-Stine bootstrap $p = .008$, $\chi^2 = 480.32$, $\text{CMIN/DF} = 1.95$, $\text{CFI} = .83$, $\text{TLI} = .81$, $\text{GFI} = .79$, $\text{AGFI} = .75$, $\text{RMSEA} = .08$, $\text{SRMR} = .08$. 

Chi-square = 480.323 (247 df) $p = .000$
Appendix M


An inspection of the model revealed a poor model fit, Bollen-Stine bootstrap $p = .002, \chi^2 = 447.89$, CMIN/DF = 1.81, CFI = .85, TLI = .84, GFI = .82, AGFI = .77, RMSEA = .07, SRMR = .08.
Appendix N

Scree Plot of Eigenvalues for the Recovery Assessment Scale

*Figure N1.* Scree Plot of Eigenvalues for the RAS ($n = 154$).
Appendix O

Discriminant Validity for the Brief COPE

Figure O1. Discriminant Validity for the Brief COPE ($n = 154$).
### Appendix P

Reliabilities of Brief COPE Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
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<tbody>
<tr>
<td>Active Coping</td>
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<td>Avoidance Coping</td>
<td>.64</td>
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<tr>
<td>Social Support</td>
<td>.75</td>
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<tr>
<td>Spirituality</td>
<td>.81</td>
</tr>
<tr>
<td>Substance Use</td>
<td>.84</td>
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<tr>
<td>Self Blame</td>
<td>.71</td>
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<tr>
<td>Humour</td>
<td>.72</td>
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Appendix Q

Scree Plot of Eigenvalues for the MARS

*Figure Q1.* Scree Plot of Eigenvalues for the MARS ($n = 154$).
Appendix R

Scree Plot of Eigenvalues for AUDIT

*Figure R1.* Scree Plot of Eigenvalues for the AUDIT ($n = 154$).
Appendix S

CFA for Model for the DAST-10

A CFA on the previously proposed model for the DAST-10 proposed by Cocco and Carey (1998) was conducted. An inspection of the model revealed an inadequate model fit, \( \chi^2 (df = 20, n = 154) = 43.386, p > .002, \) CMIN/DF =2.169, GFI =.939, AGFI= .890, TLI= .923, CFI =.945, RMSEA =.087, SRMR =.049.

Figure S1. Unidimensional Model for DAST-10 proposed by Cocco and Carey (1998) (n = 154).
### Appendix T

**Scale Reliabilities and Correlations with Original Scales**

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<tr>
<th>Scale</th>
<th>Alpha</th>
<th>Correlation with Original Scale</th>
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<td><strong>RAS</strong></td>
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</tr>
<tr>
<td>Optimism and purpose</td>
<td>.79</td>
<td>Pearsons $r = .91$</td>
</tr>
<tr>
<td>Willingness to ask for help</td>
<td>.79</td>
<td>-</td>
</tr>
<tr>
<td>No domination by symptoms</td>
<td>.73</td>
<td>-</td>
</tr>
<tr>
<td>Illness self efficacy</td>
<td>.75</td>
<td>-</td>
</tr>
<tr>
<td><strong>PANAS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Affect</td>
<td>.85</td>
<td>Pearsons $r = .99$</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>.89</td>
<td>Spearmans $\rho = .98$</td>
</tr>
<tr>
<td><strong>ECR</strong></td>
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<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>.77</td>
<td>Pearsons $r = .95$</td>
</tr>
<tr>
<td>Avoidance</td>
<td>.81</td>
<td>Pearsons $r = .89$</td>
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<tr>
<td><strong>SDS</strong></td>
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<tr>
<td>Medication adherence behaviour</td>
<td>.69</td>
<td>Pearsons $r = 1$</td>
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<td><strong>MARS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BCSS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Self</td>
<td>.84</td>
<td>Spearmans $\rho = 1$</td>
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<td>Positive Self</td>
<td>.87</td>
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<td>Negative Others</td>
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<td>Spearmans $\rho = .96$</td>
</tr>
<tr>
<td>Positive Others</td>
<td>.89</td>
<td>Pearsons $r = .98$</td>
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<tr>
<td><strong>AUDIT</strong></td>
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<tr>
<td>Medication adherence behaviour</td>
<td>.85</td>
<td>Spearmans $\rho = .92$</td>
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<tr>
<td><strong>DAST</strong></td>
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<tr>
<td>Active Coping</td>
<td>.69</td>
<td>Pearsons $r = .89$</td>
</tr>
<tr>
<td>Avoidance &amp; Behavioural</td>
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<td>Pearsons $r = .92$</td>
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<tr>
<td>Disengagement</td>
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<td>Social Support</td>
<td>.75</td>
<td>Pearsons $r = 1$</td>
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Appendix U

