Doctoral Thesis

Social recovery following first-episode psychosis:

The role of negative symptoms and motivation

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Abstract

Background

Impairment in social functioning following psychosis is associated with negative symptoms, particularly reduced motivation (Foussias & Remington, 2010). Cognitive models of negative symptoms propose that expectancy appraisals are involved in the expression and maintenance of negative symptoms (Rector, Beck, & Stolar, 2005; Staring & Van der Gaag, 2010). Theories of motivation (e.g. expectancy-value theory; Eccles and Wigfield 2002) describe how self-efficacy beliefs, appraisals of task value, and self-schema may influence behaviour, but minimal research has applied these models to the understanding of negative symptoms and functional outcomes in first-episode psychosis. This was the aim of the current study.

Method

A cross-sectional, correlational study was conducted to explore relationships between negative symptoms and appraisals of self-efficacy, task value and self-schema in a clinical sample of individuals with first-episode psychosis. Fifty-one participants completed measures examining psychotic symptoms, functioning, and appraisals.

Results

Relationships between negative symptoms and appraisals of self-efficacy, task value and self-schema were found, however these relationships were not significant when controlling for depression and anxiety symptoms. Contrary to expectations, there was no difference in the strength of relationships between self-efficacy, subjective task value and self-schema and the negative symptoms associated with motivation compared with other negative symptoms. Self-efficacy and self-schema were not significantly

correlated with social functioning, but negative symptoms significantly mediated the relationship between subjective task value and social functioning.

Discussion

Although some hypotheses were partially supported, depressive symptoms accounted for the most variance in negative symptoms in this sample. The findings support a psychological approach for treatment to assist functional recovery of individuals with first-episode psychosis. This study addresses some methodological limitations of previous research, though was itself limited by small sample size. Theoretical implications for the applicability of cognitive models of negative symptoms and theories of motivation in first-episode psychosis are also discussed.

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1. Introduction

1.1 Overview

This research is concerned with the relationship between negative symptoms in psychosis and the psychological constructs involved in motivation, such as self-efficacy; and how these may impact upon social functioning following an episode of psychosis. This introduction will first present an overview of psychosis, and then consider the domain of negative symptoms in greater detail. The development of cognitive models of negative symptoms, and evidence for their utility, will then be discussed. Treatment strategies for psychosis and for negative symptoms in particular will be examined, with some consideration of how these relate to a recovery focus within intervention for psychosis. The concept of self-efficacy will be discussed, with regards to how it relates to negative symptoms and cognitive models, and research looking at the relationship between self-efficacy and negative symptoms will be reviewed in detail. Finally, the rationale for the current research will be presented.

1.2 Psychosis

1.2.1 Definition and epidemiology. Psychosis involves disturbances in thought, senses and perception, emotion, and behavior (Davey, 2008). Psychotic disorders include schizophrenia, schizoaffective disorders, schizotypal disorders and delusional disorders (World Health Organisation, 1992), of which schizophrenia is most common (National Institute for Health and Clinical Excellence, 2009b). The two dominant sets of diagnostic criteria, the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (American Psychiatric Association, 2000) and the International Classification of Diseases, 10th Revision (World Health Organisation, 1992) recognise schizophrenia to comprise symptoms including hallucinations, delusions, disorganised speech, thought or behaviour, and ‘negative symptoms’ including social withdrawal and

reduction in volition. The full diagnostic criteria from both manuals are presented in Table 1 below.

Table 1

ICD-10 and DSM-IV Diagnostic Criteria for Schizophrenia.

ICD-10	DSM-IV
A minimum of one very clear symptom belonging to any one of the groups listed below as (a) to (d) or symptoms from at least two of the groups referred to as (e) to (i) should have been clearly present for most of the time during a period of 1 month or more. a) Thought echo, thought insertion or withdrawal and thought broadcasting b) delusions of control, influence or passivity, clearly referred to body or limb movements or specific thoughts, actions or sensations; delusional perception c) hallucinatory voices giving a running commentary on the patient's behaviour or discussing the patient among themselves, or other types of hallucinatory voices coming from some part of the body d) persistent delusions of other kinds that are culturally inappropriate and completely impossible, such as religious or political identity, or superhuman powers and abilities (e.g. being able to control the weather or being in communication with aliens from another world) e) persistent hallucinations in any modality, when accompanied either by fleeting or half-formed delusions without clear affective content or by persistent over-valued ideas, or when occurring every day for weeks or months on end f) breaks or interpolations in the train of thought, resulting in incoherence or irrelevant speech, or neologisms g) catatonic behaviour, such as excitement, posturing. or waxy flexibility, negativism, mutism and stupor h) 'negative' symptoms such as marked apathy, paucity of speech and blunting or incongruity of emotional responses, usually resulting in social withdrawal and lowering of social performance; it must be clear that these are not due to depression or neuroleptic medication i) a significant and consistent change in the overall quality of some aspects of personal behaviour, manifest as loss of interest, aimlessness, idleness, a self-absorbed attitude and social withdrawal	A. Characteristic symptoms: Two or more of the following, each present for a significant portion of time during a 1-month period, or less if successfully treated: 1) Delusions, 2) Hallucinations, 3) Disorganized speech, e.g. frequent derailment or incoherence, 4) Grossly disorganized or catatonic behaviour, 5) Negative symptoms, i.e. affective flattening, alogia or avolition. *Note:* Only one criterion A symptom is required if delusions are bizarre or hallucinations consist of a voice keeping up a running commentary on the person's behaviour or thoughts, or two or more voices conversing with each other. B. Social/Occupational dysfunction. For a significant portion of the time since the onset of the disturbance, one or more major areas of functioning such as work, interpersonal relations, or self-care are markedly below the level achieved prior to the onset (or when the onset is in childhood or adolescence, failure to achieve expected level of interpersonal, academic or occupational achievement). C. Duration. Continuous signs of the disturbance persist for at least 6 months. This 6-month period must include at least 1 month of symptoms (or less if successfully treated) that meet criterion A, i.e. active-phase symptoms, and may include periods of prodromal or residual symptoms. During these prodromal or residual periods, the signs of the disturbance may be manifested by only negative symptoms or two or more symptoms listed in criterion A present in an attenuated form (e.g. odd beliefs, unusual perceptual experiences). D. Schizoaffective and mood disorder exclusion. Schizoaffective and mood disorders have been ruled out because either (1) no major depressive, manic or mixed episodes have occurred concurrently with the active-phase symptoms or (2) if mood episodes have occurred during active-phase symptoms, their total duration has been brief relative to the duration of the active and residual periods. E. Substance/general medical condition exclusion. The disturbance is not related to the direct physiological effect of a substance (e.g. a drug of abuse, a medication) or a general medical condition. F. Relationship to a pervasive developmental disorder. If there is a history of autistic disorder or another pervasive developmental disorder, the additional diagnosis of schizophrenia is made only if prominent delusions or hallucinations are also present for at least a month (or less if successfully treated).

Although the incidence of schizophrenia within the general population is low compared with other mental health difficulties (around 0.4% lifetime prevalence; Saha, Chant, Welham, & McGrath, 2005), it has been ranked as one of the top ten medical causes of disability worldwide (World Health Organisation, 1990). Between 14% and 20% of people are thought to recover fully following a first episode of psychosis (National Institute for Health and Clinical Excellence, 2009b), but research has estimated that 59% continue to experience moderate to severe social disability even after 15 years (Wiersma et al., 2000), and nearly 80% remain out of work (Thornicroft et al., 2004). Schizophrenia is among the most expensive disorders in terms of cost for treatment and in loss of productivity (Cardenas et al., 2013), with the total societal cost of schizophrenia in England estimated to be £11.8 billion per year (Andrew, Knapp, McCrone, Parsonage, & Trachtenberg, 2012).

Psychotic symptoms also occur outside of schizophrenia and related disorders, including within bipolar disorder and unipolar depression. Life time prevalence of bipolar disorder is estimated to be around 1-2% of the population in the United Kingdom, and like schizophrenia it is believed to have substantial societal cost, estimated to be around £2 billion per year (Das Gupta & Guest, 2002; National Institute for Health and Clinical Excellence, 2006). It has been estimated that around 18.5% of people diagnosed with major depression also experience psychotic symptoms (Ohayon & Schatzberg, 2002), with some research suggesting that in first-episode psychosis, psychotic depression may actually be more prevalent than schizophrenia (Crebbin, Mitford, Paxton, & Turkington, 2008). Other disorders where psychosis is a feature include acute and transient psychosis, puerperal psychosis, substance-induced psychosis, and other unspecified non-organic psychoses (World Health Organisation, 1992), demonstrating the diverse array of presentations in which psychotic symptoms

may be part of the clinical picture. There is therefore a lot to be gained, both in terms of improving individual functioning and reducing societal cost, in the development of effective treatments for symptoms of psychosis. The next section will discuss the main types of symptoms seen in psychotic illness.

1.2.2 Symptom categories. Over 100 years ago it was proposed that serious mental illness may be composed of positive and negative symptoms (Jackson, 1884; in J. S. Strauss, Carpenter, & Bartko, 1974). Positive symptoms indicate processes or experiences which are unusual by their presence, and negative symptoms indicate processes or experiences which are unusual by their absence (Jones, Hacker, Cormac, Meaden, & Irving, 2012). The application of this symptom distinction to psychotic disorders by Crow (1980) and Andreasen (1982) in the early 1980s gained support from research which indicated that positive and negative symptoms were relatively independent of one another and may have differing aetiologies and prognostic significance (Kay, Opler, & Lindenmayer, 1988; J. S. Strauss, 1985). Factor analytic research with psychotic symptom measures have subsequently found support for three (Basso, Nasrallah, Olson, & Bornstein, 1998; Smith, Mar, & Turoff, 1998), five (Emsley, Rabinowitz, & Torreman, 2003; Van der Gaag et al., 2006) and 11 (Peralta & Cuesta, 2001) factor models of the symptoms of psychosis. These findings have indicated further symptom categories including disorganised symptoms, excitation, and affective symptoms including anxiety and depression; however, all models accept the presence of at least one positive symptom and one negative symptom factor (Stahl & Buckley, 2007). Negative symptoms in particular have consistently been found to load on a factor separate from positive symptoms, disorganised symptoms, and anxiety and depression (Blanchard & Cohen, 2006), and are recognised as a distinct therapeutic area for treatment (Kirkpatrick, Fenton, Carpenter, & Marder, 2006).

In psychosis, positive symptoms are usually viewed as comprising experiences such as delusions and hallucinations, while negative symptoms involve reduction of functions related to social interaction, goal-directed activity and emotional expression (National Institute for Health and Clinical Excellence, 2009b). Originally, positive symptoms were considered the essential processes of psychotic disorders, possibly owing to easy identification (J. S. Strauss, 1985), and the fact that they are often the most prominent and troubling symptoms at onset (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001). Consequently, much research into treatment of psychotic disorders in the 20th century focused on reducing positive symptoms (Kern, Glynn, Horan, & Marder, 2009; Turkington & Morrison, 2011), and only more recently has the impact of negative symptoms been more closely considered. This is the focus of the current research and will now be discussed in more detail.

1.3 Negative Symptoms of Psychosis.

1.3.1 Overview. Negative symptoms have been considered an essential part of schizophrenia since the early work of Kraeplin (1919), who described a 'weakening of volition' as one of the fundamental processes in schizophrenia (then known as 'dementia praecox'). Renewed interest in negative symptoms in the mid-1970's to early 1980's led to further refinement in the understanding of these symptoms (Andreasen, 1982; Crow, 1980, 1985), which has continued to the present day. A widely accepted current definition has been proposed by the National Institute of Mental Health (NIMH) in the United States in the NIMH-MATRICS consensus statement. This statement defines negative symptoms of psychosis as comprising blunting of affect (or reduced emotional expression), reductions or 'poverty' of speech (also termed alogia), asociality (or 'apathetic' social withdrawal), avolition (or lack of drive and energy), and anhedonia or diminished interest, enjoyment or pleasure from activities (Kirkpatrick et al., 2006).

Recent research proposes that negative symptoms may be best represented by a two factor model, with one factor involving 'diminished expression' (i.e. alogia and affective flattening), and another involving amotivation or 'diminished experience', including avolition and anhedonia (Blanchard & Cohen, 2006; Couture, Blanchard, & Bennett, 2011; Foussias & Remington, 2010; Kirkpatrick et al., 2006). Foussias and Remington (2010) have also argued that anhedonia experienced in psychosis may not be anhedonia in the strictest definition of the term, given research which found that individuals with schizophrenia did not actually have diminished capacity to experience pleasure, but instead exhibited decreased ability to anticipate pleasure compared to the general population (Gard, Kring, Gard, Horan, & Green, 2007). This lack of anticipatory pleasure could be seen as a deficit in motivational processes and more akin to avolition, and it is proposed that avolition may therefore represent the most important negative symptom in terms of impact upon functional outcomes and recovery (Foussias & Remington, 2010; Kingdon & Hansen, 2007).

Distinctions are also sometimes made between primary and secondary negative symptoms. Primary negative symptoms are thought to be attributable to organic or neurobiological pathology (Carpenter, Heinrichs, & Alphs, 1985), while secondary negative symptoms are thought to occur in response to psychosis, possibly as a consequence of medication side effects, depression, or a compensatory reaction to positive psychotic symptoms (Barnes & Paton, 2011; Foussias & Remington, 2010). The presence of primary negative symptoms that persistent for more than 12 months is sometimes referred to as a 'deficit syndrome', which is associated with persistently low functioning and poor quality of life (Kirkpatrick & Galderisi, 2008). Secondary negative symptoms are typically seen as more amenable to treatment (Carpenter et al., 1985), however in practice it can be difficult to distinguish primary and secondary

negative symptoms, and some have argued this distinction is unnecessary for the purpose of measurement or treatment (Kirkpatrick et al., 2006).

Negative symptoms tend to be less immediately visible than positive symptoms of psychosis, but are associated with a more chronic and deteriorating course of illness (Allardyce, Suppes, & van Os, 2007), and often persist in schizophrenia after positive symptoms have been largely resolved (Mueser, Valentiner, & Agresta, 1997; National Institute for Health and Clinical Excellence, 2009b). Forchuk, Jewell, Tweedell, and Steinnagel (2003) interviewed service users over a year following treatment commencement, and found that while initially auditory hallucinations were reported as the most troubling symptom, over time as these symptoms resolved service users became more concerned about their levels of introversion, social withdrawal and isolation from others. Others agree that negative symptoms are often of more ongoing concern to service users and care-givers than other symptoms (Mueser et al., 1997; Turkington & Morrison, 2011).

1.3.2 Negative symptoms in first-episode psychosis. As indicated above, negative symptoms are often considered part of a more chronic presentation within psychotic disorders. In addition, while negative symptoms are part of the diagnostic criteria of schizophrenia, some research has suggested that negative symptoms were rarely found in individuals with psychotic diagnoses other than schizophrenia (Montague, Tantam, Newby, Thomas, & Ring, 1989). A growing body of research has now reported evidence of psychotic symptoms in early psychosis and in disorders other than schizophrenia. Within a Canadian sample of individuals with a first-episode of non-affective psychosis, 70% were found to have at least one negative symptom scoring within the moderate range or higher on the SANS at initial assessment (Malla et al., 2002). Husted, Beiser, and Iacono (1995) reported that negative symptoms did occur in

individuals affective first-episode psychosis (bipolar or depression), though less frequently and persistently than in people with schizophrenia; and similar patterns have been found in other studies of first-episode psychosis (Edwards, McGorry, Waddell, & Harrigan, 1999; Henry et al., 2010).

Macmillan et al. (2007) investigated the prevalence of negative symptoms in individuals with bipolar disorders, and found that although they were rarer than in non-affective psychoses, negative symptoms in bipolar disorder in early intervention were related to poorer functional outcomes at 12 month follow up. Lyne et al. (2012) completed an item-level analysis of negative symptoms as defined by the SANS in a sample with first-episode psychosis, and again found that although negative symptoms were more prevalent within schizophrenia spectrum disorders, they also occurred frequently within other types of psychosis. This study reported that 87% of individuals with a schizophrenia spectrum disorder reported at least one negative symptom of moderate severity or greater, but moderate negative symptoms were also found in substance induced psychosis (74%), major depressive disorder (68%), delusional disorder (64%), brief psychotic disorder (29%) and bipolar disorder (21%). Collectively, this research suggests that negative symptoms are relevant and important treatment targets in first-episode psychosis and in disorders other than schizophrenia.

1.3.3 Differentiation of negative symptoms from depression and anxiety. It is now recognised that emotional dysfunction such as depression and anxiety disorders are common both in first-episode and more chronic psychosis (Birchwood, 2003; Buckley, Miller, Lehrer, & Castle, 2009; Turnbull & Bebbington, 2001). Studies have reported that 41.5% (Braga, Mendlowicz, Marrocos, & Figueira, 2005) and 62% of people with schizophrenia also met criteria for an anxiety disorder (Huppert & Smith, 2005); while depression may be present in up to 50% of people with schizophrenia

(Buckley et al., 2009). Such comorbidities can further complicate the clinical understanding of particular outcomes; for example, avoidant behaviour and poorer social functioning were found to be related to both negative symptoms and anxiety symptoms (Lysaker & Salyers, 2007; Rector et al., 2005). With depression in particular, there appears to be considerable conceptual overlap and similarity to negative symptoms, with the concepts of reduced interest or enjoyment in activities and reduced motivation and energy being common to both (Hill & Startup, 2013; Mulholland & Cooper, 2000; Siris, 2000). Relationships between particular types of cognitions have also been found to overlap; for example, defeatist beliefs were found to correlate with negative symptoms, depression and anxiety symptoms within a sample of people with schizophrenia, (Grant & Beck, 2009), as were asocial beliefs (Grant & Beck, 2010). Although some factor analytic work has found that negative symptoms load on a factor distinct from symptoms of depression and anxiety (Blanchard & Cohen, 2006; Emsley et al., 2003; Peralta & Cuesta, 2001), other studies have reported significant associations between depressive and negative symptoms (Fitzgerald et al., 2002), in particular with symptoms of avolition and anhedonia (Sax et al., 1996).

In attempting to explain the relationship between psychotic symptoms and symptoms like depression and anxiety, some have suggested that they might be a psychological response to the experience of psychosis. One example is post-psychotic depression, which has been linked to appraisals of personal threat following a first-episode psychosis (Birchwood, 2003). It is also thought that social anxiety may arise as a response to positive symptoms of suspiciousness or paranoia (Huppert & Smith, 2005), or due to perceived stigma as a result of diagnosis (Birchwood et al., 2007). These emotional responses might in turn lead to secondary negative symptoms (Carpenter et al., 1985; Foussias & Remington, 2010). However Birchwood (2003) also

hypothesises alternative pathways for emotional dysfunction in early psychosis; such as that depression may be intrinsic to psychosis (as it is often part of the prodrome), or that psychosis and other emotional disorders might both arise as a result of a common factor, such as developmental trauma.

The degree of conceptual overlap and multiple potential aetiologies can make it challenging to reliably distinguish between depression, anxiety and psychotic symptoms. One factor which some believe can distinguish between negative symptoms and depression is the subjective experience of mood – if a patient is experiencing low mood this is thought to be more indicative of depression, whereas prominent lack of affect or blunting of affect is thought to be more suggestive of negative symptoms (Mulholland & Cooper, 2000; Siris, 1994). However, this assertion is challenged by research which reported significant associations between depression and affective flattening (Avery, Startup, & Calabria, 2009; Hafner, Löffler, Maurer, Hambrecht, & Heiden, 1999). Others suggest that although anhedonia and social withdrawal are seen in depression, anxiety and negative symptoms, they may have different drivers (Rector et al., 2005). An example of this might be that within an anxiety presentation, social withdrawal might be due to fear of negative evaluation, while in a negative symptom presentation it might happen more due to apathy and indifference. Similarly, it has been suggested that individuals with depression often don't wish to feel isolated or alone, whereas individuals with negative symptoms don't mind or prefer to be alone (Rector et al., 2005). Although this makes theoretical sense, little research has been conducted in order to support these proposed distinctions.

It has been reported that just under 50% of individuals receiving treatment for first-episode psychosis had experienced a major depressive episode (Romm et al., 2010), while other research has found that between 25% and 29% of individuals with

first-episode psychosis met criteria for social anxiety disorder (Birchwood et al., 2007; Michail & Birchwood, 2009). Negative, depressive and anxiety symptoms are all thought to be related to poorer functioning and ongoing disability following a first-episode (Milev, Ho, Arndt, & Andreasen, 2005; Oosthuizen, Emsley, Niehaus, Koen, & Chiliza, 2006), which suggests they are all important considerations within early intervention for psychosis. Further conceptual clarity might improve the treatment of these clinically important symptoms. Models of negative symptoms, in particular cognitive models, have attempted to define the factors which are most pertinent to negative symptoms. These cognitive models will now be discussed.

1.4 Cognitive Models of Negative Symptoms

1.4.1 The argument for a psychological approach. Research into treatments for negative symptoms, until recently, has tended to focus on pharmacological treatment (Tarrier, 2006). This was largely due to early work on the 'deficit syndrome', which proposed that negative symptoms were solely associated with structural abnormalities or underlying organic pathology within the brain (Crow, 1980; Husted et al., 1995; Kay, Fiszbein, & Opler, 1987; Liberman, 2002). This perspective appeared to be supported by research which has found negative symptoms to be associated with a range of deficits in cognitive functioning, including deficits in intelligence, executive functioning, verbal fluency, memory, sustained attention and sensory- or visual-motor function (Basso et al., 1998; O'Leary et al., 2000). However, negative symptoms often do not respond well to medication (Erhart, Marder, & Carpenter, 2006; Kane & Correll, 2010; Kirkpatrick, Kopelowicz, Buchanan, & Carpenter, 2000; Stahl & Buckley, 2007; Turkington & Morrison, 2011) and medication can have little effect on functional outcomes (Grant, Huh, Perivoliotis, Stolar, & Beck, 2012). In some cases, side effects from medication may also lead to the development of secondary negative symptoms

(Kingdon & Hansen, 2007), which exacerbate difficulties. These findings have led to consideration of options other than pharmacological treatment.

An alternative perspective is that rather than representing stable cognitive deficits or neural pathology, negative symptoms might indicate cognitive, emotional or behavioural dysfunction, and may respond to psychological treatment strategies such as cognitive behaviour therapy (CBT), which are used for other emotional disorders (Rector, Seeman, & Segal, 2003). Given also that there are other difficulties with pharmacological treatments, such as non-response in a substantial proportion of cases (Jones et al., 2012; Kane, 1996), high relapse rates after 12 month follow up (Addington & Gleeson, 2005), and low adherence to medication (Coldham, Addington, & Addington, 2002); some suggest that psychosocial treatments are a necessary adjunct to medication to help individuals cope with the ongoing disability caused by negative symptoms in psychosis (Erhart et al., 2006; Kern et al., 2009).

Cognitive behaviour therapy (CBT) for the positive symptoms of psychotic disorders has now been widely researched, and a number of cognitive models of positive psychotic symptoms exist (e.g. Birchwood & Chadwick, 1997; Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002; Garety et al., 2001; Morrison, 2001). Cognitive models of negative symptoms are a more recent development. Perivoliotis and Cather (2009) described that behavioural strategies such as activity scheduling were first used to target negative symptoms in early CBT for psychosis, and an increasing amount of research has now investigated the cognitive correlates of negative symptoms. It has been proposed that dysfunctional attitudes about performance might be particularly related to negative symptoms (Beck, 2004), and that negative symptoms could be conceptualised as ‘understandable, but maladaptive’ responses to experiences arising from positive symptoms that individuals perceive as failures and contribute to

negative self-beliefs (Kern et al., 2009). Therefore CBT for negative symptoms uses behavioural strategies to test these negative self-beliefs.

Research findings have suggested that hopelessness (Aguilar et al., 1997; Lysaker, Salyers, Tsai, Spurrier, & Davis, 2008; White, McCleery, Gumley, & Mulholland, 2007), defeatist beliefs (Beck, Grant, Huh, Perivoliotis, & Chang, 2013; Couture et al., 2011; Grant & Beck, 2009; Horan et al., 2010), asocial beliefs (Beck et al., 2013; Grant & Beck, 2010), lower appraisals of success and resources (Couture et al., 2011), need for acceptance (Horan et al., 2010), and low self-esteem or negative beliefs about the self (Lincoln, Mehl, Kesting, & Rief, 2011; Palmier-Claus, Dunn, Drake, & Lewis, 2011) are related to negative symptoms of psychosis. This suggests a range of possible treatment targets for psychological treatments aiming to reduce negative symptoms. Many of these factors have been included in the two cognitive models of negative symptoms published to date, which will now be discussed.

1.4.2 Rector, Beck and Stolar's (2005) cognitive model of negative symptoms. Rector, Beck and Stolar (2005) developed the first cognitive model of the negative symptoms of psychosis, which proposes specific appraisals that are thought to contribute to the expression and maintenance of negative symptoms. The model includes four domains (see Figure 1 below) which are thought to be characteristic of the negative symptoms of psychosis specifically, including low expectancies for pleasure, low expectancies for success, low expectancies for acceptance, and perception of limited resources.

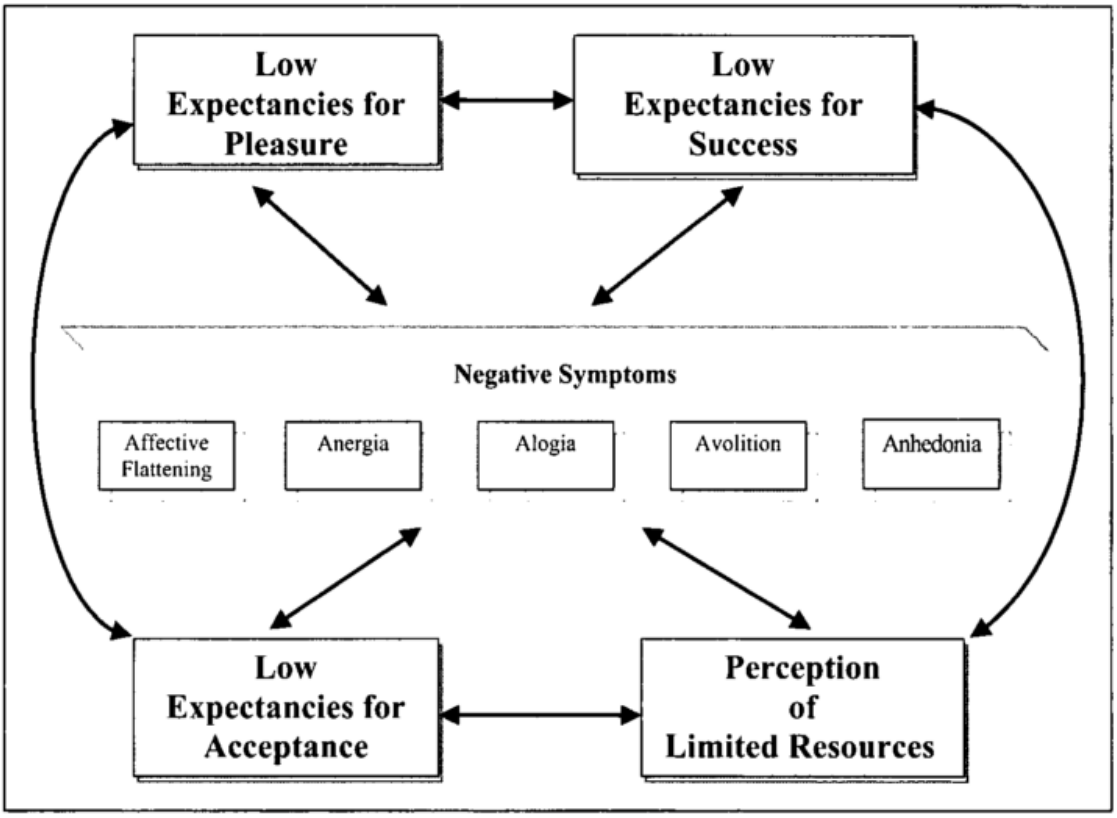

Figure 1. Rector, Beck and Stolar's (2005) cognitive model of negative symptoms. From "The negative symptoms of schizophrenia: A cognitive perspective", by N.A. Rector, A.T. Beck, and N. Stolar, 2005, *Canadian Journal of Psychiatry, 50,* p. 247-257. Copyright 2005 by the Canadian Psychiatric Association.

This model proposes that individuals with psychosis expect to experience little enjoyment or pleasure, or may anticipate experiencing displeasure, when they participate in activities or socialise with others, and therefore often feel it is not worth the effort. Research suggests this is not a deficit in the ability to experience pleasure, as there was no significant difference in the amount of self-reported enjoyment in everyday activities in people with schizophrenia compared to others in the general population (Gard et al., 2007); therefore the difference is in the expectation or anticipation of pleasure. Individuals with psychosis are also thought to have lower expectancies that they will succeed in meeting their goals or performing a specific task, and consequently feel less motivated to pursue their goals even if they possess the skills to do so. Individuals affected by this may give up more easily and then feel they have failed to

meet expectations of themselves or others, which can consolidate defeatist beliefs. The stigma that some individuals feel as a consequence of having a mental health difficulty is thought to contribute to the third domain, low expectancies of being accepted by others, which can lead to further withdrawal. Finally, it is thought that individuals with psychosis may feel as though they have only limited personal resources due to their illness, and might therefore be reluctant to put in the effort to engage with others or in activities because it may be too much or exhaust (what they perceive as) the limited resources that they have. These four types of negative expectancy are thought to contribute to active or passive social withdrawal, lack of energy or motivation, and reduced expression that are characteristic of negative symptoms of psychosis (Rector et al., 2005).

While this model does not propose how negative symptoms develop, Rector and colleagues (2005) suggest that individuals may exhibit or be predisposed to these cognitive styles and behaviour patterns prior to becoming ill, and are therefore familiar strategies for coping that people resort to when they begin experiencing positive symptoms. These dysfunctional beliefs are thought to influence the selection of behaviours such as social isolation and reduced engagement in activity, which are seen as maladaptive attempts by the individual to protect themselves from perceived rejection or failure, and give little opportunity for individuals to revise their beliefs (Couture et al., 2011; Kern et al., 2009; Perivoliotis & Cather, 2009). A bi-directional relationship between symptoms and expectancies is therefore hypothesised, implying that negative expectancies may lead to negative symptom behaviours, but that worsening of negative symptoms primes further negative appraisals. Likewise, it is thought that expectancies may also influence each other, for example if a person expects that they will not succeed at a given task they may also believe that the task will not be

enjoyable (Rector et al., 2005). Treatment based on this model would therefore focus on challenging and altering some of these cognitive appraisals to inhibit the maintenance of both the beliefs and negative symptoms.

1.4.3 Staring and Van der Gaag's (2010) cognitive model of negative symptoms. Staring and Van der Gaag's (2010) model was originally published in Dutch but is described in Staring, ter Huurne, and Van der Gaag (2013), which describes the model's use in a pilot treatment trial. Figure 2 shows a diagrammatic representation of this model.

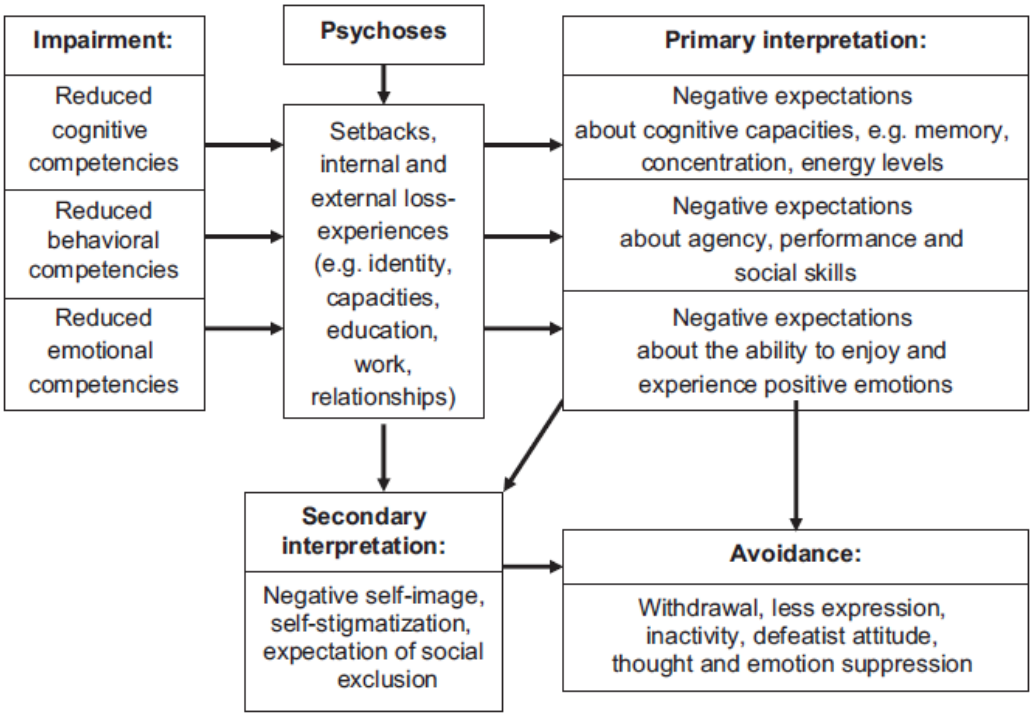

Figure 2. Staring and Van der Gaag's (2010) cognitive model of negative symptoms. From "Cognitive Behavioral Therapy for negative symptoms (CBT-n) in psychotic disorders: A pilot study" by A. B. P. Staring, M. B. ter Huurne, and M. Van der Gaag, 2013, Journal of Behavior Therapy and Experimental Psychiatry, 44, p. 300-306. Copyright (2013) by Elsevier.

Given that the authors acknowledge their treatment manual was based on the work of the research group involved in developing Rector, Beck and Stolar's (2005) model (e.g. Grant et al., 2012; Perivoliotis & Cather, 2009), there are a number of

similarities between the two models. One point of differentiation is that Staring and Van der Gaag's (2010) model offers some suggestion of how negative symptoms may develop, proposing that impairments which may be present in individuals with psychotic disorders as well as their positive psychotic symptoms lead to experiences of setbacks and losses, both external (e.g. in vocational functioning and social relationships) and internal (e.g. disruptions to an individual's sense of self). The authors suggest change is less possible in these areas, but that the experiences as a result of psychotic symptoms and impairments lead to primary and secondary cognitive interpretations which are the targets for therapeutic change (Staring et al., 2013). The descriptions of cognitive interpretations cover the same four types of negative expectancies as in Rector, Beck and Stolar's (2005) model, though with slightly more expanded descriptions in some cases – for example, 'perception of limited resources' is described more explicitly here as 'negative expectations about cognitive capacities' including in memory, concentration and energy levels. 'Low expectancies of acceptance' has also been defined separately as a secondary interpretation involving self-stigmatisation, negative self-image and expectancies of social exclusion thought to occur both as a result of experiences of setbacks and losses, and as a result of other negative expectancies; which the researchers based on additional research exploring the connections between stigmatisation, demoralisation and reduced activity (Cavelti, Kvrgic, Beck, Rüsch, & Vauth, 2012; Moriarty, Jolley, Callanan, & Garety, 2012; Staring, Van der Gaag, Van den Berge, Duivenvoorden, & Mulder, 2009). These primary and secondary interpretations are then hypothesised to lead to behaviours associated with negative symptoms described in the 'avoidance' box, including reduced expression, social withdrawal and inactivity. As with Rector, Beck and Stolar's (2005) model, Staring and Van der Gaag's (2010) model suggests that the goal of treatment is

to alter these primary and secondary cognitive appraisals in order to reduce associated negative symptom behaviours. However one key difference between the two models is that Rector, Beck and Stolar (2005) hypothesise bi-directional relationships between these cognitive appraisals and negative symptoms, whereas the diagrammatic representation of the Staring and Van der Gaag (2010) model suggests that uni-directional relationships and potentially a causal sequence is proposed, from impairment to setbacks and losses to cognitions and finally to behaviour associated with negative symptoms.

1.4.4 Support for cognitive models of negative symptoms. There have been a number of studies published to date which examine the role of the types of cognitive appraisals proposed within these two models, and appear to support their association with negative symptoms. One study found that individuals with schizophrenia endorsed defeatist beliefs regarding performance significantly more than a control group from the general population, and that these greater levels of defeatist beliefs were significantly associated with negative symptoms, even after depression was controlled for (Grant & Beck, 2009). Further research reported that individuals classed as having a 'deficit syndrome' (primary and enduring negative symptoms) endorsed defeatist beliefs (e.g. "If you cannot do something well, there is little point in doing it at all") significantly more than individuals with schizophrenia without deficit syndrome (Beck et al., 2013). The findings of these studies appear to provide support for the model domains of 'low expectancies of success' or 'negative expectancies about performance'.

Asocial beliefs, which were found to be associated with negative symptoms and social functioning, are proposed to develop as a means of protection from social rejection (Grant & Beck, 2010), and therefore may support the domains of 'low expectancies of acceptance' or 'negative self-image' within the models. The study by

Gard and colleagues (2007) found that individuals with schizophrenia experienced lower anticipatory but not consummatory pleasure compared to people in the general population, and that this lower anticipatory pleasure was significantly associated with ratings on the anhedonia subscale of the SANS, which provides particular support for the involvement of low expectancies of pleasure or enjoyment within these cognitive models.

Couture and colleagues (2011) developed a new measure of negative expectancy appraisals in order to examine two aspects of the cognitive models, low expectancies of success and perceptions of limited resources, which were both found to be related to negative symptoms. Further support for the specificity of the type of appraisals included in the models was also implied, as additional variables which are not included in cognitive models of negative symptoms (such as 'need for approval') were not found to have a significant relationship with negative symptoms in this study. This study also examined whether low expectancies of success and perceptions of limited resources were associated more with particular types of negative symptoms, and found that these variables were related to symptoms thought to be part of the 'diminished experience' factor (i.e. avolition, asociality and anhedonia) but not those symptoms which are part of the 'diminished expression' factor (i.e. affective flattening and alogia; Couture et al., 2011). This suggests that these cognitive models may be more representative of these aspects of negative symptoms, which are thought by some to be the key factor impacting upon functional outcomes and recovery (Foussias & Remington, 2010); and therefore may have particular utility in therapy to facilitate social recovery following psychosis. However all of the research described here was conducted with individuals with schizophrenia, so the applicability of these cognitive appraisals and models to the

diverse range and often lower chronicity of presentations seen in first-episode psychosis is currently unclear.

1.5 Treatment and Recovery from Psychosis

1.5.1 Definitions of recovery. When Kraeplin first described schizophrenia, it was believed that psychotic disorders had a chronic, deteriorating course and that those diagnosed would inevitably not recover (Corrigan, Giffort, Rashid, Leary, & Okeke, 1999). The idea that recovery from psychosis was possible began to gain momentum from the 1980's as service users published their own accounts of recovery from schizophrenia (Andresen, Oades, & Caputi, 2003). Research into psychosis over periods of up to 25 years suggests that around 35% to 55% of people with schizophrenia will be rated has having 'recovered' according to the Bleuler (1978) scale, with no more than mild symptoms of disability according to Global Assessment of Functioning ratings (Harrison et al., 2001). Better global outcome is seen if there has been early involvement in a comprehensive therapeutic programme (National Institute for Health and Clinical Excellence, 2009b). Over time, the perception of psychosis has thus gradually changed to that of an illness which can be recovered from, and can be treated (Liberman, 2002).

In addition, broader definitions of recovery are now applied by services and service users. Traditional definitions of recovery from psychosis usually focused on objective symptomatic outcomes (Resnick, Rosenheck, & Lehman, 2004), which for psychosis was often defined as the remission of positive symptoms (Addington, Young, & Addington, 2003). More recently, there has been a view that the absence of symptoms is less important than the degree that symptoms impact upon psychosocial functioning (Liberman, 2002). According to Andresen and colleagues (2003), the processes involved in recovery from the perspectives of service users are finding hope,

redefining personal identity, finding new meaning in life, and taking responsibility for one's recovery, as well as the establishment and definition of important goals. Similarly, other research with service users identified three key themes – rebuilding of the self, rebuilding of life, and hope for a better future (Pitt, Kilbride, Nothard, Welford, & Morrison, 2007). There is an emphasis on regaining a sense of personal mastery and self-identity (Hodgekins & Fowler, 2010; Liberman, 2002). These definitions of recovery presume that individuals can lead a fulfilling, meaningful life regardless of whether symptoms remain present (Anthony, 1993; Corrigan et al., 1999; Pitt et al., 2007).

It is now accepted that recovery from serious mental illness means more than just symptomatic recovery, but also psychological wellbeing and functional recovery in social, interpersonal, and vocational domains (Anthony, 1993; Forchuk et al., 2003; Hodgekins & Fowler, 2010; Kern et al., 2009; Liberman, 2002; Voges & Addington, 2005). Recovery-oriented services not only provide treatment for symptoms, but also facilitate engagement in meaningful activity (work, education and recreation), support individuals to develop skills relevant to personal goals, promote interpersonal relationships and ease social isolation, and foster a sense of autonomy and empowerment within the service user (Anthony, 1993; National Institute for Health and Clinical Excellence, 2009b; G. P. Strauss, Sandt, Catalano, & Allen, 2012). Indicators such as quality of life measures and levels of engagement in meaningful activity are therefore increasingly being used alongside symptom measures in outcome research to assess levels of recovery (Fowler et al., 2009; Resnick et al., 2004).

The risk of ongoing social disability in chronic psychosis and the drive towards recovery-oriented services has also led to the development of early intervention in psychosis services. Evidence suggests that a longer duration of untreated psychosis is

associated with poorer recovery (National Institute for Health and Clinical Excellence, 2009b), and that in more than half of all new cases of psychosis, social disability was present from two to four years prior to the first admission (Hafner et al., 1999). Social (as well as symptomatic) recovery from first-episode psychosis is therefore an important guiding principle within early intervention services. The next section will focus on how negative symptoms may impact upon recovery from psychosis.

1.5.2 Negative symptoms and recovery from psychosis. Previous research has found that even those patients whose positive psychotic symptoms were deemed to be 'in remission' after a first episode continued to function significantly more poorly than a general population control group; indicating that symptomatic recovery was not matched by a full functional recovery (Addington, Young, et al., 2003). This study, along with a substantial number of others, have found that higher levels of negative symptoms are associated with poorer social functioning and quality of life both in early psychosis (Addington, Young, et al., 2003; Edwards et al., 1999; Ho, Nopoulos, Flaum, Arndt, & Andreasen, 1998; Milev et al., 2005; Song et al., 2011); as well as with individuals with chronic psychotic disorders (Hill & Startup, 2013; Narvaez, Twamley, McKibbin, Heaton, & Patterson, 2008; Pratt, Mueser, Smith, & Lu, 2005), and therefore are a significant cause of ongoing disability.

A meta-analysis of 73 studies similarly concluded that negative symptoms, as compared with other symptoms of psychosis, were most strongly related to functional outcomes in schizophrenia (Ventura, Hellemann, Thames, Koellner, & Nuechterlein, 2009). One study has found that the relationship between negative symptom severity and global functioning strengthened over time following the first episode (from 11% at initial measurement to 47.4% at 7 year follow-up; Milev et al., 2005). Similarly, another study found that negative symptoms predicted poorer global functioning and

increased illness severity more than 12 years after the initial episode (Möller, Bottlender, Wegner, Wittmann, & Strauß, 2000), indicating their ongoing impact upon functioning in the longer term. The strong associations between negative symptoms and functional recovery suggest that addressing negative symptoms is an important priority for recovery-focused treatment (Foussias & Remington, 2010), right from the early stages of illness.

1.5.3 Psychological therapy for psychosis. As with other treatments, research into psychological treatments for psychosis initially tended to focus on positive symptoms (Tarrier, 2006), which are arguably more obviously distressing particularly in the early stages of illness. In particular, a number of meta-analyses have examined CBT for positive symptoms of psychosis, for which there is more evidence of efficacy than other forms of psychological treatment in psychosis (Pilling, Bebbington, Kuipers, Garety, Geddes, Martindale, et al., 2002; Pilling, Bebbington, Kuipers, Garety, Geddes, Orbach, et al., 2002). A meta-analysis of seven randomised controlled trials (RCTs) of CBT with individuals with schizophrenia found that those receiving CBT were more likely to attain an 'important improvement' in mental state (definitions of this varied but typically involved a significant reduction in psychotic symptoms), that effects were maintained at follow up, and that CBT was associated with reduced treatment drop-out (Pilling, Bebbington, Kuipers, Garety, Geddes, Orbach, et al., 2002). Wykes, Steel, Everitt, and Tarrier (2008) conducted a meta-analysis of 34 RCTs of CBT for psychosis, which found that CBT had significant positive effects on various outcomes including positive symptoms, negative symptoms, functioning and mood in people with schizophrenia. The findings of the most recent Cochrane review into CBT for schizophrenia were less favourable, as no overall difference in outcome between CBT and other types of talking therapies was found in relation to incidence of adverse events,

relapse prevention, re-hospitalisation, positive symptoms or negative symptoms; however it was felt that the review was limited by the methodological quality and small scale of the trials involved (Jones et al., 2012). A recent meta-analysis also found pooled effect sizes for the impact of CBT on both positive and negative symptoms were in the 'small' range (Jauhar et al., 2014). However, the current NICE guidelines for schizophrenia examined 31 RCTs of CBT for psychosis and found a number of benefits, including reductions in rehospitalisation, symptom severity, depression, and some improvements in social functioning; and therefore recommend that CBT should be offered to all patients with schizophrenia (National Institute for Health and Clinical Excellence, 2009b).