Details of Items Removed from Scales

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<tr>
<th>Scale</th>
<th>Items Cut</th>
<th>Reason</th>
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<tr>
<td>RAS</td>
<td>2, 3, 6, 9, 11-17, 19, 21-23, 26, 33-41, 1, 5, 20, 29, 30.</td>
<td>Redundant items in EFA</td>
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<td></td>
<td></td>
<td>Redundant items in CFA</td>
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<td>PANAS</td>
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<tr>
<td>Positive Affect</td>
<td>3, 5, 17.</td>
<td>Redundant items in CFA</td>
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<tr>
<td>Negative Affect</td>
<td>2, 8, 18.</td>
<td>Redundant items in CFA</td>
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<td>ECR</td>
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<td>Redundant items in CFA</td>
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<td>ECR- Avoidance</td>
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<td>Redundant items in CFA</td>
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<td>5-10</td>
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<td>BCSS</td>
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<tr>
<td>Negative Self</td>
<td>-</td>
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<tr>
<td>Positive Self</td>
<td>-</td>
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<td>Negative Others</td>
<td>17, 18</td>
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<td>Positive Others</td>
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<td>Discriminate Validity</td>
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<td>1, 2, 3</td>
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<td>DAST</td>
<td>4, 6</td>
<td>Redundant items in CFA</td>
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<tr>
<td>Brief COPE</td>
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<td>Redundant items in EFA</td>
</tr>
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<td>Active Coping</td>
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<td>Social Support Coping</td>
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### Appendix V
Goodness-of-Fit Indices for Scales \( (n = 154) \)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Chi Square</th>
<th>CMIN/DF</th>
<th>GFI</th>
<th>AGFI</th>
<th>TLI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
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<tr>
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Appendix W

Residuals Scatterplot and Normal probability plot for Regression Standardised

Residuals for Hierarchical Regression and RAS

Figure W1. Histogram of regression standardised residuals for variables on RAS

(n = 154).
Figure W2. Normal probability plot of regression standardised residuals for variables on RAS ($n = 154$).
Figure W3. Scatter plot of regression standardised residuals for variables on RAS ($n = 154$).
Appendix X

Residuals Scatterplot and Normal probability plot for Regression Standardised

Residuals for Hierarchical Regression and SDS

Figure XI. Histogram of regression standardised residuals for variables on SDS ($n = 154$).
Figure X2. Normal probability plot of regression standardised residuals for variables on SDS ($n = 154$).
Figure X3. Scatter plot of regression standardised residuals for variables on SDS (n = 154).
Figure Y1. Discriminant validity for the clinical variables (n = 154).
Figure Y2. Discriminant validity for the attachment and coping variables (n = 154).
Appendix Z

Structural Equation Modeling for the Alternate Clinical Hypothesis

The correlational nature of the data as well as no consensus of causality in the literature between many of the clinical variables, directionality between medication adherence and substance use could not be assumed. Staff severity rating was removed along with alcohol use as they did not contribute to the model.