Although these findings are very promising, once again the majority of research was conducted with chronic schizophrenia samples; though a small number of studies have now examined the effect of individual and group interventions based on cognitive behavioural approaches in people with first-episode psychosis. A meta-analysis conducted by Zimmermann, Favrod, Trieu, and Pomini (2005) included studies which had examined individuals with acute as well as chronic schizophrenia spectrum disorders, and reported that there was a greater treatment benefit of CBT (in terms of symptom reduction) for patients experiencing an acute psychotic episode. Qualitative meta-analyses have reported that individual CBT led to greater symptom reduction compared to control groups in both affective and non-affective psychotic disorders (Addington & Gleeson, 2005; Penn, Waldheter, Perkins, Mueser, & Lieberman, 2005). Jackson et al. (1998) found that cognitively-oriented psychotherapy during the recovery period following first-episode psychosis was associated with improved quality of life and adaptation to illness and reduced negative symptoms. These findings suggest potential benefits for CBT and the applicability of cognitive approaches in early

intervention for psychosis. Family therapy and individual CBT are also now recommended for young people presenting with a first episode of psychosis by the National Institute for Health and Clinical Excellence (2013a).

Having considered the findings in chronic and first-episode psychosis samples for CBT more generally, CBT which specifically targets negative symptoms will now be discussed.

1.6 Cognitive Behaviour Therapy for Negative Symptoms

Wykes and colleagues (2008) stated that of the 34 RCTs included in their meta-analysis of CBT for psychosis, 24 of these studies targeted positive symptoms, while only two targeted negative symptoms, and 2 targeted social functioning. However, this meta-analysis also found that CBT had an effect on other outcomes, such as functioning and negative symptoms, even when these were not the target of the intervention (Wykes et al., 2008), suggesting wider benefits of therapy than just positive symptoms. At the same time, consistent with the recovery movement many now advocate that treatment should also address broader social and functional outcomes (Addington & Gleeson, 2005; Fowler et al., 2009; Granholm, Ben-Zeev, & Link, 2009). As functional outcomes are closely related to negative symptoms, this suggests an important role for CBT targeting negative symptoms, and the development of the previously discussed cognitive models have facilitated this in practice.

There have now been a small number of RCTs of CBT for psychosis which have specifically focused on negative symptoms and the improvement of social functioning. Grant and colleagues (2012) trialed cognitive therapy for ‘low functioning patients’ with schizophrenia, which focused on highlighting individuals’ strengths and improving productivity, independence and social relationships; and reported improvements in global functioning, positive symptoms, and the ‘avolition-apathy’ scale of the SANS in

those receiving cognitive therapy compared with standard treatment. It was proposed that CBT facilitated these improvements in part by targeting negative, self-defeatist beliefs that inhibit social functioning, which enables individuals to set functional goals and become more motivated to engage in activities and relationships. This idea that targeting particular cognitions may facilitate functional improvement was supported by the findings of Granholm and colleagues (2009). Their trial of a group-based intervention incorporating CBT and social skills training components and targeting functional impairment in people with schizophrenia found that a reduction in social disinterest attitudes was related to improved social functioning, and suggested that such attitudes might be a mediator between skill capacity and real-world functioning (Granholm et al., 2009).

Although not an RCT, the pilot study of CBT for negative symptoms which was based on Staring and Van der Gaag's (2010) cognitive model found that treatment significantly reduced negative symptoms in people with a schizophrenia spectrum disorder after six months of treatment. This effect remained significant even after depression was controlled for, and it was also found that this change was partially mediated by a reduction in dysfunctional beliefs (questionnaire items selected to represent the four types of negative expectations described within the cognitive model), which provides support for the role of these types of cognitions in maintaining negative symptoms (Staring et al., 2013).

While the findings from treatment trials show a promising level of initial support for CBT for negative symptoms, a relatively small amount of research has been conducted to date. In addition, all of the treatment trials described above were conducted with chronic schizophrenia samples once again, and few studies have looked at CBT for negative symptoms in first-episode psychosis. One study which did

examine CBT in early psychosis was the Improving Social Recovery in Early Psychosis (ISREP) RCT (Fowler et al., 2009), which compared 'social recovery-oriented CBT' with treatment as usual (TAU) in a sample of individuals attending early intervention in psychosis services who were showing signs of persistent poor social functioning. While the focus of this therapy wasn't specifically on reduction of negative symptoms, the CBT offered in this trial targeted increasing social behaviour and constructive activity (which can be reduced as a consequence of negative symptoms); as well as managing psychotic and other psychological symptoms such as social anxiety, with the primary outcome being hours per week spent in constructive activity. Significant gains in activity (an average of 12 hours per week) as well as symptom improvement were observed in individuals with non-affective psychosis who received CBT as compared to TAU (Fowler et al., 2009), and increased levels of activity in those receiving CBT were associated with changes in positive beliefs about the self (Hodgekins & Fowler, 2010), demonstrating the impact that beliefs and cognitions may have on functional outcomes.

Gaynor and colleagues (2011) compared the effect of group CBT for individuals with first-episode psychosis with individuals with chronic schizophrenia, and reported that both groups experienced improved quality of life and reductions in positive symptoms, depression and anxiety. Again, this study did not specifically target negative symptoms, but it was found that the first-episode psychosis group experienced significant reductions in negative symptoms as a result of the treatment (Gaynor et al., 2011). This provides further support for CBT as an effective means of targeting negative symptoms in first-episode psychosis.

1.6.1 Summary. Cognitive models of the negative symptoms of psychosis are a relatively new development. Research to date has provided support for the role of particular types of cognitive appraisals within the cognitive model, and the small

number of RCTs examining CBT for negative symptoms have reported promising findings. However, the majority of research (both for treatment trials and correlational research examining aspects of cognitive models) has been conducted with people with chronic schizophrenia, therefore it is difficult to draw conclusions about the applicability of these cognitive models to individuals with first-episode psychosis, and further research within this population would be beneficial.

It also may be that certain domains within the model may also be informed by research which has investigated similar cognitive concepts. Of particular interest to the current research is the widely known and well-validated construct of self-efficacy, which is closely related to expectancies of success or negative expectancies of agency or performance as described within cognitive models of negative symptoms (Rector et al., 2005; Staring & Van der Gaag, 2010). Self-efficacy will now be discussed in greater detail.

1.7 Self-Efficacy

Self-efficacy is defined as the extent to which we believe ourselves capable of successfully performing a given task to produce desired outcomes (Bandura, 1994). Bandura's (1977) self-efficacy theory is an influential theory of motivation, which describes some of the cognitive components involved in the activation and persistence of behaviour. Bandura (1977) described that a person's decision to engage in a particular behaviour is influenced not only by their certainty that the behaviour will lead to a certain outcome (outcome expectation), but also that they perceive themselves as able to successfully perform this behaviour in order to achieve this outcome, or their efficacy expectation. Self-efficacy beliefs are therefore thought to be important determinants in an individual's choice of activities, goal setting, willingness to expend effort, willingness to persist on a given task, and resilience to 'failures' (Bandura, 1993,

1994). If self-efficacy beliefs are low, this may lead to fear or avoidance of particular tasks or situations, or 'giving up' too soon, which may reinforce low expectations and fears (Bandura, 1977), whereas individuals with higher self-efficacy are more likely to view difficult tasks as challenges to approach and master, rather than threats (Bandura, 1993).

Bandura proposed that self-efficacy could differ in level or magnitude (whether sense of self-efficacy extends to more difficult tasks as well as easier tasks) , generality (whether sense of self-efficacy is present in a wide variety of situations or just with certain specific tasks), and strength (relating to the durability of self-efficacy beliefs in more challenging circumstances; Bandura, 1977; Eccles & Wigfield, 2002); however, Eccles and Wigfield (2002) noted that their empirical findings indicated little distinction between task specific efficacy beliefs and general efficacy beliefs. Cognitive, motivational and affective processes (such as goal setting, prediction and anticipation of scenarios, problem solving, experience of stress and ability to cope with it) are all thought to inform people's self-efficacy beliefs. Although self-efficacy beliefs are thought to determine behaviour, experiences of one's behaviour producing success also influence self-efficacy beliefs (Bandura, 1994), suggesting a bi-directional relationship.

Self-efficacy has been related to behaviour outcomes in numerous domains, including academic achievement and learning, athletic performance, career choice, and performing various health behaviours (Eccles & Wigfield, 2002; Pratt et al., 2005). Low self-efficacy has also been included in models of functional impairment in psychological disorders, including anxiety, depression and substance misuse (McDermott, 1995; Pratt et al., 2005). Some research has examined the role of self-efficacy in psychotic disorders. Bechdolf et al. (2003) studied self-efficacy in people with schizophrenia and found that it was significantly related to quality of life. Other

research found that lower levels of mastery (a related concept) were related to more severe affective, positive and negative symptoms in individuals with schizophrenia (Bengtsson-Tops, 2004). Both studies concluded that CBT could help improve the sense of self-efficacy or mastery in individuals with schizophrenia as a means of improving subjective quality of life or reducing the impact of symptoms. Ventura and colleagues (2004) found that higher self-efficacy was associated with higher levels of 'approach' coping (strategies which attempt to resolve a stressful situation, as opposed to avoidance-based coping) in individuals with schizophrenia, which may buffer against symptom exacerbation; however Mueser and colleagues (1997) found that higher numbers of coping strategies of whatever kind were associated with perceived coping efficacy for negative symptoms of psychosis. Once again, little research has been conducted with first-episode psychosis samples.

A growing amount of research has now investigated possible relationships between self-efficacy and the negative symptoms of psychosis in particular, given that both are theoretically related to motivational processes. This body of research will now be reviewed.

1.8 The Relationship Between Negative Symptoms and Self-Efficacy

1.8.1 Overview of literature review. Given that negative symptoms are linked to motivational deficits and poorer functioning in psychotic disorders, it could be that self-efficacy contributes to the expression or persistence of negative symptoms as it is also linked to motivation (Bandura, 1994). This would be consistent with cognitive models of negative symptoms, which theorise a role for expectancies of success, or expectancies about performance or agency (Rector et al., 2005; Staring & Van der Gaag, 2010). Given its role in motivation, it might also be expected that self-efficacy would be most related to the symptoms that are part of the amotivation sub-domain, i.e.

anhedonia and avolition. If a relationship existed, it might suggest that interventions targeting self-efficacy could be useful for treating negative symptoms, and through this symptom reduction, improving social functioning in psychosis.

The following section is a systematic review of the literature, examining past research which has applied self-efficacy theory to individuals with psychosis. The review aims to address the following questions:

1. Is there a relationship between self-efficacy and negative symptoms?
2. Is there a particular relationship with symptoms in the amotivation sub-domain?
3. To what extent may the findings have been influenced by methodological quality?

1.8.2 Search strategy. The databases PsycINFO (1806 to February 2014), Ovid Medline (1946 to February 2014), Embase (1974 to February 2014), Web of Science (1945 to February 2014), and PubMed (1946 to February 2014) were searched from their inception to present. The searches conducted and search terms are listed on Table 2 below. Due to the majority of research in individuals with psychosis being conducted with people with schizophrenia diagnoses, schizophrenia was included as one of the search terms; however this review aimed to explore the role of self-efficacy within psychosis more generally. “Mastery” and “self-competency” were included in the search terms as synonyms for self-efficacy following examination of the keywords for the relevant items returned from the searches using “self-efficacy”. These searches were supplemented by identifying further relevant articles from reference lists of articles already included, from review articles, and by hand-searching of two key journals (Schizophrenia Bulletin and Schizophrenia Research).

Table 2.

Search Terms Used for Literature Review

Search	Search Terms
1	“self efficacy” AND “negative symptom*” AND “psychosis”
2	“self efficacy” AND “negative symptom*” AND “schizophrenia”
3	“self competenc*” AND “negative symptom*” AND “psychosis”
4	“self competenc*” AND “negative symptom*” AND “schizophrenia”
5	“mastery” AND “negative symptom*” AND “psychosis”
6	“mastery” AND “negative symptom*” AND “schizophrenia”

1.8.2.1 Inclusion and exclusion criteria. All abstracts were examined to determine suitability for inclusion in the review, and full text articles were obtained if they appeared to meet selection criteria. Journal articles were considered for inclusion if they included both a measure of negative psychotic symptoms and a measure of self-efficacy. As the purpose of the review was to understand the relationship between these two constructs, articles were retained if they reported a finding concerning the relationship between these variables (regardless of whether this relationship was an explicitly stated interest of the study). Studies involving participants with any form of psychotic illness (schizophrenia, schizophreniform disorder, schizoaffective disorder, or other psychosis), at any stage of their illness (first-episode or long term), and any treatment setting (inpatient or outpatient) were included. Studies returned which involved participants with non-psychotic diagnoses were excluded, as were studies which included heterogeneous groups with a variety of different disorders (e.g. a mixed group of ‘severe mental disorder’ without separately reporting on the psychotic group). Articles were also excluded if they were not in English, not from peer-reviewed

journals, or were review articles which did not report new findings. Figure 3 summarises the search process, including number of articles excluded and reasons for exclusion at each stage.

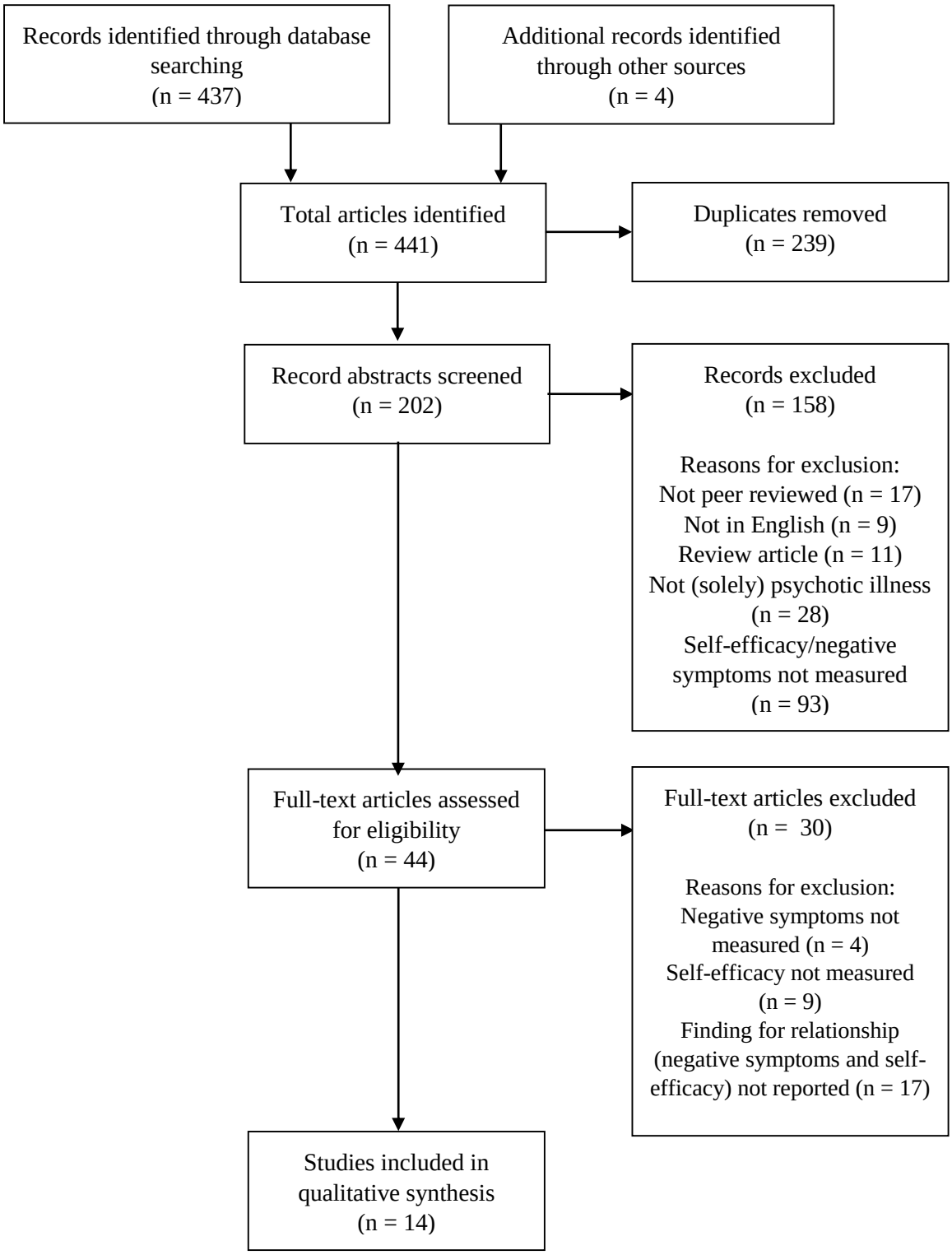

Figure 3. Flow chart of systematic review article inclusion and exclusion.

1.8.3 Overview of findings. Fourteen papers met the inclusion criteria for the review, and the main characteristics of the papers are summarised in Table 3 (papers are identified by first author and year of publication). Findings were evaluated according to the three questions stated. With regards to methodological quality, checklists for evaluating schizophrenia research have been published (Collins, Hogan, & Nuttall, 1992), however these criteria are most appropriate for assessing the quality of clinical trials. As the studies reviewed were of correlational and quasi-experimental research, a generic framework for critical appraisal (Crombie, 1996) was applied, and augmented with criteria suggested by Collins et al. (1992) where appropriate. These criteria are presented in Table 4.

Table 3.

Characteristics of Journal Articles Included in the Literature Review

Reference	Sample (N)	Diagnosis (mean illness duration, years)	Gender (% male)	Mean age (years)	Measures		Relationship found?	Correlation (effect size)
					Negative Symptoms (severity)	Self-efficacy (general/ specific)		
Avery et al. (2008)	Inpatients (50)	Schizophrenia (unknown)	60%	34.7	SANS (low-moderate)	CEQ (specific)	Yes	*r* = -.32 (medium)
Bentall et al. (2010)	Outpatients (56) Controls (30)	Schizophrenia/ Schizoaffective (unknown)	68%	41.3	SANS (low-moderate)	TMQ (specific)	Mixed	n/a
Cardenas et al. (2012)	Outpatients (97)	Schizophrenia/ Schizoaffective (unknown)	56.7%	50.9	PANSS (low-moderate)	RSES (general)	No	*r* = -.19 (small)
Chino et al. (2009)	Outpatients (36)	Schizophrenia (5.5)	58%	28	PANSS (low-moderate)	SECL (general)	No	*r* = -.05 (Spearman)
Choi et al. (2010)	Outpatients (70)	Schizophrenia/ Schizoaffective (12.11)	62%	38.5	BPRS-E (severe)	PCS (specific)	No	*r* = -.20 (small)
Hill et al. (2013)	Inpatients (60)	Schizophrenia spectrum (unknown)	73.3%	34.4	SANS (low-moderate)	SEQ (specific)	Yes	*r* = -.51 (large)
Kleim et al. (2008)	Outpatients (127)	Schizophrenia (unknown)	55.9%	38.9	PANSS (low)	GSES (general)	No	*r* = .04 (very small)

(table continues)

Reference	Sample (N)	Diagnosis (mean illness duration, years)	Gender (% male)	Mean age (years)	Measures		Relationship found?	Correlation (effect size)
					Negative Symptoms (severity)	Self-efficacy (general/ specific)		
Kurtz et al. (2013)	Out- and in-patients (69)	Schizophrenia/ Schizoaffective (10.6)	73.5%	31.4	PANSS (moderate)	RSES (general)	No	*r* = -.13 (small)
Lysaker et al. (2001)	Outpatients (49)	Schizophrenia/ Schizoaffective (unknown)	96%	44	PANSS (unknown)	AQ (general)	No	Unknown
Macdonald et al. (1998)	Outpatients (50) Controls (23)	First-episode/ early psychosis various diag. (6.79 months)	78%	22.9	SANS (low-moderate)	CISCR (specific)	Yes	*r* = -.34 (medium)
Morimoto et al. (2012)	Inpatients (39)	Schizophrenia (17)	64%	44	PANSS (moderate)	SESIB (specific)	No	*r* = -.06 (Spearman)
Pratt et al. (2005)	Outpatients (85)	Schizophrenia/ Schizoaffective (unknown)	62.4%	37.9	SANS (unknown)	RSES (general)	Yes	*r* = -.33 (medium)
Vauth et al. (2007)	Outpatients (172)	Schizophrenia (15.6)	60.5%	39.6	PANSS (low-moderate)	GSES (general)	No	*r* = .02 (very small)
Ventura et al. (2014)	Outpatients (71) Controls (20)	Recent-onset schizophrenia (5.9 months)	80%	21.7	SANS (low-moderate)	RSES (general)	Yes	*r* = -.58 (large)

Note. Relationship found pertains to the relationship between negative symptoms and self-efficacy only. All correlations are Pearson correlations except where otherwise noted. SANS = Scale for the Assessment of Negative Symptoms, PANSS = Positive and Negative Syndrome Scale, BPRS-E = Extended Brief Psychiatric Rating Scale, CEQ = Cognitive Expectancy Questionnaire, TMQ = Task Motivation Questionnaire, RSES = Revised Self Efficacy Scale, SECL = Self Efficacy for Community Life Scale, PCS = Perceived Competency Scale, SEQ – Self Efficacy Questionnaire, GSES = General Self Efficacy Scale, AQ = Attitude Questionnaire, CISCR = Critical Incident Stress and Coping Rating, SESIB = Self Efficacy Scale of Interpersonal Behaviour

Table 4.

Criteria for Assessing Methodological Quality

Criterion	Details
Sample	Was sample size sufficient? Were calculations reported? Were inclusion/exclusion criteria explicit? Were age/gender described? Were severity/chronicity of illness described? Was the control group (if used) appropriate?
Measurement	Were suitable measures used? Were psychometric properties reported?
Statistical analysis	Were statistical methods appropriate? Were assumptions of the method met? Were adjustments made for multiple comparisons? Were descriptive statistics described? Was statistical significance reported?
Findings	Have potential biases/confounding been controlled for? Can the results be generalised? What are the limitations? What are the implications for clinical practice?

Note. Adapted from Collins, Hogan and Nuttall (1992), and Crombie (1996).

1.8.3.1 Sample. In all but one study (Cardenas et al., 2013), diagnoses were made according to either DSM-IV or ICD-10 criteria. As shown in Table 3, all samples had a higher proportion of men, which is typical in schizophrenic populations (Ring et al., 1991), however the percentage of males varied greatly (from 55.9% to 96%). Mean age of research participants typically ranged from mid 30s to early 50s, with the exception of two studies which recruited early psychosis samples and the mean age of participants in both was in the early 20s (Macdonald, Pica, McDonald, Hayes, & Baglioni, 1998; Ventura et al., 2014). Severity and chronicity of illness were inconsistently reported, though inferences about the average level of symptom severity within study populations could be made from symptom mean scores (where provided) according to previously published cut-off scores (Leucht et al., 2005a; Leucht et al.,

2005b; Levine & Leucht, 2013). Negative symptoms for most studies were reported to be in the low to moderate range, except for one study which reported participants on average had symptoms in the severe range (Choi, Fiszdon, & Medalia, 2010). Exclusion criteria were not made explicit in some cases (Bentall et al., 2010; Chino, Nemoto, Fujii, & Mizuno, 2009; Kleim et al., 2008; Macdonald et al., 1998; Vauth, Kleim, Wirtz, & Corrigan, 2007), though where reported, brain injury or organic disorder were typical exclusions. Only one study (Vauth et al., 2007) reported a priori consideration of sample size, and a number of studies reported low sample size which may have limited the power to detect a relationship or to have confidence in the findings (Avery et al., 2009; Bentall et al., 2010; Chino et al., 2009; Hill & Startup, 2013; Lysaker, Clements, Wright, Evans, & Marks, 2001; Macdonald et al., 1998; Morimoto, Matsuyama, Ichihara-Takeda, Murakami, & Ikeda, 2012; Ventura et al., 2014).

1.8.3.2 Measurement. Three measures were used to assess negative symptoms – the Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1984), the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987), and the expanded version of the Brief Psychiatric Rating Scale (Overall & Gorham, 1962; Ventura, Nuechterlein, Subotnik, Gutkind, & Gilbert, 2000). These three measures are all widely used and well-validated within psychotic populations, but each have relative strengths and limitations. The BPRS has the advantage of being less time consuming to administer but is less comprehensive than other measures. The PANSS is used extensively, but research examining the factor structure shows that negative symptom items in the PANSS appear in several different subscales and do not correspond to the structure implied by the subscales (Emsley et al., 2003), which limits the utility of the negative symptom scale in the PANSS. Negative symptom dimensions are thought to most closely correspond with the SANS (Kirkpatrick et al., 2006), which is the most

comprehensive of the three measures. Although the SANS does contain some items (e.g. attentional impairment, inappropriate affect) which are no longer considered part of the negative syndrome, it also includes more items relating to avolition and amotivation (Foussias & Remington, 2010), so could possibly be considered the most appropriate measure to capture these particular constructs.

There was a wide degree of variation in the instruments and methods employed for measuring self-efficacy in the studies reviewed. Self-efficacy measures ranged from one item to 57 items long. Some measured self-efficacy for a specific task (e.g. a problem-solving task) or domain (e.g. interpersonal behaviour), while others examined general self-efficacy. A number of studies developed their own questions to measure self-efficacy (Avery et al., 2009; Bentall et al., 2010; Hill & Startup, 2013; Macdonald et al., 1998), which meant that limited statements could be made about their reliability and validity. Four studies (Cardenas et al., 2013; Kurtz, Olfson, & Rose, 2013; Pratt et al., 2005; Ventura et al., 2014) used the 57-item Revised Self-Efficacy Scale (McDermott, 1995), which was devised specifically for use in schizophrenic populations and yields scored which measure confidence in managing positive symptoms, negative symptoms, and performance of social behaviours. This measure has demonstrated evidence of reliability and construct validity, and reported coefficient alpha statistics for subscales and overall total were high (.91 to .95; Cardenas et al., 2013; Pratt et al., 2005), although coefficient alpha can be artificially inflated in scales with a greater number of items (Cortina, 1993). A scale specifically designed for psychotic populations has advantages in terms of validity, but disadvantages in that it limits generalisability and the ability to compare levels of self-efficacy to those with other disorders or to non-clinical samples. A further two studies (Kleim et al., 2008; Vauth et al., 2007) used the 10-item Generalised Self-Efficacy Scale (Schwarzer &

Jerusalem, 1995), a measure of general self-efficacy which has been widely used in various countries and is well-validated in a variety of populations, including people with psychosis.

1.8.3.3 Statistical analysis. The majority of studies were cross-sectional and employed correlation or regression analysis, which was largely appropriate given that the stated aims in all cases were to examine a relationship between specified variables. Exceptions to this methodology were three studies which utilised quasi-experimental methods with a control group (Bentall et al., 2010; Macdonald et al., 1998; Ventura et al., 2014) and one which analysed longitudinal data (Choi et al., 2010). Several studies tested mediation models involving self-efficacy and negative symptoms (Hill & Startup, 2013; Kurtz et al., 2013; Pratt et al., 2005; Ventura et al., 2014). All studies made clear statements about the statistical significance of their findings; however in all studies, multiple comparisons were conducted without any alpha adjustment, and assumption breaches were not always reported. No study reported effect sizes, but these could be inferred from studies reporting Pearson correlations (see Table 1). In addition, only a small number of studies (Avery et al., 2009; Hill & Startup, 2013) reported controlling for the effect of potentially confounding variables such as depression or cognitive functioning within their study design.

1.8.4 Study findings. Of the fourteen papers included, eight had explicitly aimed to investigate the relationship between negative symptoms and self-efficacy; while the remaining six reported this relationship due to the inclusion of negative symptoms as a control variable while investigating other relationships of interest. These latter six papers will be reviewed first.

1.8.4.1 Studies which included negative symptoms as a covariate. None of the six papers in this category found a significant relationship between negative symptoms

and self-efficacy. As negative symptoms were not a focus of these studies, it is possible this indicates some form of interviewer bias which affected findings. Another possible explanation may be measurement bias, as these studies all used the briefer PANSS or BPRS-E measures (as opposed to the more comprehensive SANS) for negative symptoms, and have fewer items which assess avolition and anhedonia which are thought to be particularly related to motivation (Foussias & Remington, 2010).

Cardenas et al. (2012), and Morimoto, Matsuyama, Ichihara-Takeda, Murakami and Ikeda (2012), both examined effects of self-efficacy on functioning; the former investigating general functioning and the latter specifically interpersonal behaviour. In both studies, self-efficacy and negative symptoms were significantly related to functioning but not to each other, suggesting that self-efficacy and negative symptoms independently influence functioning. Morimoto and colleagues felt that the lack of relationship between self-efficacy and symptoms was unexpected, and wondered whether this might be to do with a deficit in insight affecting self-efficacy. Both studies used self-efficacy measures developed for schizophrenic populations, which strengthens internal validity but limits generalisability of findings. Cardenas et al. (2012) used the Revised Self-Efficacy Scale (McDermott, 1995) with 35 items instead of the original 57, but the reasoning behind this adaptation was unclear. Neither study comprehensively reported statistical assumptions or psychometric properties of measures (though Cardenas and colleagues did report coefficient alpha of .91 for self-efficacy). Other strengths of Cardenas et al. (2012) were good sample size, and attempts made to control for confounding factors through suitable exclusion criteria and use of covariates in regression analyses. However, the mean age of Cardenas and colleagues' sample (50.9 years) was higher than in any of the other studies reviewed, which may limit generalisability of findings given that both age and illness duration

may have implications for functioning. Morimoto et al. (2012) also noted that small sample size meant their study was potentially under-powered.

Two studies from the same research group (using different samples) found that higher stigma and avoidant coping were related to lower self-efficacy. Vauth, Kleim, Wirtz and Corrigan (2007) employed structural equation modelling and found support for the involvement of stigma, self-efficacy and avoidant coping strategies in explaining deficits in functioning, which they believed suggested that learned helplessness was demonstrated and could undermine the recovery process. However negative symptoms were not included in this model as no significant relationships were found with other model variables. Kleim et al. (2008) included negative symptoms as a covariate in hierarchical multiple regression, however negative symptoms varied greatly which undermined their reliability and utility as a covariate. Standard deviations were almost three times the mean of 6.71, suggesting that negative symptoms were highly skewed, but it was not stated how this was managed statistically. This score on the PANSS suggests relatively low symptom severity, but the large amount of variance limits reliable interpretation. Vauth et al. (2007) reported also low-moderate negative symptoms and commented that this may have led to their effect being underestimated, but otherwise did not report psychometric properties for the PANSS. Strengths for both studies include robust internal consistency for self-efficacy measures, thorough description and reporting of statistical (particularly Vauth and colleagues) and generous sample size, though Vauth et al. (2007) reported that sample size was at the lower limits of that required for structural equation modelling. Another limitation reported was that given that this sample was relatively highly functioning (50% were engaged in employment), the findings may not be generalisable to other samples.

Lysaker, Clements, Wright, Evans and Marks (2001) also examined coping but found (contrary to the previous two studies) avoidant coping was related to higher self-efficacy, hope and well-being; suggesting that avoidance may have served a protective function for people in this sample, though it seems to run counter to findings from previously described studies which suggest that higher self-efficacy improves social functioning. In this study, researchers conducting the PANSS interviews were blind to outcomes on other instruments; a methodological strength not reported by other studies. The authors also considered that higher numbers of correlations increase chances of spurious findings, and minimised the number of predictors for this reason. However, statistical assumptions, descriptive data, and psychometric properties of measures were not reported (making it difficult to assess reliability of findings), and it was unclear which variables were entered in each step of the regression. The sample size of 49 was unlikely to have provided sufficient power for multiple regression given the number of predictors. The results also may not be generalisable to women, as 96% of participants were male.

Lastly, Choi, Fiszdon and Medalia (2010) examined aspects of expectancy-value theory (Eccles & Wigfield, 2002), and found that self-efficacy was related to the value attributed to the task and the persistence of learning effects, but there was no significant relationship between self-efficacy and negative symptoms. The findings indicate that perception of task value is important for learning outcomes and that expectations of success greatly influence learning persistence, suggesting the value for schizophrenia interventions to promote expectations of success. Mean duration of illness (12.11 years), and BPRS-E scores in the ‘markedly ill’ category (Leucht et al., 2005a), indicated this group had both chronic and severe illness in contrast to others reviewed. The use of comparatively brief measures for both psychotic symptoms and self-efficacy

(the four-item Perceived Competency Scale) may be a limitation of the study, and no psychometric properties were reported for this study for either the negative symptoms or self-efficacy which makes it difficult to comment on their suitability. Strengths of this study were the robust sample size, detailed descriptive statistics and information about assumption testing was reported.

1.8.4.2 Negative symptom and self-efficacy relationship as a main outcome.

The next eight articles all stated examining relationships of self-efficacy with negative symptoms as an explicit aims of their studies, and of these, six found support for a relationship between negative symptoms and self-efficacy. Avery, Startup and Calabria (2009) examined relationships between negative symptoms, effort, coping, and negative expectancy appraisals; and found self-efficacy was significantly related to SANS total and the anhedonia subscale. Multiple regressions found that self-efficacy accounted for 9% of the variance in SANS total (controlling for depression, effort and executive functioning), and 11.5% of the variance in anhedonia (controlling for depression and effort). Affective flattening primarily correlated with depression and was not related to self-efficacy, which provides some support for the notion that there are two sub-domains within negative symptoms (Foussias & Remington, 2010), however no significant relationship was found for self-efficacy and avolition, contrary to what might theoretically be expected. Three questions measured self-efficacy and had good internal consistency, but use of a custom measure limits generalisability and makes it difficult to quantify if self-efficacy was generally high or low. Methodological strengths included use of the SANS (which had good inter-rater reliability), controlling for potential biases, and adequate sample size. This was the only study reviewed which comprehensively reported on psychometric properties and statistical assumptions.

Bentall et al. (2010) compared patients with high and low scores on the SANS avolition subscale with each other and a with non-clinical comparison group. Self-efficacy was measured by self-report questionnaire (which had good internal consistency), and also by estimates of task efficacy following a manipulation which primed participants to high- or low-efficacy estimates. Findings of this study were mixed. No difference was found between avolition and non-avolition groups for estimates of task efficacy; however in contrast to this, analysis of self-reported self-efficacy suggested patients with higher avolition perceived themselves as less likely to be successful with everyday tasks. In most analyses, the avolition and non-avolition groups differed significantly from controls but not each other. The authors believed that low sample size contributed to failure to discriminate between these two groups; though an alternative explanation is that another variable relevant to both clinical groups explained this pattern (such as levels of depression or anxiety, for which there were reported group differences, or positive symptoms, which were not reported). One of the main limitations was that the control group was a convenience sample made up of ward staff, who differed greatly on a number of demographic variables. However in light of contradictory findings, Bentall et al. (2010) concluded that the specific role of self-efficacy in negative symptoms requires further investigation.

Chino, Nemoto, Fujii and Mizuno (2009) investigated relationships between subjective factors (quality of life, self-efficacy and subjective well-being) and cognitive function, symptoms and social functioning, with no specific hypotheses. They reported Spearman correlations for each PANSS item with three subjective measures. Self-efficacy was not significantly correlated with any negative subscale items, however it did correlate with active social avoidance, which appears on the positive subscale of the PANSS but is thought to be more related to negative symptoms (Foussias & Remington,

2010). No Bonferroni corrections for multiple analyses were made, which undermines reliability particularly with such a large number of correlations. The small sample of 36 would likely not have provided sufficient power to observe these relationships had the significance level been adjusted. Additionally, no psychometric properties for measures were reported. Chino et al. (2009) felt that the lack of relationship between self-efficacy and negative symptoms contradicted previous reports, and attributed this to the sample being relatively young and low in symptom severity.

Hill and Startup (2013) aimed to examine processes contributing to negative symptoms and lower social functioning, and hypothesised that self-efficacy would mediate relationships between internalised stigma and both negative symptoms and social functioning. Though these mediation models were not supported, the study reported a significant and large association (r = -.51) between self-efficacy and negative symptoms, and an even larger (r = -.72) association between negative symptoms and social functioning. The use of the SANS to measure negative symptoms was a methodological strength as was thorough reporting of testing procedures and psychometric properties of measures, and use of appropriate covariates (i.e. depression) to control for potential confounds. However like Avery et al. (2009) a custom measure of self-efficacy was used which consisted of only four items, which is a potential limitation, along with a relatively small sample size for mediation analysis, particularly as only 48 of the 60 patients data on the self-efficacy measure could be used due to some participants electing not to complete this part of the assessment.

Kurtz, Olfson and Rose (2013) investigated whether self-efficacy mediated the relationship between illness factors such as negative symptoms and cognition, and performance-based measures of social functioning, and also whether this relationship was moderated by level of insight, in patients with schizophrenia. Insight was found to

significantly moderate the relationship between self-efficacy and social functioning, with higher self-efficacy being significantly related to better functioning in those with high insight but not average or low insight. However, analyses for the mediation model were not conducted as no significant relationship was found between negative symptoms and self-efficacy in this sample. Psychometric properties of measures and analyses conducted were appropriate and well-described in this paper which are methodological strengths, though the authors noted that their stabilised and chronic patient sample may make it difficult to generalise findings to patients in an earlier stage of illness.

Macdonald, Pica, McDonald, Hayes and Baglioni (1998) explored relationships between coping strategies, social support, psychiatric symptoms and self-efficacy, and found a significant relationship between self-efficacy and negative symptoms after controlling for depression. This early intervention sample had a mean age of 22.9 years which was notably younger than in other studies, but participants had similar negative symptom severity to other samples. The involvement of patients with a wider array of diagnoses suggests greater generalisability of the findings to a wider range of people. Use of the SANS is also a strength of this study, however psychometric properties were not reported and self-efficacy was rated by just one question, making it difficult to assess measurement reliability. The authors also noted that the depression was not measured in the whole sample due to some participants having difficulty completing numerous self-report questionnaires. This means that depression potentially cannot be ruled out as a confounding factor, and also undermines the reliability of other self-report measures used.

Pratt, Mueser, Smith and Lu (2005) proposed that self-efficacy mediated the relationship between psychosocial functioning and negative symptoms, based on a

published model (Liberman et al., 1986). Comprehensive measures of negative symptoms (SANS) and self-efficacy (the 57-item Revised Self-Efficacy Scale) were used, and both possessed good psychometric properties in this sample. Statistical methods were particularly well described, however descriptive statistics for study variables were not reported, rendering it impossible to ascertain general symptom severity. A significant relationship was found between negative symptoms and self-efficacy, however findings did not support the proposed model. Pratt et al. (2005) instead found that negative symptoms mediated the relationship between self-efficacy and functioning. This finding could be seen as support for Rector, Beck and Stolar's (2005) cognitive model, which proposes negative expectancies influence the severity of negative symptoms, which in turn impact functioning. Similarly, Bandura's theory would suggest that self-efficacy beliefs play a role in our decisions to initiate particular behaviours (Eccles & Wigfield, 2002), which would also be consistent with this model as negative symptom measures summarise observed behaviours (Avery et al., 2009). Significant depression was an exclusion criterion, which helps control confounding but reduces generalisability as depression is relatively common in psychosis (Birchwood, Iqbal, Chadwick, & Trower, 2000).

The last study reviewed, conducted by Ventura et al. (2014) tested two competing mediation models – one similar to that found by Pratt and colleagues (2005), proposing that negative symptoms mediate the relationship between self-efficacy and functioning; and another more similar to the model tested by Kurtz and colleagues (2003) which proposed that self-efficacy mediated the relationship between negative symptoms and functioning. This study (along with Macdonald et al., 1998) is one of only two studies reviewed which investigated an early intervention sample. Support was found for the first mediation model, in line with the findings of Pratt et al. (2005).

This study also examined relationships of 'expressive' negative symptoms and 'experiential' negative symptoms in this mediation model separately, and both were found to be significant, which is perhaps contrary to expectations that 'experiential' symptoms might be more related to variables associated with motivation such as self-efficacy (Foussias & Remington, 2010). In addition the research also reported that mean self-efficacy was lower than in demographically matched general population controls, suggesting that lower self-efficacy is present in individuals with psychosis even in the very early stages of illness and therefore might be a useful target for intervention. The methodological strengths of this study included that it used comprehensive measures of both negative symptoms and self-efficacy (though there was inconsistent reporting of psychometric properties), and thorough statistical analysis, though the authors reported the 'moderate' sample size for mediation as a potential limitation.

1.8.5 Summary of literature review. The findings of this review provide mixed support for a relationship between self-efficacy and negative symptoms. Of the fourteen studies reviewed, eight did not find a significant relationship (Cardenas et al., 2013; Chino et al., 2009; Choi et al., 2010; Kleim et al., 2008; Kurtz et al., 2013; Lysaker et al., 2001; Morimoto et al., 2012; Vauth et al., 2007); one found mixed support (Bentall et al., 2010); and five reported a significant relationship (Avery et al., 2009; Hill & Startup, 2013; Macdonald et al., 1998; Pratt et al., 2005; Ventura et al., 2014). In these five studies, Pearson correlations of the association between self-efficacy and negative symptoms ranged from r = -.32 to -.58, suggesting a medium to large effect size for this relationship.

1.8.5.1 The amotivation sub-domain. Three studies examined relationships with particular negative symptoms. Bentall et al. (2010) found that patients with higher

avolition anticipated less success in everyday tasks than patients with lower avolition (a non-significant trend) and non-clinical controls (a significant difference). Avery, Startup and Calabria (2009) found that self-efficacy explained 11.5% of the variance in anhedonia. Anhedonia and avolition make up the amotivation sub-domain (Foussias & Remington, 2010), however self-efficacy did not significantly correlate with avolition. Ventura and colleagues (2014) also examined relationships between experiential (or amotivation) negative symptoms and expressive negative symptoms and found that both had medium to large significant relationships with self-efficacy, although the relationship was slightly stronger for experiential symptoms (r = -.53) compared with expressive symptoms (r = -.43), which perhaps provides some evidence that self-efficacy may be more related to amotivation symptoms as theory would suggest (Foussias & Remington, 2010). Given that findings are mixed and only three studies have studied this relationship, this area merits further investigation.

The negative scales of the PANSS and BPRS include few items which tap amotivation compared with the SANS. That none of the studies employing the PANSS or BPRS found a significant relationship between self-efficacy and negative symptoms, and that all of those which used the SANS did, could support a relationship particularly between amotivation factors and self-efficacy in psychosis. This is consistent with theory that self-efficacy is vital in motivation (Bandura, 1994).

1.8.5.2 Influence of methodological quality. As described, the studies reviewed were of varying methodological quality, however in general, findings did not appear to vary systematically with quality. One systematic difference between studies which did and did not find a relationship between negative symptoms and self-efficacy was the use of the SANS measure in all studies which found support for the relationship, which suggests measurement effects which may have confounded the

findings. It also suggests that the SANS may be most appropriate to assess motivational factors, and should be used in future studies of self-efficacy.

Appropriate measures of self-efficacy in psychosis also need to be determined, and thought given to the potential limitations of self-report questionnaires. While self-report is appropriate for self-related constructs, responses may be influenced by overall self-appraisals or mood state (Macdonald et al., 1998), which would suggest it may be useful to control for these factors. This review also found that the quality and focus of self-efficacy measures used seemed to vary greatly. Some measures assessed general self-efficacy while others examined specific domains (such as interpersonal self-efficacy), and they ranged from just one question to 57 questions. While this is something that researchers in this area should perhaps be aware of, findings did not appear to vary systematically according to the self-efficacy measures used, suggesting that various approaches are perhaps acceptable.

As well as appropriate measures, future studies require adequate sample size and inclusion of relevant covariates to control for confounding. In the papers reviewed, only half controlled for depression and none for anxiety, both of which are prevalent in psychotic samples (Birchwood et al., 2000; Birchwood et al., 2007). Furthermore, most samples comprised individuals who were chronically ill and only two studies used an early psychosis sample, which limits the generalisability of the findings of this literature review to people in an earlier stage of illness. Negative symptoms are a key factor in long-term prognosis (Addington, Young, et al., 2003; Edwards et al., 1999) so further research into the influence of self-efficacy in early psychosis could be valuable in order to better understand this relationship.

1.8.5.3 Future research directions. The mixed findings regarding the relationship between negative symptoms and self-efficacy could also suggest that self-

efficacy may only be part of the picture, and other variables are also important in explaining negative (and in particular, amotivation) symptoms. It may be that depression and anxiety symptoms, which most studies did not control for, also account for some of this relationship. In addition, more recent theories of motivation incorporate not just expectancy beliefs but other factors related to goal-related behaviour, such as the value of the task to be performed. Both of these factors are hypothesised to play a role in achievement-related choices and performance in expectancy-value theory (Eccles & Wigfield, 2002). One study in this review drew on principles of expectancy-value theory and found that perceptions of task value were related to learning outcomes and persistence (Choi et al., 2010), suggesting it may have an important role in the motivation to learn and the willingness to persist with challenging tasks. Expectancy-value theory will now be discussed in more detail.