*Figure Z1. Clinical Variables and Impact on Functioning and Recovery Model (n = 154)*

The above figure shows only the significant relationships in the model for clinical variables, recovery, and functioning. One multivariate outlier was identified using Mahalanobis distance, but as the model showed good fit with similar paths with and without the outlier, this observation was retained. As there was significant
multivariate kurtosis (Mardia's coefficient = 7.49, t = 5.54), the Bollen-Stine bootstrapping procedure was utilised, showing good fit (Bollen-Stine bootstrap p = 1.00). Other goodness of fit statistics also indicate a good fit, \( \chi^2 (df = 4, n = 154) = 3.525, p > .474, \text{CMIN/DF} = .881, \text{GFI} = .991, \text{AGFI} = .966, \text{TLI} = 1.017, \text{CFI} = 1.000, \text{RMSEA} = .000, \text{SRMR} = .038. \)

Modeling of the relationships could only provide limited new information than that provided by the regression and correlational analyses. Few of the clinical variables were associated with functioning or recovery and could only account for a small proportion of the variances (11% and 7% respectively). The SEM did provide some additional information, suggesting that higher medication adherence was associated with lower number of hospitalisations and recovery. Lower number of hospitalisations and drug use were associated with lower functioning. Medication was the only variable to have an effect on recovery with a direct effect of .27 (95% Confidence Interval was .09 to .45, \( p < .01 \)).

Number of hospitalisations showed the highest contribution to functioning scores, with higher number of hospitalisations indicating lower functioning. This suggests that higher number of hospitalisations (used as a clinical indicator of severity of illness) predicts subjective functional disability. Number of hospitalisations did not mediate the relationship between medication adherence and functional disability, as the initial relationship between medication adherence and functioning was not significant. Drug use showed a non-significant trend effect on functioning scores, with higher drug use predicting higher functional disability.
Table Z1

Standardised Direct, Indirect, and Total Effects of Psychosocial Variables on Impact of Mental Illness Symptoms on Functioning (n =154)

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect (Lower Bounds)</th>
<th>Total Effect (Upper Bounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Use</td>
<td>.16</td>
<td>.16</td>
<td>.00</td>
<td>.33</td>
</tr>
<tr>
<td>Medication Adherence</td>
<td>-</td>
<td>-.07*</td>
<td>-.07*</td>
<td>-.17</td>
</tr>
<tr>
<td>Hospitalisations</td>
<td>.27*</td>
<td>-</td>
<td>.27*</td>
<td>.05</td>
</tr>
</tbody>
</table>

*a 95% Confidence Interval.

*p < .05.
Appendix AA

Additional Structural Equation Modeling for the Psychosocial Variables

Due to the potential for over-modeling, two smaller models were constructed based on a priori for a more simplistic depiction of the data. The first model shows the attachment relationships with coping style, whilst the second model shows the relationships between schema, coping, recovery, and functioning.

*Figure AA1.* Influence of attachment style and schema on active coping style ($n = 154$).

In the current model, no multivariate outliers were identified using Mahalanobis distance. An assessment of normality demonstrated non-significant multivariate kurtosis ($Mardia’s \text{ coefficient} = 1.54, t = 1.14$). A Bollen-Stine bootstrapping procedure was employed as a measure of fit and showed a non-
significant adjusted chi-squared $p$ value (Bollen-Stine bootstrap $p = .46$), indicating good fit. Other goodness of fit statistics further indicate a good fit, $\chi^2 (df = 4, n = 154) = .388, p > .421$, CMIN/DF =.971, GFI = .990, AGFI= .963, TLI=1.002, CFI =1.000, RMSEA =.000, SRMR = .030. Significant paths are depicted in the presented model. The model explained 31% of the variance in negative self schemas, a smaller 12% of positive self schemas, and 25% of the variance for active coping scores.