1.9 Expectancy-Value Theory and Negative Symptoms

Expectancy-value theory proposes that effort and persistence with tasks are related not only to expectancies (beliefs about how well one might do on a task), but also the perceived value of performing the task, which provide reasons or incentives for doing the activity (Eccles & Wigfield, 2002). Expectancy-value theory proposes a complex socio-developmental model which includes cultural stereotypes, gender roles and societal expectations as well as one's life experiences and memories growing up as distal influences on later task-related choices and behaviour. Distal factors are thought to influence more proximal factors, which include self-related beliefs such as general self-schema, self-concept of one's abilities, and personal expectations of success; and also task-specific factors such as the subjective value of a task and evaluations of personal cost of performing a task.

Bandura (1993) drew differences between self-efficacy and expectations in this model, stating that expectancy-value theory was governed by outcome expectancies and therefore excluded consideration of efficacy expectancies. However, Eccles and Wigfield (2002) state that expectancies in modern expectancy-value theory focus on individual's beliefs about how well they will do (as opposed to whether a given course of action will lead to a particular outcome, as in outcome expectancies) and therefore do incorporate efficacy expectations. Therefore expectancy-value theory can be seen as an elaboration of self-efficacy theory (Choi et al., 2010). Much like self-efficacy, expectancy-value theory has now been applied to consider motivational influences in a variety of domains, including education (Sullins, Hernandez, Fuller, & Tashiro, 1995; Wigfield & Eccles, 2000), health (Rogers, Deckner, & Mewborn, 1978), business and employment (Feather, 1992; Wiklund, Davidsson, & Delmar, 2003), social psychology (Shepperd, 2001), and mental health (MacCarthy, Benson, & Brewin, 1986). In educational settings, where a lot of research into expectancy-value theory has been conducted, findings have suggested that expectancies are broadly related to performance, whereas values may be more related to decision making about future plans and goal setting; however both are theorised to play a role in achievement related choices and ultimately performance (Eccles & Wigfield, 2002; Wigfield & Eccles, 2000).

A limited amount of research has examined expectancy-value theory in individuals with schizophrenia, and in particular in relation to negative symptoms. Research investigating engagement in everyday tasks in both schizophrenic and non-schizophrenic patients found that individuals with schizophrenia were more likely to rate tasks that they did not perform as more difficult and less likely to value the tasks that they did perform (MacCarthy et al., 1986). Chronicity of illness was associated

with everyday tasks which were not performed being perceived as more difficult, and tasks which were performed being perceived as less important. MacCarthy et al. (1986) concluded that a useful area for intervention could be to focus on tasks which were perceived as difficult but important.

Previous research examining expectancy-value theory in the context of learning outcomes with schizophrenic outpatients found if the learning task was more valued, there were greater expectations of success and stronger learning effects (Choi et al., 2010). This research did not find a relationship between negative symptoms and self-efficacy or subjective task value, but may have been affected by inadequate measurement as the SANS was not used to measure negative symptoms in this study. Bentall et al. (2010) did not find ratings of task value to be significantly different when comparing two groups of people with schizophrenia (divided into high and low avolition groups) and a control group. Contrary to the research hypotheses, no particular distinction was found between the groups who scored high on avolition and low on avolition in this study, though it was proposed that this might have been due to low sample size. In addition, Bentall and colleagues (2010) did not report findings for other negative symptoms, so their relationship is particularly unclear.

Findings from the literature reviewed above suggest that self-efficacy is only part of the picture in the relationship with negative symptoms in psychosis, and the expansion of cognitive appraisals under investigation to include those proposed within expectancy-value theory provides another area of investigation. To date, the small number of studies which have examined the applicability of expectancy-value theory within psychotic disorders (none of which have examined first-episode psychosis) have been inconclusive regarding the role of cognitive appraisals such as subjective task value in negative psychotic symptoms, and further research is needed in this area.

1.10 Summary and Rationale for Current Research

Developing and delivering effective treatments for psychotic disorders is of paramount importance both to reducing the financial burden on society, and alleviating the enduring disability that individuals often experience. Given that negative symptoms are a major factor in ongoing difficulties with social functioning, these present an important treatment target. Negative symptoms have often been perceived as difficult to treat, however psychological therapies are emerging as a beneficial treatment option for these troubling and debilitating symptoms. One RCT of cognitive behaviour therapy to date has provided support for the benefits of improving cognitive appraisals associated with motivation in reducing negative symptoms (Grant et al., 2012). This finding suggests that targeting self-efficacy, as a key determinant of motivation, could be useful within psychological interventions for psychosis.

Cognitive models of negative symptoms suggest a role for expectancies regarding success, performance and agency in the expression of negative symptoms, perhaps particularly those related to the amotivation domain, which may in turn affect social functioning. Research to date is limited and has been affected by methodological issues, and consequently had mixed findings. s In addition, many studies have not controlled for potential confounding factors such as positive symptoms, depression and anxiety, and cognitive functioning, which can all have substantial effects on functioning (Birchwood, 2003; Voges & Addington, 2005), and can share some variance with negative symptoms (Bentall et al., 2010) and self-efficacy (Bandura, 1993; Kavanagh & Bower, 1985). Previous research has also tended to have a more limited focus on self-efficacy, without considering other factors which could be important in motivation such as subjective task value and general self-schemas. Furthermore, very little previous research has been conducted within early intervention populations; for example, in a

meta-analysis of 18 studies examining functional outcomes in people having CBT for psychosis, just one had been conducted with young adults (Granholm et al., 2009). Having effective treatments for people receiving early intervention for psychosis is particularly important as effective early treatments may prevent significant long term disability and limit the impact of psychosis.

The overall aim of the current research is to investigate some of the psychological mechanisms which might contribute to the consistently found relationship between higher severity of negative symptoms and poorer social functioning. This may help in the identification of useful therapeutic targets, improve the quality of therapy offered and help improve functional recovery for people with first-episode psychosis. Given the role of expectancies about performance and success in cognitive models of negative symptoms (Rector et al., 2005; Staring & Van der Gaag, 2010), another aim of this research is to clarify the nature of the relationship between self-efficacy and negative symptoms, and whether it exists in an early psychosis sample. This research also aims to explore the relationship of other cognitive appraisals thought to be related to motivation (such as subjective task value, and self-schema) with negative symptoms, and to investigate whether these cognitive appraisals might be more strongly associated with the 'diminished experience' or avolition subscale of negative symptoms as might be theoretically expected (Foussias & Remington, 2010). To understand the impact of these factors on social functioning, this research also aims to replicate a mediation model which has been supported in previous work examining self-efficacy (Pratt et al., 2005; Ventura et al., 2014) which suggests that negative symptoms mediate the relationship between self-efficacy and social functioning. In addition, his research aims to extend and test this model with other cognitive appraisals such as subjective task value and self-schemas as predictors. This research also hopes to address

methodological shortcomings of previous research by incorporating appropriate control variables into analyses. Finally, given that most previous research has been conducted with individuals who have schizophrenia spectrum disorders and have tended to be chronically ill, this research also aims to extend the findings of previous research to individuals with first-episode psychosis. These findings may be able to usefully inform treatments for individuals in the early course of psychotic illness, which may assist in faster or more complete social recovery from a first episode and prevent progression to more chronic illness.

1.11 Research Hypotheses

With these research aims in mind, it is hypothesised that:

1. Greater severity of negative symptoms will be associated with lower self-efficacy, lower subjective task value, lower ratings of positive self-schemas and higher ratings of negative self-schemas (controlling for positive symptoms, depression, anxiety and cognitive functioning)
2. Self-efficacy, task value, positive self-schema and negative self-schema will all have stronger associations with symptoms related to motivational deficits (avolition, anhedonia – the 'diminished experience' factor) than others (affective flattening, alogia – the 'diminished expression' factor)
3. Negative symptoms will mediate the relationship between the cognitive appraisals (self-efficacy, task value, positive self-schemas, and negative self-schemas) and social functioning

2. Method

2.1 Design

This study employs a within-subjects, correlational design, examining relationships between variables of interest within a group of individuals identified as having experienced a first episode of psychosis. This design allowed for the inclusion of covariates to help control for potentially confounding variables. The study is cross-sectional as data were gathered at one time point only, via self-report questionnaires and semi-structured interviews.

2.2 Participants

This study recruited a clinical sample of individuals currently attending outpatient early intervention in psychosis services in Norfolk, Suffolk, South Essex and Bedfordshire. In Norfolk, South Essex and Bedfordshire, specialist early intervention services exist for individuals aged between 14 to 35 who experience a first episode of psychosis. The Norfolk service is county-wide and has clinics in Norwich, Great Yarmouth and Kings Lynn. The South Essex service covers the Essex districts of Brentwood, Basildon, Castle Point, Southend and Rochford, while the Bedfordshire service is county-wide (including Luton). In Suffolk, early intervention in psychosis input is delivered as part of the Youth Pathway (for those under 25) and the Adult Pathway (for those over 25) within the Integrated Delivery Teams (IDTs). There are two IDTS in west Suffolk (located in Bury St Edmunds and Newmarket) and three IDTS in east Suffolk (the Ipswich IDT, the Coastal IDT, and the Central IDT which is located in Stowmarket). In all areas, early intervention services aim to provide therapeutic intervention, support, and education to young people and their families for up to three years following a first episode of psychosis, with a focus on maintaining community and social engagement, and working towards recovery.

2.2.1 Inclusion criteria. Individuals were considered for inclusion if they were:

- Currently a patient of an early intervention in psychosis service
- Between 18 and 65 years of age
- In the recovery phase of their illness and their clinical presentation is stable at present, indicated by:
    - No significant positive symptoms as assessed by their care coordinator
    - Attendance at an early intervention service for more than 12 months
    - No hospital admissions or medication changes within the past month

These criteria helped to ensure that participants were not currently in an acute phase of their illness, and that participation in research was unlikely to be detrimental to their wellbeing. Relative absence of active psychotic symptoms also helped make sure that individuals had mental capacity to provide informed consent to take part in the research. Finally, a focus on recovery is consistent with the mandate of early intervention services. Research suggests that negative symptoms are a contributing factor to poor functional recovery even if remission from positive symptoms is achieved (Voges & Addington, 2005); therefore it may be that the effects of negative symptoms can be best observed within this phase of the illness, and knowledge of their impact on functioning at this time could helpfully inform recovery-focussed treatment.

2.2.2 Exclusion criteria. Individuals were considered ineligible if they had:

- History of head injury
- A primary diagnosis of substance dependence, depressive disorder, or organic psychosis
- Insufficient English abilities or literacy level to complete the interview or questionnaires

These exclusion criteria were applied in order to minimise the effect of any other conditions or circumstances which may limit research participation or confound the findings of this research.

2.2.3 Sample size. To ensure that the planned analyses had adequate statistical power to make valid conclusions about the significance of any relationships between variables, sample size calculations were conducted using the computer programme G*Power 3.1.6 (Faul, Erdfelder, Buchner, & Lang, 2009). Previous studies examining the relationship between self-efficacy and negative symptoms using the SANS (e.g. Avery et al., 2009; Macdonald et al., 1998; Pratt et al., 2005) reported bivariate or partial correlations (within a multiple regression) between the two variables which indicate a medium effect size (of between r = -.32 and -.34 in all studies) of this relationship. Sample size calculations for bivariate correlations were conducted with a medium effect size (r = .30), statistical power of .80 and significance level of .05, and estimated the required sample size for these analyses is 64. Sample size calculations for linear multiple regression used a medium effect size (f^2 = .15), statistical power of .80 and significance level of .05, and estimated the required sample size for statistical analysis is 68. In mediation analysis using non-parametric bootstrapping (Shrout & Bolger, 2002) with two correlations of medium effect size, the required sample size is estimated by some to be 71 (Fritz & Mackinnon, 2007), while others suggest that a 20:1 ratio of subjects to parameters is adequate (Grant & Beck, 2009; Kline, 2005), indicating that as minimum sample of 60 is necessary in this study. This study therefore aimed to recruit a minimum of 68 participants.

2.2.4 Sample characteristics. A summary of demographic data for the sample are provided on Table 5.

Table 5

Demographic Data for the Sample (N = 51)

		n (%)	*M (SD)*	Range
Gender	Male	32 (62.7)		
	Female	19 (37.3)		
Age (in years)			26.92 (5.55)	18-40
Ethnicity	White	47 (92.2)		
	Mixed/Multiple ethnic groups	1 (2)		
	Asian/Asian British	1 (2)		
	Black/African/Caribbean/Black British	2 (3.9)		
Level of Education	None	2 (3.9)		
	GCSEs/O Levels	14 (27.5)		
	A Levels	6 (11.8)		
	NVQ/BTEC qualification	16 (31.4)		
	Degree	7 (13.7)		
	Other	6 (11.8)		
Current Work	None	32 (62.7)		
	Part-time	12 (23.5)		
	Full-time	7 (13.7)		
Region	Norfolk	27 (52.9)		
	Suffolk	11 (21.6)		
	South Essex	12 (23.5)		
	Bedfordshire	1 (2.0)		
Time with early intervention clinic (in months)			30.67 (20.21)	12-140
Time since most recent psychotic episode (in months)			10.13 (12.43)	0-42
Diagnosis	Schizophrenia	17 (33.3)		
	Unspecified non-organic psychosis	15 (29.4)		
	Acute psychotic episode	9 (17.6)		
	Bipolar disorder	3 (5.9)		
	Depression with psychotic features	2 (3.9)		
	Drug-induced psychotic disorder	2 (3.9)		
	Schizotypal disorder	1 (2.0)		
	Post-partum psychosis	1 (2.0)		
	No diagnosis	1 (2.0)		

Fifty-one participants were recruited for the current study, and ranged between 18 and 40 years of age (*M* = 26.92). Most of the participants (52.9%) were recruited from Norfolk, with 21.6% from Suffolk, 23.5% from South Essex, and 2% from Bedfordshire. A higher proportion of participants were male (62.7%), however this is similar to previous research which reported that 66.2% of individuals attending early intervention services in East Anglia were male (Kirkbride, Stubbins, & Jones, 2012), suggesting our sample is representative of the local area. The majority (92.2%) of participants reported their ethnicity as White, which is consistent with regional data for East Anglia indicating that 90.82% of the population in this part of England reports their ethnicity as white (Office for National Statistics, 2013). Most of the sample (84.3%) had completed education at GSCE level or equivalent, and 37.2% of the sample were currently working part- or full-time in voluntary or paid employment.

The mean length of time with the early intervention service with this sample was 30.67 months (*SD* = 20.21) and the mean length of time since the most recent psychotic episode was 10.13 months (*SD* = 12.43), which suggests that people recruited to the study did tend to be in the recovery stage of psychosis as was the aim. All but one participant had been given diagnoses, with the most common being schizophrenia (33.3%), unspecified non-organic psychosis (19.4%), and acute psychotic episode/disorder (17.6%). In addition to psychotic diagnoses, 17.65% of participants also reported other co-morbid diagnoses such as Asperger's Syndrome, personality disorders, anxiety disorders, depressive episodes or substance disorders. A small proportion of participants (15.69%) were no longer taking any medication. Most of the participants (70.59%) reported having previously had some psychological therapy, most commonly CBT.

2.3 Measures

Copies of all measures are included in Appendices A-H (unless copyright protected). Training for the interview-based measures was provided by researchers from the Norfolk early intervention service, where the measures described are regularly used. Interviews were audio recorded to allow for inter-rater agreement on the interview measures to be calculated, to ensure that the measures were used correctly and consistently.

2.3.1 Primary outcome variable measures.

2.3.1.1 The Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1984). The SANS is a semi-structured interview in which ratings are made on a six-point Likert scale ranging from 0 (symptom not present) to 5 (severe) for 25 negative symptom behaviours making up five subscales – affective flattening, alogia, avolition/apathy, anhedonia/asociality, and attentional impairment. The SANS is widely used and is the most comprehensive measure of negative symptoms and includes more questions addressing motivational deficits (Foussias & Remington, 2010), which is a particular interest of this research and therefore why this measure of negative symptoms was chosen. The measure takes approximately 40 minutes to complete, however many of the items are observational and can therefore be completed concurrently to other aspects of the clinical interview.

Later versions of the SANS have excluded the ‘inappropriate affect’ item (Andreasen, 1989) originally included on the ‘affective flattening’ subscale, and a number of recent studies using the SANS have chosen not to include the three items of the ‘attention’ subscale (e.g. Avery et al., 2009; Hill & Startup, 2013; Milev et al., 2005; Ventura et al., 2014), following factor analytical research which suggests that these items are more closely related to ‘cognitive dysfunction’ or ‘disorganisation’ factors

rather than negative symptoms (Foussias & Remington, 2010; Kirkpatrick et al., 2006). In view of these findings, the current research also excluded these items and used a 21-item version of the SANS. There are also a number of different ways to score the SANS (Fischer, Corcoran, & Barlow, 1994; van Erp et al., 2014), which can make direct comparison with other research challenging. The current study retained the original scoring method of generating a total score by summing all items including global rating items, and subscale scores by summing all items for that scale including the global rating item (Andreasen, 1984). The variable of negative symptoms was therefore operationalised by this total score, and the subscale scores were used to make comparisons between diminished expression (affective flattening, alogia) and diminished experience (avolition/apathy, anhedonia/asociality) factors.

Previous research reports subscale intra-class correlations on global ratings of alogia, avolition/apathy and anhedonia/asociality from .95 to .98 (Avery et al., 2009) indicating high inter-rater reliability. In the current study, intra-class correlations rated from audio recordings of 20% of participants were .88 for alogia, .98 for avolition/apathy, .99 for anhedonia/asociality and .99 for the overall rating; indicating 'excellent' inter-rater reliability (Cicchetti, 1994). Intra-class correlations were not calculated for the affective flattening global score as many of the items in this subscale require direct observation. Cronbach's alpha for the overall SANS rating was .88, and ratings for the subscales were .94, .60, .84 and .80 for affective flattening, alogia, avolition/apathy and anhedonia/asociality respectively. Internal consistency for all scales, with the exception of alogia, was above the conventional level of acceptability (generally .70 or greater is considered acceptable; Cicchetti, 1994).

2.3.1.2 The General Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995). Self-efficacy was operationalised by the total score from the GSES, which is a

ten-item self-report questionnaire assessing general perceived self-efficacy and taking approximately 3 minutes to complete. Individuals are asked to rate statements like 'I can always manage to solve difficult problems if I try hard enough' on a four-point scale from 1 (strongly disagree) to 4 (strongly agree), yielding a total score between 10 and 40. This scale was chosen for its brevity, which limits burden on participants, and also because it has been widely used (Scholz, Doña, Sud, & Schwarzer, 2002), including with individuals with psychosis (Kleim et al., 2008; Vauth et al., 2007) and is well-validated. Principal components analysis of the scale suggested that it is unidimensional in nature, and it has demonstrated good convergent and divergent validity when correlated with constructs such as optimism, coping, lack of accomplishment, and burnout (Scholz et al., 2002). Previous use with individuals with schizophrenia reported Cronbach's alpha of .90 (Kleim et al., 2008), and in this study Cronbach's alpha was calculated to be .82, indicating good internal consistency (Cortina, 1993) in this population.

2.3.1.3 The Brief Core Schema Scales (BCSS; Fowler et al., 2006). Self-schema variables were operationalised by using the negative-self and positive-self subscales within the BCSS. The BCSS is a 24-item self-report questionnaire which asks individuals to rate positive and negative beliefs about themselves and others, such as 'I am vulnerable' or 'others are accepting', on a five-point scale from 0 (I do not hold this belief) to 4 (I believe it totally). This is the only measure designed specifically to measure types of core schemas which may be problematic in psychosis, therefore was the most suitable schema measure to use in this research. There are four subscales – negative-self, positive-self, negative-other and positive-other, each composed of six items. Principal components analysis found support for this four factor structure (Fowler et al., 2006). Previous research found internal consistency for the subscales

ranged between α = .78 to .88, and good test-retest reliability was demonstrated, as was convergent and divergent validity when compared with schema and self-esteem measures (Fowler et al., 2006). In the current sample, Cronbach's alpha was .79 for the negative-self scale, .87 for the positive-self scale, .90 for the negative-other scale, and .95 for the positive-other scale, indicating good internal consistency for all subscales (Cortina, 1993). The scale takes approximately 5 minutes to complete.

2.3.1.4 The Time Use Survey (adapted from Short, 2006). The Time Use Survey was used to measure social functioning in the current study. The measure is a semi-structured interview which asks individuals to estimate how much time they spend each week in different activities, including employment, education, voluntary work, leisure activities and hobbies, socialising, chores or housework, child care, resting and sleep. Level of social functioning is represented by two summary scores of how many hours per week are typically spent in constructive economic activity (which includes hours spent in paid or voluntary work, in education, on childcare, and on housework or chores) and structured activity (all those included for constructive economic activity, plus hours spent on leisure and sporting activities), the latter of which was used for analyses in this research. This research uses the modified version from the Improving Social Recovery in Early Psychosis study (Fowler et al., 2009), which adapted the original measure to reduce demand on participants and make it more suitable for use with individuals with psychosis. This use and adaptation in previous research with a social recovery focus made this an ideal assessment of functioning for this study. The modified version has demonstrated good convergent validity with other measures of quality of life and functioning, but was also found to be independent of measures of other symptoms (Hodgekins & Fowler, 2010). The interview takes approximately 15 minutes to complete.

2.3.1.5 The Task Motivation Questionnaire (TMQ; adapted from MacCarthy et al., 1986). The TMQ assesses components of expectancy-value theory for everyday tasks, and was designed for use with individuals who have psychiatric difficulties leading to impaired general functioning, which made it appropriate for use in this study. For a list of ten tasks (e.g. cooking a meal, using public transport, managing a personal budget), respondents rate the importance of the task from 0 (not very important to me) to 3 (very important to me); the difficulty of the task from 0 (not very difficult for me) to 3 (very difficult for me); and how successful they believed their efforts were likely to be from 0 (very successful) to 3 (not successful at all). Additionally, participants were asked to estimate how frequently they carry out the activity (0 = never, 1 = rarely, 2 = approximately monthly, 3 = approximately weekly, and 4 = most days); an adaptation made by Bentall, et al. (2010) who found significant group differences in task frequency for individuals reporting high avolition compared to low avolition in psychosis. Bentall, et al. (2010) reported internal consistency for judgments of frequency, importance, difficulty and expectations of success in a sample of individuals with psychosis ranged from $\alpha = .64$ for importance to $\alpha = .88$ for success expectations. In the current sample, Cronbach's alpha was .70 for ratings of importance, .85 for ratings of expected difficulty, and .74 for ratings of expected success, which are all within the acceptable range (Cortina, 1993). For the current study, ratings of how important the task was to the individual were used as a measure of subjective task value for everyday tasks. This questionnaire takes approximately 10 minutes to complete.

2.3.2 Covariates/control variable measures.

2.3.2.1 The Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987). The PANSS is a 30-item semi-structured interview assessing psychotic symptoms on a seven-point scale from 1 (absent) to 7 (extreme). The positive scale was used in this

study to operationalise positive symptoms, so that the impact of these on the main outcome variables could be controlled for. The seven positive scale items include delusions, conceptual disorganisation, hallucinatory behaviour, excitement, grandiosity, suspiciousness/persecution and hostility. The scale is widely used, and has good internal consistency (α = .73; Kay et al., 1987) and inter-rater reliability (r = .83; Kay et al., 1988). Within this study, intra-class correlations of .98 were obtained with a 20% sub-sample of participants, indicating excellent inter-rater reliability (Cicchetti, 1994); and Cronbach's alpha for the positive scale was .72, indicating good internal consistency (Cortina, 1993). This scale takes approximately 40 minutes to complete, however in practice it was generally less than this within the current study, owing to considerable item overlap with the SANS.

2.3.2.2 The Depression Anxiety Stress Scale (DASS; P. F. Lovibond & S. H. Lovibond, 1995). The depression and anxiety subscales of the DASS self-report questionnaire were used in this study. It was important to control for the effects of anxiety and depression on the main outcome variables, as these difficulties can also have a significant impact upon social functioning. The depression and anxiety subscales of the DASS are each made up of 14 statements such as 'I felt that I had nothing to look forward to' and 'I felt I was close to panic', which are rated on a four-point scale from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). The subscales show good convergent validity with other depression and anxiety measures, and have been found to possess good internal consistency (α = .91 for depression and α = .81 for anxiety; P. F. Lovibond & S. H. Lovibond, 1995). In the current sample, the Cronbach's alpha obtained was .96 for the depression subscale and .94 for the anxiety subscale, indicating high internal consistency (Cortina, 1993). The

questionnaire has also previously been used with individuals with psychosis (Fowler et al., 2006).

2.3.2.3 Cognitive functioning. Two tests were selected as measures of cognitive functioning, to enable the influence of this on outcome variables to be controlled for. The Controlled Oral Word Association Test (COWAT; Benton, Hamsher, & Sivan, 1994) is a test of verbal fluency. Verbal fluency tests have been found to measure processing speed (Nuechterlein et al., 2008) and executive function (Velligan et al., 2004) in people with psychosis. In the COWAT, the participant is required to name as many words as they can starting with a specified letter (the letters F, A and S) within 60 seconds each. The COWAT has been found to possess good internal consistency ($\alpha = .83$) and test-retest reliability ($r > .70$), and has previously been used with individuals with psychosis (E. Strauss, Sherman, & Spreen, 2006). Cronbach's alpha was .86 in the current sample, indicating high internal consistency (Cortina, 1993). There is some evidence to suggest that people with psychosis show deficits in verbal fluency (Crawford, Obonsawin, & Bremner, 1993; Kolb & Whishaw, 1983), therefore this is an important area of cognitive functioning to control for in this research.

Digit Span is a working memory task from the Wechsler Memory Scale, 3rd Edition (Wechsler, 1997), wherein the participant listens to sequences of numbers of increasing lengths, and repeats them back to the examiner either as originally stated or in reverse order. As with verbal fluency, deficits in working memory in individuals with psychosis are well documented (Lee & Park, 2005), so it is important to control for the influence of working memory difficulties on outcome variables. The Wechsler tests are widely used and possess good psychometric properties across a range of clinical groups (Lezak, Howieson, & Loring, 2004; E. Strauss et al., 2006).

2.3.3 Demographic information. Individuals were asked to report their age, gender, ethnicity, educational attainment and employment status. Participants were also asked how long they have been attending their current service, what their diagnosis is (if they have one), how much time has passed since their most recent psychotic episode, what their current medication and dosage is, and whether they have previously received psychological therapy.

Service use and treatment information was corroborated through checking patient notes. These data were collected to examine relationships with outcome variables, and to ensure that there were no systematic differences as a function of any demographic characteristics.

2.4 Procedure

2.4.1 Clinic participation. Team leaders from early intervention services in East Anglia were initially contacted by telephone or email in early 2013 to inform them of the research. Where team leaders agreed to participate, arrangements were made for the study to be introduced to the rest of the clinical team, typically by delivering a presentation to participating teams at a regular team meeting, which occurred between July 2013 and March 2014. At these meetings leaflets outlining the study and the inclusion and exclusion criteria were given to team members, as well as copies of the participant information sheets (see Appendices I and J). Participating clinics were asked to identify eligible individuals for the study, and for care coordinators or other appropriate clinicians to pass on the information sheet during their next routine clinical visit. The clinicians gained verbal consent (which they recorded on file) for a researcher to phone and explain the study further. Only once this consent to contact was gained did any initial contact take place with potential participants.

2.4.2 Contact with individuals. Once they had consented to be contacted, the researcher then contacted potential participants by phone or in a joint visit with their care coordinator. This contact occurred at least four days after receiving the information sheet (but usually within a week) to give the individual time to read the information sheet they had been given. Potential participants also had the option of contacting the researchers themselves using the phone number or email address supplied on the information sheet.

During the initial contact, the research was explained in more detail and the potential participant was given the opportunity to ask questions. If they were then interested in participating, an appointment time and place was arranged and a letter confirming this was posted to them. Sessions were arranged to take place either at the clinic where the individual usually attends, or at another convenient location such as their home. These appointments occurred between September 2013 and May 2014.

Across all recruitment bases, 163 individuals were identified by care coordinators as potentially suitable for the study. Of these, 92 were approached by their care coordinator about the study, 63 agreed to be contacted by the researcher, and 51 took part in the study; suggesting we were able to recruit approximately 31% of all individuals who were initially considered as potential participants for the research. A flow chart describing recruitment numbers and reasons for exclusion at various stages is presented in Figure 4.

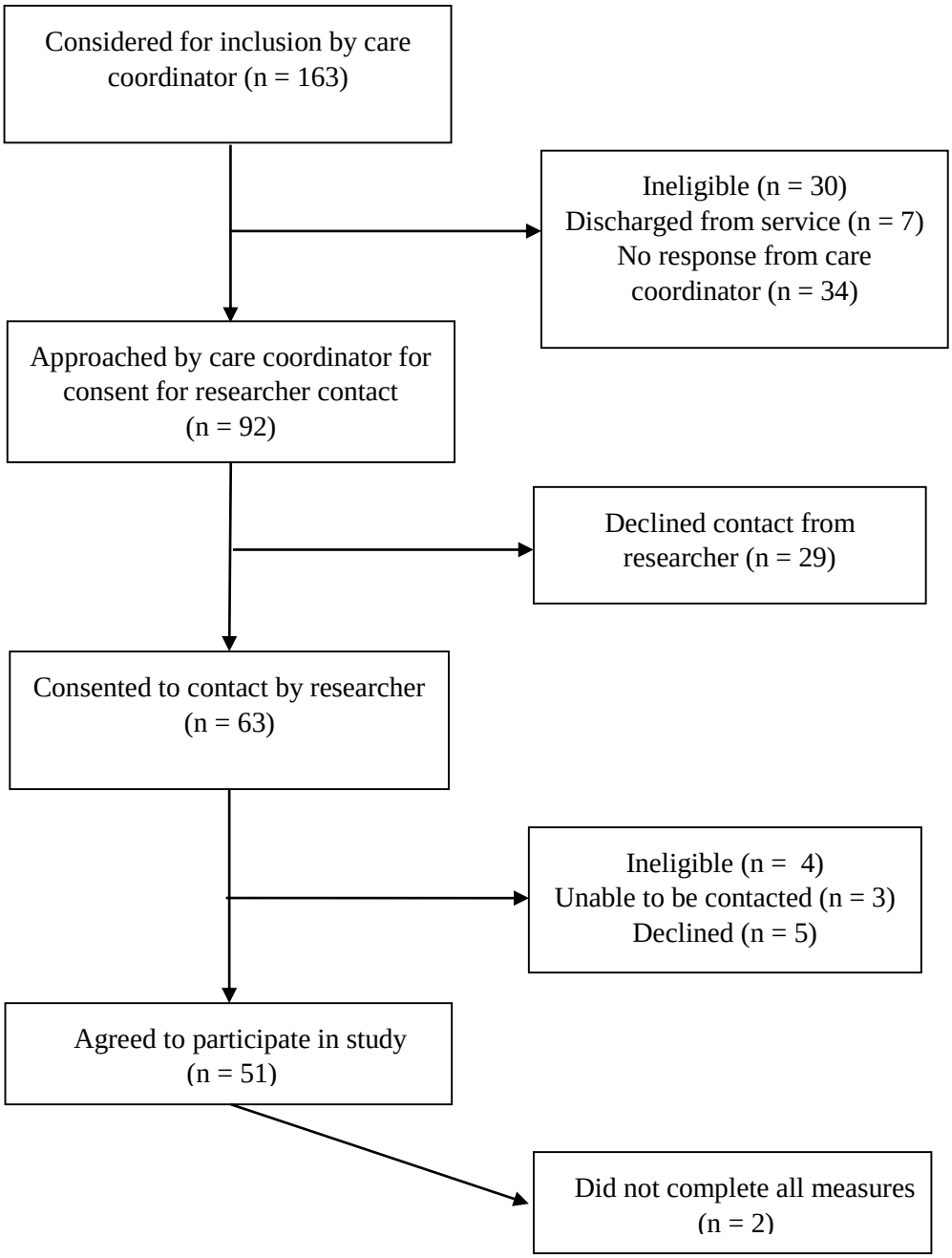

Figure 4. Flow chart of participant inclusion and exclusion.

2.4.3 Research session procedure. At the beginning of the appointment, the information sheet was reviewed and the participant once again had the opportunity to ask questions. If they were then happy to proceed, consent forms were signed (see Appendix K) and data collection commenced. The demographic questionnaire was

administered first, followed by the tests of cognitive functioning (to avoid any potential effects of fatigue). This was followed by the interview-based measures (the SANS, PANSS and Time Use Survey), and lastly the self-report questionnaires (the GSES, DASS, BCSS and TMQ). This was usually completed within one session lasting approximately 90 minutes to two hours, though participants were given the option of completing the measures over two shorter sessions if preferred.

Recruitment and data collection for this research was shared with another trainee clinical psychologist conducting research in the same population (see Appendix L for further information). A small number of early appointments were undertaken jointly with both researchers, to enable checks that the assessments were being carried out consistently and accurately. Appointments were also audio-recorded with the permission of the participant, to allow the calculation of inter-rater reliability statistics for the interview measures. Following the interview, patient notes were reviewed for confirmation of the individual's diagnosis (if applicable) and for medication and dosage information. This took place at the clinic that the individual usually attended.

2.5 Ethical Considerations

2.5.1 Ethical approval. Prior to recruitment of participants, ethical approval was obtained from the East of England-Norfolk Research Ethics Committee, the Norfolk and Suffolk NHS Foundation Trust Research and Development department, and the South Essex Partnership University NHS Foundation Trust (see Appendices M to O).

2.5.2 Consent. Potential participants were approached in the first instance via their care coordinator and given a brief description of the study. Direct contact with these individuals from the researchers only occurred once they had consented to the contact, and had been in possession of an information sheet for at least four days, to

give them time to read and consider the information independently. Study information was reviewed with the researcher, both over the telephone and in person on the day of the appointment. The potential participant was given the opportunity to ask questions on all of these occasions. This process was to help ensure that the information was given multiple times (both verbally and in writing), that questions could be asked and answered to the satisfaction of the participant, and that ample time was given to consider the information before consent was requested.

Informed consent was gained in writing from all participants at the beginning of the research session, before data collection commenced. Written consent included consent for the researcher to examine medical notes to gain information regarding diagnoses and medication, and consent to audio-record the interview. Participants were made aware at all stages of the process that consent was voluntary and that they were free to withdraw at any time if they changed their mind; and that their decision would not affect their medical care at all. Inclusion criteria for the study (that the individual was in the recovery phase of their illness) helped to ensure that individuals had the capacity to make decisions regarding consent at the time of the study. The participant's care coordinator initially made this judgement at the point of referring an individual to the study, and the researcher also considered any potential capacity concerns when meeting the participants. If there was any doubt over whether an individual had capacity to make the decision to be in the study, the individual would not be invited to participate, however this was not an issue of concern for any participants within the current study.

2.5.3 Confidentiality. Once consent was gained, participants were assigned an identification number, which was used in place of names on all response sheets to record data anonymously. Names and identification numbers were stored in a separate,

password-protected database which only the researchers had access to. It was necessary to keep some record of matched names and identification numbers should any information need to be passed on to the clinic. All electronic data were stored in an encrypted database and on an encrypted USB memory stick. All questionnaire booklets were stored in a locked drawer at the University of East Anglia during the study. No personally identifying information was included in the SPSS databases used for statistical analysis. Only the researchers and their supervisors had access to participants' personal data during the study.

It was possible that data obtained from the study could helpfully inform clinical care, and participants were therefore asked if they agreed to the researcher sharing the data with their care team for this purpose. This information was only disclosed with the participants' consent. The exception to this was if any issues of risk (of harm either to the participant or someone else) were disclosed during the study. It was made clear on the information sheets and the consent forms that if any risk issues arose, the researcher would have a duty of care to pass this on to the participant's care coordinator; however no imminent risk issues were disclosed within any of the research interviews in this study.

2.5.4 Potential risks and benefits for participants and researcher. There were no perceived risks for participants taking part in this study. All measures had been previously used in similar populations, and some were used as part of standard clinical care in clinics. In the event that a participant became distressed during the research interview, the protocol was to stop assessment and provide the individual with time to talk through their distress, as well as assist them to seek support from their care coordinator. All participants were also reminded at the end of the session that they could seek their care coordinator's support if for any reason they become distressed

following the session. However within the current study, none of the interviews were discontinued due to participant distress.

The potential benefits for participants included that the study information could be used (with the participants' consent) to helpfully inform the work that the clinical team was involved in with the participant. Participants were asked if they wished to be informed of the general findings of the study, and if so were sent a leaflet summarising the study findings following completion of the study. Participants were also entered into a prize draw for a £50 shopping voucher as a token of thanks for their participation.

A potential risk to the researchers associated with visiting participant's homes alone was identified. To manage this, the researchers worked within the Norfolk and Suffolk NHS Foundation Trust Lone Working Policy, and implemented a 'buddy system' with one another to ensure personal safety.

2.6 Plan for Data Analysis

Analyses of data were conducted using the Statistics Package for Social Sciences (SPSS) Version 21. Descriptive statistics were conducted on all outcome variables to determine whether parametric assumptions were met and what tests could be used. Planned statistical procedures are described below.

2.6.1 Hypothesis one. To examine whether higher severity of negative symptoms were associated with lower self-efficacy, lower subjective task value, lower ratings of positive self-schemas and higher negative self-schemas, bivariate Pearson correlations were conducted between negative symptoms and each of the other variables. These were also examined via hierarchical multiple regressions with the covariates (positive symptoms, depression, anxiety and cognitive functioning) added first to control for the effects of potential confounds. Given that there is no non-parametric equivalent of multiple regression, non-normally distributed data were

managed for the bivariate correlations using transformations where applicable, to maintain consistency between the bivariate and multivariate analyses (multiple regression requires only normally distributed residuals, not overall sample data).

2.6.2 Hypothesis two. To investigate the relative strengths of the associations between self-efficacy, lower subjective task value, lower ratings of positive self-schemas and higher ratings of negative schemas with different categories of negative symptoms, bivariate Pearson correlations were carried out with each of these four variables and each of the four subscales of the SANS (avolition, anhedonia, affective flattening, and alogia). These relationships were also examined in hierarchical multiple regressions with covariates added first as above to control for the effects of potential confounds. Once again, non-normal data will be managed using transformations where applicable.

2.6.3 Hypothesis three. The hypothesis that negative symptoms (as measured by the total score on the SANS) will mediate the relationship between cognitive variables thought to be related to motivation (lower self-efficacy, lower subjective task value; lower positive self-schemas, and higher negative self-schemas) and social functioning. In this study, the relationship of each of the variables (self-efficacy, self-schemas, and task value) to negative symptoms and social functioning were examined individually. Mediation models propose that the relationship of a predictor (in this case, the cognitive appraisals) with an outcome variable (social functioning) is accounted for at least partially by the presence of a third variable, the mediator (negative symptoms). Mediation is said to have occurred if the indirect effect (the relationship of the predictor with the outcome variable through the effect on the mediating variable) is statistically significant.

Until recently tests such as the Sobel test were typically used to determine the significance of the indirect effect (Baron & Kenny, 1986). A disadvantage of such tests is that they assume that the sampling distribution of the indirect effect is normal, which it often is not (Hayes, 2013). Consequently these significance tests are very conservative and require large sample sizes to achieve adequate power (Fritz & Mackinnon, 2007; Shrout & Bolger, 2002). An alternative method to test the indirect effect is through using bootstrapping. Bootstrapping is a resampling method which is non-parametric (therefore not reliant on normal distributions), in which observations are repeatedly resampled (with replacement) from the data, typically thousands of times, to create an empirically derived sampling distribution (Field, 2009; Hayes, 2013). From this bootstrap-estimated sampling distribution of the indirect effect, confidence intervals are computed which are used to determine if the indirect effect is different from zero and therefore significant (Shrout & Bolger, 2002). Confidence intervals generated using bias-corrected bootstrapping (which corrects for skew in the population) were used for this analysis, as this is thought to be the most statistically powerful method and is therefore most appropriate for use with smaller sample sizes (Fritz & Mackinnon, 2007).

3. Results

3.1 Overview of the Results Section

This section outlines the results of all statistical analyses which were conducted on the data collected from research participants. It begins with describing procedures for data screening and testing of statistical assumptions which occurred prior to planned data analyses, and the strategies for managing problems such as missing data, outliers and assumption breaches. Following this, descriptive data are presented for each of the main variables of interest in this research as well as control variables. This section considers differences within the population due to demographic variables, as well as differences between the current sample and previous research samples or norms. The next section is concerned with testing the research hypotheses. Each hypothesis is considered in turn and the procedures used to test each hypothesis along with the outcomes are described. Finally, all of the findings are summarised.

3.2 Preliminary Data Screening and Assumption Testing

Prior to analysis, all data were screened for missing data and accuracy of data entry. The main variables of interest to the study (negative symptoms, self-efficacy, subjective task value, self-schemas, social functioning), the control variables (positive symptoms, depression, anxiety, cognitive functioning) and some relevant demographic variables (e.g. length of time with the early intervention service, length of time since most recent episode) were also screened for outliers and to determine whether statistical assumptions were met.

3.2.1 Missing data. Every attempt was made to control for missing data at data collection, by asking all interview questions, reminding participants to complete all questionnaire items and checking this during the interview where possible. In a small number of cases (3.9%), data were missing for one or two items on the DASS, TMQ

and SANS. If data were missing at random and the amount of missing data was less than 5%, the missing item was imputed by mean substitution (Tabachnick & Fidell, 2007). Two participants (3.9%) did not complete all of the study measures. These cases were retained, and were excluded pair-wise from applicable analyses.

3.2.2 Outliers. Histograms and boxplots were examined for outliers prior to analysis. One or two univariate outliers were identified on most variables. The data were also examined for bivariate outliers on pair combinations of the main variables of interest (negative symptoms, self-efficacy, self-schema, task value and social functioning), and several were identified. Outliers are sometimes due to a participant not being from the population of interest, or may indicate diversity in the population of interest. In most cases, the latter explanation was thought most likely and it was deemed preferable to retain these cases. Analyses were therefore run with and without these outlier cases, and as removal of the outliers did not alter the results these cases were retained. When conducting multiple regression analyses, casewise diagnostics were examined, and where influential cases were identified (cases with standardised residuals of greater than 2) analyses were run again without these cases, however in all cases this did not significantly alter the outcome. Cook's Distance statistics were also examined to ensure no case was exerting undue influence on the outcomes, however no values were greater than one which suggest no significant cause for concern (Field, 2009). All of these cases were therefore retained in analyses.

Despite recruitment screening processes, a small number of individuals (5.8%) who did not meet all inclusion criteria participated in the study. This included one person whose length of illness was more than 10 years (and therefore more representative of chronic illness rather than early intervention), and two individuals with a primary diagnosis of a depressive disorder. In addition, one individual was a

significant outlier on the PANSS with an unusually high level of positive symptoms compared to other participants, which suggested they may not have met the inclusion criterion of no significant positive symptoms currently. The decision was made to remove the data for the participant likely representing chronic illness, as this individual appeared not representative of an early intervention population. Data from the other participants was retained as they had met criteria for early intervention services, had been considered suitable for the study by their care coordinators, and were most likely representative of the diverse range of presentations seen in first-episode psychosis.

3.2.3 Assumption testing. Z-scores were calculated from the skewness and kurtosis statistics reported using the SPSS Descriptives function. These indicated that several variables (positive symptoms, affective flattening, alogia, social functioning, negative self-schema, depression and anxiety) were significantly positively skewed at $p = .05$, meaning that more scores were clustered around the lower ends of all of these scales. Two variables (negative self-schema and social functioning) were also significantly leptokurtic at $p = .05$. These z-scores indicated a breach of the normality assumption for these variables, which is necessary for *t*-tests and Pearson correlations. The removal of outliers did not rectify the skewness or kurtosis of these variables, therefore square root data transformations were applied to the problematic variables, which corrected the skewness in all cases and adequately reduced the influence of the outliers (please see Appendix P for skewness and kurtosis values before and after transformation). Although use of untransformed variables did not alter the statistical significance of any analyses, it did alter the strength of the relationships found; therefore transformed variables were used for all hypothesis testing analyses and in the correlation matrix presented in Table 7, though not for descriptive statistics presented in Table 6 and in the text. Levene's test for homogeneity of variance was conducted for *t*-

tests and was non-significant in almost all cases, except where it is noted below that the *t*-statistic reported is for 'equal variances not assumed'. All of the t-tests reported are two-tailed.

For multiple regression analyses, scatterplots of predicted z scores and residual z scores were examined for even spread to ensure that the assumptions of linearity and homoscedasticity were met, and no problems were identified in any analyses. Durbin-Watson statistics were examined to ensure independence of errors, and in all cases the outcomes were close to two, suggesting no breaches of this assumption (Field, 2009). Histograms of the standardised residuals were examined to ensure normally distributed errors, and again no breaches of this assumption were identified in any analyses. Finally, inter-correlations of variables were examined to ensure no multicollinearity. No two variables correlated more than .80, and tolerance and VIF values examined in multiple regressions were all within acceptable ranges as proposed by Field (2009), so there did not appear to be any issues of concern regarding multicollinearity.

3.3 Descriptive Data for Study Variables

3.3.1 Primary outcome variables.

Descriptive statistics for the primary outcome variables and control variables within the study are presented in Table 6. Correlations between all study variables are shown in Table 7.