The presence of significant relationships between attachment style and self schemas provide evidence for attachment theory framework used in the current study. It also suggests that attachment experiences and cognitive self schemas explain about one quarter of the variance in active coping styles.

Table AA1

*Standardised Direct, Indirect, and Total Effects of Attachment Variables on Active Coping Style (n =154)*

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect (Lower Bounds)$^a$</th>
<th>Total Effect (Upper Bounds)$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment Avoidance</td>
<td>-.17**</td>
<td>-.17**</td>
<td>-.31</td>
<td>-.07</td>
</tr>
<tr>
<td>Attachment Anxiety</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PS Schema</td>
<td>.50***</td>
<td>.50***</td>
<td>.32</td>
<td>.67</td>
</tr>
<tr>
<td>NS Schema</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

$^a$95% Confidence Interval.

**$p < .01$, ***$p < .001$.**
Modeling of the data suggests that both attachment avoidance and positive self schemas contribute significantly to an active coping style. Attachment anxiety and negative self schemas did not contribute significantly to active coping scores.

Figure AA2. Influence of schemas and coping style on functioning and recovery (n = 154).

In the current model, no multivariate outliers were identified using Mahalanobis distance. An assessment of normality demonstrated non-significant multivariate kurtosis (Mardia’s coefficient = .34, t = .25). A Bollen-Stine bootstrapping procedure was employed as a measure of fit and showed a non-significant adjusted chi-squared p value (Bollen-Stine bootstrap p = .85), indicating good fit. Other goodness of fit statistics further indicate a good fit, $\chi^2$ (df = 3, n = 154) = .915, p > .822, CMIN/DF = .305, GFI = .998, AGFI = .988, TLI = 1.035, CFI = 1.000, RMSEA = .000, SRMR = .012. Significant paths are depicted in the presented model. The model explained 27% of the variance in active coping as well as a high proportion
of functional disability scores (42%), and a very substantial proportion of the variance for recovery scores (63%).

Table AA2

*Standardised Direct, Indirect, and Total Effects of Schema and Coping on Recovery (n = 154)*

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect (Lower Bounds)</th>
<th>Total Effect (Upper Bounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS Schema</td>
<td>-</td>
<td>-.25***</td>
<td>.25***</td>
<td>.13</td>
</tr>
<tr>
<td>NS Schema</td>
<td>-.51**</td>
<td>-</td>
<td>-.51**</td>
<td>-.66</td>
</tr>
<tr>
<td>Active Coping</td>
<td>.47**</td>
<td>-</td>
<td>.47**</td>
<td>.28</td>
</tr>
</tbody>
</table>

*a 95% Confidence Interval.

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

As found in the previous regression analysis, negative self-schemas and active coping style were the strongest direct predictors of recovery scores. Positive self-schema also provided a significant, indirect contribution to recovery scores. Scores suggests that active coping style mediates the relationship between positive self schemas and recovery. Whilst negative self schemas and active coping have a direct relationship with recovery scores.
Table AA3

*Standardised Direct, Indirect, and Total Effects of Schema and Coping on Impact of Mental Illness Symptoms on Functioning (n = 154)*

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect (Lower Bounds)&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Total Effect (Upper Bounds)&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS Schema</td>
<td>-</td>
<td>-.11&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.24</td>
<td>.00</td>
</tr>
<tr>
<td>NS Schema</td>
<td>.56&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-</td>
<td>.56&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.39</td>
</tr>
<tr>
<td>Active Coping</td>
<td>-.20&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-</td>
<td>-.42</td>
<td>-.01</td>
</tr>
</tbody>
</table>

<sup>a</sup> 95% Confidence Interval.

*<sup>p</sup> < .05, **<sup>p</sup> < .01.

Negative self schema was the strongest predictor of lower functioning, whilst and active coping and positive self schema provided smaller, but significant direct effects. Whilst negative self schema and active coping provided a direct effect on functioning, positive self schemas were mediated by active coping.