Table 6

Descriptive Data for Study Variables

	N	*M*	*SD*	Range	Skewness	Kurtosis
Negative Symptoms – Total	49	24.31	13.84	2-53	0.21	-1.06
Affective Flattening	49	6.69	6.88	0-26	0.96	0.10
Alogia	49	2.08	2.47	0-8	0.89	-0.68
Avolition/Apathy	49	7.96	4.79	0-16	-0.29	-1.03
Anhedonia/Asociality	49	7.57	5.16	0-18	0.12	-1.17
General Self-Efficacy	49	26.18	4.37	17-39	0.13	0.48
Negative Self Schema	48	5.44	5.20	0-22	1.29	1.76
Positive Self Schema	48	7.96	6.16	0-24	0.61	-0.35
Subjective Task Value	48	1.74	0.49	0.6-3	0.54	0.63
Social Functioning (Structured Activity)	50	39.60	33.32	3.5-144	1.32	1.61
Positive Symptoms	49	11.45	3.82	7-22	0.91	0.13
Depression Symptoms	49	14.67	11.77	0-42	0.71	-0.23
Anxiety Symptoms	49	11.82	11.35	0-38	0.84	-0.47
Verbal Fluency	49	27.49	10.34	6-53	0.45	0.13
Digit Span	49	8.63	2.29	4-14	0.33	0.11

Table 7

Correlations Between Study Variables (Excluding Negative Subscales)

	Negative Symptoms	Self-Efficacy	Negative Self-Schema	Positive Self-Schema	Subjective Task Value	Social Functioning	Positive Symptoms	Depression Symptoms	Anxiety Symptoms	Verbal Fluency	Digit Span
Negative Symptoms (Total)	-										
General Self-Efficacy	-.285*	-									
Negative Self-Schema	.491**	-.428**	-								
Positive Self-Schema	-.320*	.603**	-.484**	-							
Subjective Task Value	-.307*	.096	-.228	.368*	-						
Social Functioning (Structured Activity)	-.445**	.018	-.121	.036	.307*	-					
Positive Symptoms	.232	.047	.156	.095	.053	-.246	-				
Depression Symptoms	.610**	-.473**	.728**	-.444**	-.208	-.223	.247	-			
Anxiety Symptoms	.319*	-.416**	.579**	-.343*	-.029	-.023	.213	.774**	-		
Verbal Fluency	-.050	-.011	-.003	.013	.000	-.192	.167	-.135	.067	-	
Digit Span	.002	-.057	-.059	.026	-.049	-.261	.276	-.110	-.082	.380**	-

Note. Missing cases excluded pairwise; n = 49 except for correlations involving self-schemas and task value (n = 48).
* significant at p = .05. ** significant at p = .01.

3.3.1.1 Negative symptoms of psychosis. Within this sample, 86% of participants reported at least one negative symptom which was scored as moderate (3) or higher on the SANS, with 40% of the sample reporting three or more symptoms scoring within this range. Average overall levels of negative symptoms (as defined by the SANS total score) in this sample were in the mild to moderate range (Levine & Leucht, 2013). The average level of negative symptoms of (M = 24.31, SD = 13.84) was not significantly different from the mean of 24.65 reported by a Canadian study of individuals with first-episode psychosis (affective and non-affective) 12 months after first attending a specialist early intervention service (Hovington, Bodnar, Joober, Malla, & Lepage, 2012), $t(48) = 0.174$, $p = .863$, $d = 0.02$. This suggests the current sample is fairly typical of individuals receiving early intervention in psychosis. There were no differences in overall level of negative symptoms as a function of gender, age, or length of time with the early intervention service, however for the avolition subscale the average score in this sample for males (M = 9.00, SD = 4.51) was found to be significantly higher than that of females (M = 6.32, SD = 4.84), $t(47) = 1.97$, $p < .05$, $d = 0.57$.

Lyne and colleagues (2012) also found that although negative symptoms were present to a degree in all psychotic diagnoses in first-episode psychosis, they tended to be most prevalent in schizophrenia spectrum diagnoses. Although small sample sizes in some diagnostic categories meant that comparisons based on diagnosis could not be made, comparisons between schizophrenia spectrum disorders (comprising schizophrenia and schizotypal disorder diagnoses in this population) and other psychotic disorders (all other diagnoses) were examined. All of the individuals with schizophrenia spectrum diagnoses and 78.2% of individuals with other psychotic diagnoses had at least one negative symptom scored at 3 (moderate) or above.

Individuals with schizophrenia spectrum diagnoses reported a higher number of negative symptoms scoring moderate or higher on the SANS (M = 4.94, SD = 2.61) than those with other diagnoses (M = 3.66, SD = 3.59), however this difference was not statistically significant; $t(47) = 1.33$, $p = .189$, $d = 0.41$. In comparing scores on the SANS for overall negative symptoms and subscales, no significant differences were found between schizophrenia spectrum and other diagnoses within this sample, with one exception – individuals with a schizophrenia spectrum diagnosis scored significantly higher on the avolition subscale (M = 10.00, SD = 3.97) than individuals with other psychotic diagnoses (M = 6.88, SD = 4.87); $t(47) = 2.27$, $p < .05$, $d = 0.70$.

3.3.1.2 Self-efficacy. The mean self-efficacy score in this sample was 26.18 (SD = 4.37). This is significantly lower than the mean of 29.3 reported previously with English-language general population samples (Schwarzer, Mueller, & Greenglass, 1999), $t(48) = 5.00$, $p < .001$, $d = 0.71$; indicating that self-efficacy within the study sample was lower than within the general population. The study mean did not significantly differ to the mean of 26.3 reported in a German study examining self-efficacy in outpatients with schizophrenia (Vauth et al., 2007), $t(48) = 0.186$, $p = .853$, $d = 0.03$, suggesting that the level of self-efficacy within the study sample was similar to that found in individuals with chronic psychosis. In the current sample, mean self-efficacy for males (M = 27.33, SD = 3.95) was significantly higher than females (M = 24.37, SD = 4.48), $t(47) = 2.43$, $p < .05$, $d = 0.70$, which is also consistent with previous findings (Schwarzer, 1999). Self-efficacy did not vary significantly as a function of age or length of time in early intervention.

3.3.1.3 Self-schema. Compared with a previous early intervention sample (Hodgekins & Fowler, 2010) which reported means of 6.1 and 8.8 for negative self- and positive self-schemas respectively, individuals in the current sample expressed similar

levels of negative beliefs about themselves, $t(47) = 0.88$, $p = .382$, $d = 0.01$, and positive beliefs about themselves, $t(47) = 0.95$, $p = .349$, $d = 0.14$. These results suggest the reported self-schemas in this sample are fairly typical of individuals receiving early intervention in psychosis. Compared with the general population sample data reported by Fowler and colleagues (2006) which reported means of 3.5 and 10.2 for negative self- and positive self-schemas respectively, the current sample expressed significantly higher negative beliefs about themselves, ($t(47) = 2.58$, $p < .05$, $d = 0.44$), and lower positive beliefs about themselves, ($t(47) = 2.52$, $p < .05$, $d = 0.36$), which demonstrate that there are some differences in self-schemas in individuals with psychosis compared with the general population. There was no significant relationship in the current sample between any of the subscales and either gender or the length of time with the early intervention service. Negative self-schema was found to be inversely related to age, $r = -.31$, $p < .05$; indicating that within the study sample younger people endorsed stronger beliefs in negative statements about themselves, however this relationship became non-significant when an outlier was removed.

3.3.1.4 Subjective task value. Ratings for task importance on the Task Motivation Questionnaire in the current sample ($M = 1.74$, $SD = 0.49$) were significantly lower than the mean of 2.16 reported in previous research with a sample of individuals with psychosis (Bentall et al., 2010), $t(47) = 6.02$, $p < .001$, $d = 0.86$. The mean age of this comparison group was much older than the current sample, and it is possible younger individuals might not find tasks such as managing a household budget, going shopping and doing household chores as important as more middle-aged individuals. No data on the use of this measure in early intervention samples have been previously published for more accurate comparison. In the current study, no significant

differences in task value were found as a function of gender, age, or length of time with the early intervention service.

3.3.1.5 Social functioning. Individuals in the current study reported spending an average of 39.60 (*SD* = 33.32) hours in structured activity per week. This was a significantly higher number of hours in activity than that reported in a previous sample of individuals in recovery from psychosis (Hodgekins & Fowler, 2010), who spent an average of 29.15 hours per week in structured activity, $t(49) = 2.22$, $p < .05$, $d = 0.31$. However, this difference became non-significant following the removal of two outliers, who were both individuals reporting a very high number of hours per week in activity due to childcare responsibilities.

Previous research has reported that a cut-off score of 45 hours per week in structured activity discriminates between individuals in clinical and non-clinical samples, with scores of more than 30 and less than 45 hours indicating people at risk of social disability, scores of more than 15 and up to 30 hours indicating social disability, and scores 15 or less hours indicating severe social disability (Hodgekins, 2012). According to these cut-offs, 28% of the current sample scored within the category of severe social disability, 24% were in the social disability category, 8% were at risk of social disability, and 40% were categorised as having no social disability. There are more than twice as many individuals within the current sample categorised as having no social disability than in the large clinical sample reported on by Hodgekins (2012) which implies the current sample may be functioning somewhat better than previous early psychosis samples, however the majority of the current sample (60%) still scored within the clinical range indicating social disability.

There was no significant relationship between hours in activity and either age or duration of time with early intervention team in this sample, however on average

females reported a significantly higher number of hours in structured activity (M = 58.74, SD = 39.92) than males (M = 27.87, SD = 21.98), $t(24.8) = 3.10$, $p = .01$, $d = 0.96$ (equal variances not assumed), a difference which remained even with outliers removed.

3.3.2 Covariates/control variables.

3.3.2.1 Positive symptoms. In the current study, individuals scored an average of 11.45 (SD = 3.82) on the positive scale of the PANSS, which is similar to the mean of 11.53 reported for a sample of individuals with first-episode psychosis after being with their early intervention service for 12 months, $t(48) = 0.15$, $p = .883$, $d = 0.02$ (Addington, Leriger, & Addington, 2003), suggesting this sample is fairly typical of individuals at this stage of their psychosis. This mean score suggested that participants had minimal to mild levels of positive symptoms (Kay et al., 1987), which had been a recruitment aim; however just under a third of the sample (n = 15, 30%) reported one or more symptoms rated either moderate (4) or moderate severe (5). Male participants on average scored higher on the positive symptoms (M = 12.63, SD = 4.17) than females (M = 9.58, SD = 2.19), $t(45.8) = 3.34$, $p < .01$, $d = 0.92$ (equal variances not assumed), but there were no significant differences as a function of age or duration with the early intervention service. Individuals with schizophrenia spectrum diagnoses reported more positive symptoms on average (M = 13.88, SD = 4.70) than those with other psychotic disorders (M = 10.16, SD = 2.49), $t(20.9) = 3.05$, $p < .01$, $d = 0.99$ (equal variances not assumed).

3.3.2.2 Depression and anxiety. Mean scores on the depression subscale of the DASS (M = 14.67, SD = 11.77) were significantly higher than the mean of 10.65 reported for clinical populations in the normative data (Brown, Chorpita, Korotitsch, & Barlow, 1997; S. H. Lovibond & P. F. Lovibond, 1995), $t(48) = 2.39$, $p < .05$, $d = 0.34$; a difference which remained significant even after removal of an outlier on the

depression scale. Mean scores on the anxiety subscale of the DASS (*M* = 11.82, *SD* = 11.35) were not significantly different from the mean of 10.90 reported for clinical populations in the normative data (Brown et al., 1997; S. H. Lovibond & P. F. Lovibond, 1995), $t(48) = 0.57$, $p = .575$, $d = 0.08$. Unfortunately there are no published data for mean scores on the DASS in early intervention in psychosis samples, however previously published data for a sample of people with schizophrenia reported a mean of 16.12 (*SD* = 12.11) for the depression subscale and 14.45 (*SD* = 11.09) for the anxiety subscale of the DASS (Huppert, Smith, & Apfeldorf, 2002). The current sample did not significantly differ from these means on either depression, $t(48) = 0.86$, $p = .393$, $d = 0.12$; or anxiety, $t(48) = 1.62$, $p = .111$, $d = -0.22$; suggesting this sample was similar to individuals with schizophrenia (although no illness duration was reported for this comparison sample, they were reported as chronically ill).

Percentages of the sample within each of the severity ratings published in the DASS manual (which are based on the normative sample) are presented in Table 8. This suggests that just under half of the sample were in the normal to mild range for depression and just over half in this range for anxiety; about a third were experiencing moderate depression symptoms and about 10% experienced moderate anxiety; and about a quarter of participants were experiencing severe to extremely severe symptoms of depression and a third were experiencing severe to extremely severe anxiety.

Table 8

Sample Percentages for DASS Severity Ratings (n = 50)

Severity rating	Percentile	Depression subscale (%)	Anxiety Subscale (%)
Normal	0-78	36	44
Mild	78-87	8	10
Moderate	87-95	30	10
Severe	95-98	8	12
Extremely Severe	98-100	16	22
(missing)		2	2

Previous research has suggested that approximately 61% of individuals developed depressive symptoms of moderate severity or above (as determined by the Beck Depression Inventory) within the 12 months after hospital discharge following a first episode of psychosis (Birchwood et al., 2000). Given that the BDI and the DASS are highly correlated (S. H. Lovibond & P. F. Lovibond, 1995), and that 54% within this sample reported depression symptoms of moderate severity or above, our sample appears to be relatively typical or maybe a little lower in terms of depression symptoms (although the current sample had been unwell for longer than that of Birchwood et al., 2000). There were no systematic differences in depression or anxiety symptoms in this sample as a function of gender, age, or duration of time with the early intervention team.

3.3.2.3 Verbal fluency. In the current sample, the mean score on total verbal fluency was 27.49 (SD = 10.34). Males (M = 29.47, SD = 10.25) on average scored higher than females (M = 24.37, SD = 9.94), although this difference was not statistically significant, $t(47) = 1.72$, $p = .093$, $d = 0.19$. Published norms for the COWAT are given separately for males and females (E. Strauss et al., 2006), and in the this sample females ($t(18) = 4.72$, $p < .001$, $d = 1.04$) performed significantly less well

compared with the general population normative mean of 35.14; while the difference from the normative mean for males of 33.28 was very close to statistical significance, $t(29) = 2.04$, $p = .051$, $d = 0.37$. This is consistent with previous research which suggests that verbal fluency may be impaired in individuals with psychosis (Crawford et al., 1993; Kolb & Whishaw, 1983). There was no significant relationship found between verbal fluency and either age or length of time with the early intervention service.

3.3.2.4 Digit span. Average scaled scores on digit span within the current sample ($M = 8.63$, $SD = 2.29$) were significantly lower than the normative scaled mean of 10 (Wechsler, 1997), $t(48) = 4.18$, $p < .001$, $d = 0.60$; indicating that working memory within this sample of people was lower than within the general population. This is also consistent with previous research involving people with psychosis (Lee & Park, 2005), indicating that this difference is not especially unusual. There were no significant differences on digit span between genders, and once again no significant relationship was found between digit span and either age or length of time with the early intervention service.

3.4 Hypothesis Testing

3.4.1 Hypothesis one. Bivariate Pearson correlations (with transformed variables where applicable) were used to examine the first hypothesis, that higher levels of negative symptoms are associated with lower levels of self-efficacy, subjective task value, and positive self-schemas, and higher levels of negative self-schemas. These correlations were displayed in Table 7. As predicted, significant inverse correlations were found between negative symptoms and self-efficacy, $r = -.285$, $p < .05$, task importance, $r = -.307$, $p < .05$, and positive self-schema $r = -.320$, $p < .05$, indicating that higher levels of negative symptoms were associated with lower perceptions of self-

efficacy, lower assessment of value of the task and weaker positive beliefs about the self. These correlations represent mostly medium effect sizes according to convention (Cohen, 1992), though the relationship with self-efficacy is just below the medium 'cut-off' of .30 for a medium effect size for Pearson's *r*. A medium to strong relationship was found between negative self-schema and negative symptoms, $r = .491$, $p < .01$ indicating that higher levels of negative symptoms were related to higher levels of negative beliefs about the self. The magnitude of these relationships suggests that self-efficacy, subjective task value, positive self-schema and negative self-schema account for 8.1%, 9.4%, 10.2% and 24.1% respectively of the variance in negative symptoms.

It was hypothesised that these relationships would remain significant even after controlling for potentially confounding variables such as levels of positive symptoms, depression, anxiety and cognitive functioning (measures of verbal fluency and digit span). Hierarchical multiple regressions were conducted, with negative symptoms as the dependent variable, the control variables entered together as a first step, and self-efficacy, task value or self-schema entered as a second step. However, there were no significant relationships found between negative symptoms and either verbal fluency ($r = -.05$, $p = .735$), digit span ($r = .002$, $p = .991$) or positive symptoms ($r = .23$, $p = .108$) in this population, though there were significant relationships between negative symptoms and both depression ($r = .61$, $p < .001$) and anxiety ($r = .32$, $p < .05$). Therefore only depression and anxiety were entered as control variables within the regression. The outcomes of these multiple regressions are presented on Table 9 below.

For the multiple regression with negative symptoms as a dependent variable, depression and anxiety entered as control variables in Step 1, and self-efficacy entered in Step 2 ($n = 49$), the Step 1 model was significant, $F(2, 46) = 17.37$, $p < .001$, and indicated that levels of depression and anxiety together accounted for 43% of unique

variance in negative symptoms. However the Step 2 model with self-efficacy added was not significant, $F(1, 45) = 0.26$, $p = .872$, and self-efficacy accounted for a negligible amount of additional variance. For the second multiple regression, with task value added at Step 2 ($n = 48$), the Step 1 model was again significant, $F(2, 45) = 17.20$, $p < .001$, indicating that depression and anxiety account for 43% of variance in negative symptoms. The Step 2 model was not significant, $F(1, 44) = 1.47$, $p = .232$, and task value accounted for only 1.8% of additional variance. The next two regressions ($n = 48$) had Step 1 models that were identical to the previous regression, as they had the same sample size. The Step 2 model with positive self-schema added was again not significant, $F(1, 44) = 0.23$, $p = .635$, with positive self-schema accounting for 0.3% of additional variance. The Step 2 model with negative self-schema added was also not significant, $F(1, 44) = 0.47$, $p = .499$, with negative self-schema accounting for 0.6% of additional variance.

Table 9

Hierarchical Multiple Regression Analyses Examining Relationships Of Negative Symptoms with Self-Efficacy, Task Value and Self-Schemas Controlling for Depression and Anxiety

		R^2 *change*	*B*	*SE b*	*β*
		Self-Efficacy (n = 49)			
Step 1		.43**			
	Constant		6.13	3.84	
	Depression		7.85	1.53	.90**
	Anxiety		-3.23	1.49	-.38*
Step 2		.000			
	Constant		8.18	13.17	
	Depression		7.78	1.60	.90**
	Anxiety		-3.25	1.51	-.39*
	Self-Efficacy		-0.07	0.41	-.02
		Subjective Task Value (n = 48)			
Step 1		.43**			
	Constant		6.06	3.86	
	Depression		7.86	1.53	.91**
	Anxiety		-3.28	1.49	-.39*
Step 2		.018			
	Constant		13.87	7.51	
	Depression		7.30	1.60	.85**
	Anxiety		-2.89	1.52	-.34
	Task Value		-4.04	3.34	-.14
		Positive Self-Schema (n = 48)			
Step 1		.43**			
	Constant		6.06	3.86	
	Depression		7.86	1.53	.91**
	Anxiety		-3.28	1.49	-.39*
Step 2		.003			
	Constant		7.98	5.59	
	Depression		7.63	1.62	.89**
	Anxiety		-3.28	1.51	-.39*
	Positive Self-Schema		-0.14	0.29	-.06
		Negative Self-Schema (n = 48)			
Step 1		.43**			
	Constant		6.06	3.86	
	Depression		7.86	1.53	.91**
	Anxiety		-3.28	1.49	-.39*
Step 2		.006			
	Constant		4.98	4.19	
	Depression		7.19	1.83	.83**
	Anxiety		-3.32	1.50	-.39*
	Negative Self-Schema		1.56	2.29	-.11

Note. Missing cases excluded pairwise from analyses. * $p < .05$. ** $p < .001$.

3.4.1.1 Summary for hypothesis one. Self-efficacy, perceptions of task value, positive self-schema and negative self-schema were all found to be related to negative symptoms; however these relationships were no longer significant after the variance contributed by depression and anxiety symptoms was accounted for. Therefore although relationships were found between the cognitive variables and negative symptoms, Hypothesis One was not fully supported.

3.4.2 Hypothesis two. The second hypothesis was that self-efficacy, perceptions of task value, and self-schemas would have stronger associations with the categories of negative symptoms thought to be more related to motivation (the diminished experience factor, i.e. avolition/apathy and anhedonia/asociality) than those thought to be more related to diminished expression (affective flattening and alogia). Bivariate Pearson correlations between each of the four negative symptom subscales and self-efficacy, perceptions of task value, negative self-schema and positive self-schema are reported in Table 10 below.

Table 10

Bivariate Pearson Correlations for Self-Efficacy, Subjective Task Value and Self-Schemas with Negative Symptom Subscales

	Affective Flattening	Alogia	Avolition/ Apathy	Anhedonia/ Asociality
Self-Efficacy	-.278	-.189	-.093	-.218
Subjective Task Value	-.185	-.095	-.248	-.302*
Positive Self-Schema	-.290*	-.307*	.003	-.325*
Negative Self-Schema	.406**	.278	.278	.412**

Note. Missing cases excluded pairwise. * $p < .05$. ** $p < .01$.

Significant relationships were found between affective flattening and positive and negative self-schema, between alogia and positive self-schema, and between anhedonia and subjective task value, positive self-schema and negative self-schema. All of the significant relationships were of a medium effect size, however there was no

clear pattern discernible that would indicate differences in the strength of relationships between self-efficacy, subjective task value, and self-schemas with negative symptoms associated with diminished expression as compared with those symptoms associated with diminished experience.

To facilitate more direct comparison between the two, a 'diminished expression' variable was computed by summing all items on the SANS in the affective flattening and alogia subscales, and a 'diminished experience' variable was computed my summing all SANS items on the avolition/apathy and anhedonia/asociality subscales. This approach has been employed in previous research (Ventura et al., 2014) and is consistent with current theory proposing a two-factor model of negative symptoms (Foussias & Remington, 2010; Kirkpatrick et al., 2006). The diminished expression variable (M = 8.78, SD = 8.48) was significantly positively skewed, while the diminished experience variable (M = 15.53, SD = 8.20) was not, however to facilitate direct comparison between the two (Field, 2009), both were square root transformed. Bivariate Pearson correlations between the square root transformed diminished expression and diminished experience variables with self-efficacy, perceptions of task value, and positive and negative self-schema are presented in Table 11.

Table 11

Bivariate Pearson Correlations for Self-Efficacy, Subjective Task Value and Self-Schemas with Diminished Expression and Diminished Experience Scales

	Diminished Expression		Diminished Experience	
	r	*p*	*r*	*p*
Self-Efficacy	-.329	<.05	-.173	NS
Subjective Task Value	-.156	NS	-.340	<.05
Positive Self-Schema	-.378	<.01	-.189	NS
Negative Self-Schema	.481	<.01	.402	<.01

Note. Missing cases excluded pairwise. NS = not significant

Self-efficacy and positive self-schema were significantly inversely related to diminished expression but not diminished experience. Subjective task value was significantly inversely related to diminished experience but not diminished expression. Negative self-schema was significantly positively correlated with both diminished expression and diminished experience, however the relationship with diminished expression was of greater magnitude than with diminished experience.

Following the procedure described by Field (2009) for comparing dependent Pearson *r* correlations, *t*-tests were conducted to determine whether there were any significant differences between the correlations with the diminished expression and diminished experience factors on any of the four variables of interest (self-efficacy, perceptions of task value, negative self-schema and positive self-schema). These analyses indicated that the differences in correlations on diminished expression and diminished experience factors were not significant for self-efficacy, $t(48) = 1.04$, $p = .152$, $d = 0.30$; task value, $t(47) = 1.22$, $p = .885$, $d = 0.36$; positive self-schema, $t(47) = 1.27$, $p = .105$, $d = 0.37$; or negative self-schema, $t(47) = 0.58$, $p = .717$, $d = 0.17$.

Hierarchical multiple regressions were conducted to determine whether significant relationships found between either diminished expression or diminished experience and self-efficacy, subjective task value, positive self-schema or negative self-schema remained significant after controlling for depression and anxiety. Outcomes of the regressions involving the diminished expression factor are displayed on Table 12. With diminished expression as the dependent variable, depression and anxiety entered as control variables in Step 1, and self-efficacy entered in Step 2 ($n = 49$), the Step 1 model was significant, $F(2, 46) = 9.15$, $p < .001$, and indicated that levels of depression and anxiety together accounted for 28.5% of the variance in diminished expression (although anxiety did not contribute a statistically significant

amount of unique variance to the model). The Step 2 model with self-efficacy added was not significant, $F(1, 45) = 0.95$, $p = .335$, and self-efficacy accounted for only 1.5% of additional variance. For the analyses examining self-schemas ($n = 48$), the Step 1 models were the same and were significant, $F(2, 45) = 8.96$, $p < .01$, indicating that levels of depression and anxiety together accounted for 28.5% of the variance in negative symptoms (although once again anxiety did not contribute a significant amount of variance). The Step 2 model with positive self-schema added was not significant, $F(1, 44) = 1.94$, $p = .171$, and positive self-schema accounted for only 3% of additional variance. The Step 2 model with negative self-schema added was also not significant, $F(1, 44) = 2.02$, $p = .162$, and negative self-schema again accounted for only 3% of additional variance.

Table 12

Hierarchical Multiple Regression Analyses Examining Relationships Of Diminished Expression with Self-Efficacy and Self-Schemas Controlling for Depression and Anxiety

		R^2 *change*	*B*	*SE b*	*β*
		Self-Efficacy (n = 49)			
Step 1		.29**			
	Constant		1.33	0.43	
	Depression		0.62	0.17	.73**
	Anxiety		-0.25	0.17	-.29
Step 2		.015			
	Constant		2.68	1.45	
	Depression		0.58	0.18	.67**
	Anxiety		-0.26	0.17	-.31
	Self-Efficacy		-0.04	0.05	-.14
		Positive Self-Schema (n = 48)			
Step 1		.29**			
	Constant		1.33	0.43	
	Depression		0.63	0.17	.73**
	Anxiety		-0.25	0.17	-.30
Step 2		.03			
	Constant		1.94	0.61	
	Depression		0.55	0.18	.64**
	Anxiety		-0.25	0.17	-.30
	Positive Self-Schema		-0.04	0.03	-.19
		Negative Self-Schema (n = 48)			
Step 1		.29**			
	Constant		1.33	0.43	
	Depression		0.63	0.17	.73**
	Anxiety		-0.25	0.17	-.30
Step 2		.03			
	Constant		1.08	0.46	
	Depression		0.47	0.20	.55*
	Anxiety		-0.26	0.17	-.31
	Negative Self-Schema		0.36	0.25	-.26

Note. Missing cases excluded pairwise from analyses. * $p < .05$. ** $p < .01$.

Outcomes of the regressions involving the diminished experience factor are displayed on Table 13. With diminished experience as the dependent variable, depression and anxiety entered as control variables in Step 1, and task value entered in Step 2 ($n = 48$), the Step 1 model was significant, $F(2, 45) = 15.21$, $p < .001$, and indicated that levels of depression and anxiety together accounted for 40.3% of the

variance in diminished experience (although again anxiety did not contribute significant unique variance to the model). The Step 2 model with task value added was not significant, $F(1, 44) = 2.38$, $p = .130$, and subjective task value accounted for only 3.1% of additional variance. Employing the same methodology with negative self-schema instead of task value, the Step 1 model was identical to the previous analysis, and the Step 2 model with negative self-schema added was not significant, $F(1, 44) = 0.12$, $p = .733$, with negative self-schema accounting for only 0.2% of additional variance.

Table 13

Hierarchical Multiple Regression Analyses Examining Relationships Of Diminished Experience with Subjective Task Value and Negative Self-Schema Controlling for Depression and Anxiety

		R^2 *change*	*B*	*SE b*	*β*
		Subjective Task Value (*n* = 48)			
Step 1		.40*			
	Constant		4.83	2.33	
	Depression		4.35	0.93	.86*
	Anxiety		-1.65	0.90	-.33
Step 2		.03			
	Constant		10.80	4.50	
	Depression		3.92	0.95	.77*
	Anxiety		-1.35	0.91	-.27
	Task Value		-3.09	2.00	-.18
		Negative Self-Schema (n = 48)			
Step 1		.40*			
	Constant		4.83	2.33	
	Depression		4.35	0.93	.86*
	Anxiety		-1.65	0.90	-.33
Step 2		.002			
	Constant		5.16	2.55	
	Depression		4.56	1.11	.90*
	Anxiety		-1.64	0.91	-.33
	Negative Self-Schema		-0.48	1.39	.06

Note. Missing cases excluded pairwise from analyses. * $p < .001$.

3.4.2.1 Summary for hypothesis two. It was expected that all of the cognitive variables (self-efficacy, perceptions of task value, positive self-schema and negative self-schema) would be more strongly related to negative symptoms associated with diminished experience than those associated with diminished expression. Contrary to hypothesis, there appeared to be no clear pattern indicating stronger relationships with diminished experience symptoms within this sample. Perceptions of task value was the only variable to show the expected pattern, being significantly related only to diminished experience, which gives some limited support for the hypothesis. However self-efficacy and positive self-schema showed the opposite pattern, being significantly related to diminished expression only, and negative self-schema was significantly related to both diminished expression and to diminished experience. When these correlations were compared, there were no statistically significant differences between the correlation with diminished expression and with diminished experience for any of the four variables. Furthermore, when depression and anxiety were controlled for, none of the original correlations remained significant. Therefore Hypothesis Two was in general not supported.

3.4.3 Hypothesis three. The third research hypothesis was that negative symptoms would mediate the relationship between the cognitive appraisals (self-efficacy, perceptions of task value, and positive and negative self-schemas) with social functioning. Statistical mediation occurs when an intervening variable accounts for some or all of the relationship between a predictor variable and an outcome variable. The model being tested is presented in Figure 5. It was planned to examine each of the predictors independently within this model (i.e., testing four separate mediation models with self-efficacy, perceptions of task value, positive self-schema or negative self-schema as the predictor).

Baron and Kenny (1986) state that the following conditions must be met for mediation to occur:

1. The predictor must be significantly correlated with the outcome variable, represented by path *c* in Figure 5.
2. The predictor variable (in this case, self-efficacy, task value, or self-schema) must be significantly correlated with the mediating variable (negative symptoms). This is represented by path *a* in Figure 5.
3. The mediating variable (negative symptoms) must be significantly correlated with the outcome variable (social functioning), controlling for the predictor. This is represented by path *b* in Figure 5.
4. The relationship between the predictor variable and the outcome variable (path *c*) is significantly reduced when paths *a* and *b* are controlled for.

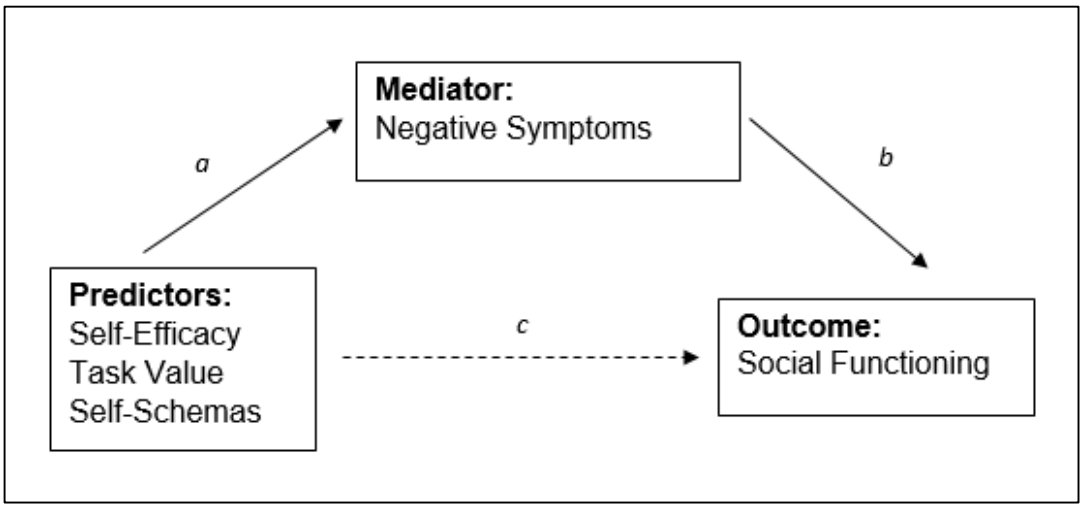

Figure 5. Diagram of proposed mediation model.

To first confirm that relationships existed between predictor, mediator and outcome variables, bivariate Pearson correlations were examined (displayed in Table 7). In relation to the first of Baron and Kenny's (1986) steps, bivariate correlations indicated that there was a significant relationship for path *c* between perceptions of task

value and social functioning, however there was no significant relationship between any of the other predictors and social functioning.

This may imply that only the model with subjective task value as a predictor should be tested; however there has been substantial degree of debate since Baron and Kenny's (1986) publication over whether the first condition is required. The current consensus is that a significant correlation between the predictor and outcome variables should no longer be seen as a necessary precondition for mediation (Fritz & Mackinnon, 2007; Hayes, 2013; Jose, 2013; Kenny, 2014; Shrout & Bolger, 2002). Hayes (2013) describes that because most phenomena, particularly within psychological sciences, have complex relationships with other variables, it is most common that outcome variables may have multiple predictors and mediators, and the mediation model may be only part of a bigger picture. A predictor may exert influence on an outcome indirectly through a mediator even if the total effect is not significantly different from zero, because there may be two opposing mediation pathways which add up to something near zero when taken together and obscure a total effect (Hayes, 2013; Rucker, Preacher, Tormala, & Petty, 2011). Another similar situation is in the case of inconsistent mediation, where the direct effect between predictor and outcome may be negative while the indirect effect through a mediator might be positive, which may result in a small total effect because the two effects 'cancel each other out' (Kenny, 2014). An example of this might be that more stress (a predictor) leads to worse mood (an outcome); but more stress might also lead to increased coping (a mediator), leading to better mood. The mediator in this instance is sometimes referred to as a suppressor variable, as introduction of this variable leads to an increase in the magnitude of the relationship between predictor and outcome (MacKinnon, Krull, & Lockwood, 2000). Given these arguments, it was decided to continue testing all four models as planned.

Significant relationships between negative symptoms and self-efficacy, perceptions of task value and self-schemas (see Table 7) confirmed relationships at path *a* of medium to large effect size (Cohen, 1992) for these variables. A significant relationship of medium to large effect size was also found between negative symptoms and social functioning, indicating a potential relationship at path *b*, which would be further explored within the mediation analysis which also control for the influence of the predictors.

Analyses were conducted using the PROCESS (Hayes, 2012) add-on for SPSS which was downloaded from http://www.afhayes.com/. As this macro does not report standardised regression coefficients, hierarchical multiple regression was also conducted in SPSS to estimate the standardised coefficient statistic for paths *a, b, c* and *c'* described by Baron and Kenny (1986). Analysis with the PROCESS macro facilitates the use of non-parametric bootstrapping, which is advised for small samples (Fritz & Mackinnon, 2007) as per the methodology described by Preacher and Hayes (2004). Bias-corrected 95% confidence intervals based on 5000 bootstrapped samples are reported for the indirect effects. In this method, if these confidence intervals do not include zero this indicates that the mediation is significant (Preacher & Hayes, 2004; Shrout & Bolger, 2002). The PROCESS macro also calculates effect sizes for mediation analysis, and the completely standardised indirect effect of the predictor on the outcome (Hayes, 2013) is reported here. This was calculated using non-transformed variables in order to draw more meaningful inferences about the effect size within this sample. Table 14 presents path statistics for each of the four mediation models tested, which are then discussed in turn; and Table 15 presents the unstandardised and standardised indirect effects for each of the four models. As missing data were excluded listwise to ensure equal sample size for each correlation within the mediation,

beta estimates show some discrepancies from earlier reported bivariate correlations, though none of these changed the statistical significance of any of the relationships.

Table 14

Unstandardised and Standardised Coefficients and Statistical Significance for Mediation Analysis with Each Cognitive Appraisal Variable as Predictor, Negative Symptoms as Mediator and Social Functioning as Outcome Variable

	B	*SE*	*β*	*t*	*p*	LLCI	ULCI
			Self-Efficacy as Predictor				
Path *a*	-0.93	.444	-.295	-2.09	.042	-1.82	-0.03
Path *b*	-0.09	.026	-.468	-3.35	.002	-0.14	-0.03
Path *c*	0.02	.085	.028	.192	.849	-0.15	0.19
Path *c'*	-0.06	.080	-.110	-.786	.436	-0.22	0.10
			Positive Self-Schema as Predictor				
Path *a*	-0.72	.315	-.320	-2.29	.027	-1.35	-0.09
Path *b*	-0.09	.026	-.472	-3.36	.002	-0.14	-0.03
Path *c*	0.02	.061	.036	0.25	.806	-0.11	0.14
Path *c'*	-0.05	.058	-.115	-0.82	.419	-0.16	0.07
			Negative Self-Schema as Predictor				
Path *a*	6.81	1.78	.491	3.82	.001	3.22	10.40
Path *b*	-0.09	.028	-.495	-3.23	.002	-0.15	-0.03
Path *c*	-0.31	.371	-.121	-0.83	.411	-1.05	0.44
Path *c'*	0.31	.387	.122	0.80	.324	-0.47	1.09
			Subjective Task Value as Predictor				
Path *a*	-8.78	4.01	-.307	-2.19	.034	-16.85	-0.71
Path *b*	-0.07	.025	-.377	-2.73	.009	-0.12	-0.02
Path *c*	1.60	.732	.307	2.19	.034	0.13	3.07
Path *c'*	1.00	.720	.191	1.38	.173	-0.45	2.45

Note. Cases were excluded listwise for these analyses. LLCI = Lower Limit Confidence Interval, ULCI = Upper Limit Confidence Interval.

Table 15.

Unstandardised and Standardised Indirect Effects of Cognitive Variables on Social Functioning (via their Effects on Negative Symptoms)

	Unstandardised indirect effect	Completely standardised indirect effect *
Self-Efficacy	0.79	.124
Positive Self-Schema	0.06	.138
Negative Self-Schema	-0.62	-.217
Subjective Task Value	0.60	.105

Note. Missing cases excluded listwise. *Calculated using the untransformed social functioning variable

3.4.3.1 Self-efficacy as predictor variable. Standardised regression coefficients for the mediation model with self-efficacy as the predictor, negative symptoms as the mediator and social functioning as the outcome variable are presented in Figure 6.

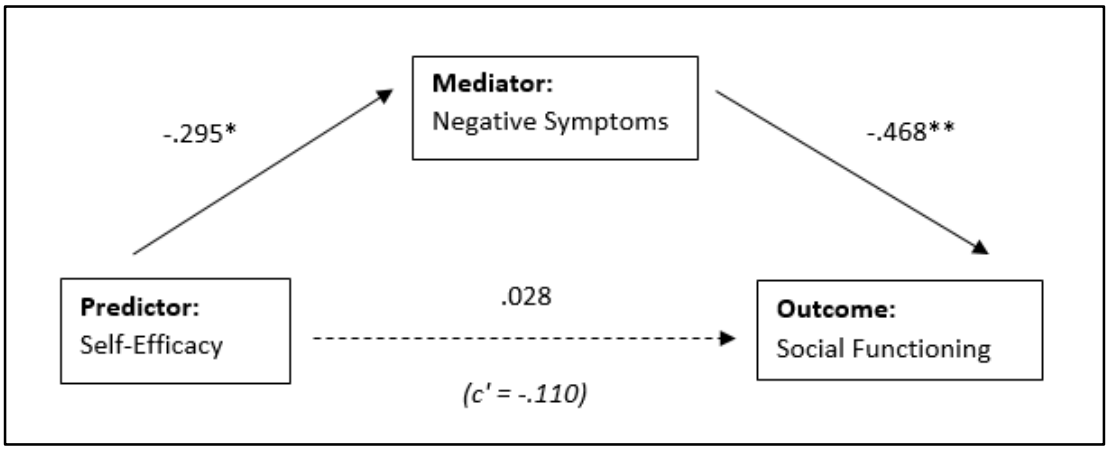

Figure 6. Standardised regression coefficients for the relationship between self-efficacy and social functioning mediated by negative symptoms. *p < .05. **p < .01.

As shown in Figure 6, the relationship between self-efficacy and negative symptoms (path *a*) was statistically significant, as was the relationship between negative symptoms and social functioning after controlling for the effect of self-efficacy (path *b*). Neither the direct relationship between self-efficacy and social functioning (path *c*) or

the relationship between these two variables after controlling for negative symptoms (path *c'*) were statistically significant, however the opposite direction of effects of *c* and *c'* suggests that negative symptoms is behaving as a suppressor variable in this model. The unstandardised indirect effect (*c – c'*) was 0.079, and results based on 5000 bootstrapped samples indicated that the 95% bias-corrected confidence intervals around the bootstrapped mean for the indirect effect were LL = 0.012, UL = 0.194. Given that these confidence intervals do not include zero, this indicates that the indirect effect is statistically significant at $p < .05$ (Preacher & Hayes, 2004; Shrout & Bolger, 2002), which suggests that the relationship between self-efficacy and social functioning may be partially mediated by negative symptoms.

The completely standardised indirect effect of self-efficacy on social functioning (based on the untransformed social functioning variable) was 0.124. This measure of indicates that a two individuals who differed by one standard deviation on the General Self-Efficacy Scale differed by about 0.124 of a standard deviation in social functioning as a result of the indirect effect through negative symptoms (Hayes, 2013). Social functioning on the Time Use Survey is measured in hours, which allows for meaningful interpretation of this effect size. In this sample, the standard deviation of social functioning was 33.7 hours, and 0.124 of 33.7 (0.124 x 33.7) is 4.1788. This effect size therefore equates to a difference of 4.18 hours of structured activity per week as a function of a one standard deviation increase in self-efficacy, via the effect on negative symptoms (the indirect effect).

3.4.3.2 Positive self-schema as predictor variable. Standardised regression coefficients for the mediation model with positive self-schema as the predictor, negative symptoms as the mediator and social functioning as the outcome variable are presented in Figure 7.

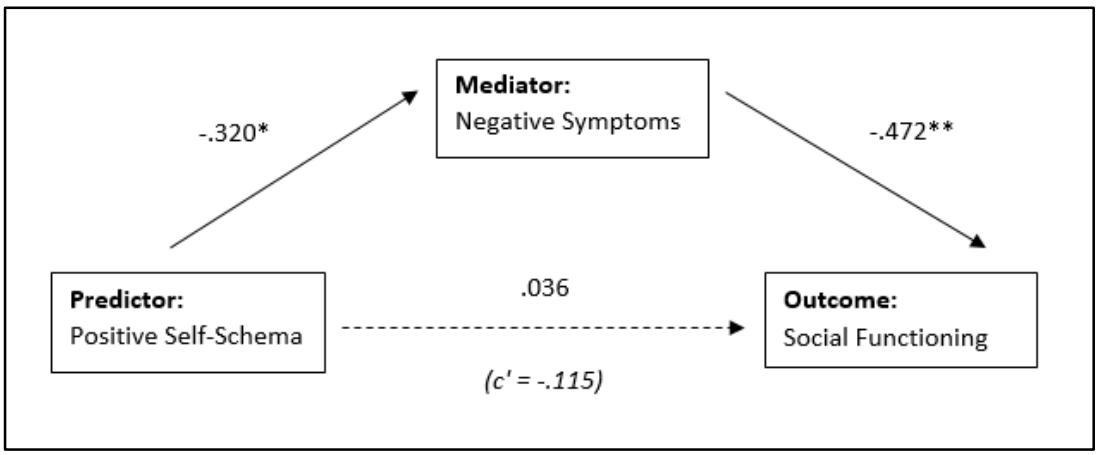

Figure 7. Standardised regression coefficients for the relationship between positive self-schema and social functioning mediated by negative symptoms. *p < .05. **p < .01.

As with self-efficacy, the relationships at path *a* and path *b* were statistically significant, but not the direct relationship between positive self-schema and social functioning (path *c*) nor the relationship between these two variables after controlling for negative symptoms (path *c'*). The opposite signs of *c* and *c'* suggest suppressor variable effects once again. The unstandardised indirect effect (*c – c'*) was 0.06, and based on 5000 bootstrapped samples the 95% bias-corrected confidence intervals around the bootstrapped mean for the indirect effect were LL = 0.007, UL = 0.166, which indicates a statistically significant indirect effect ($p < .05$), suggesting that the relationship between positive self-schema and social functioning may be partially mediated by negative symptoms. The completely standardised indirect effect of positive self-schema on (untransformed) social functioning was 0.138. This means that two individuals who differed by one standard deviation on positive self-schema differed by 0.138 multiplied by the standard deviation of social functioning (33.7), which equalled approximately 4.65 hours of structured activity per week, as a result of the indirect effect of positive self-schema through negative symptoms on social functioning.

3.4.3.3 Negative self-schema as predictor variable. Figure 8 presents the standardised regression coefficients for the mediation model with negative self-schema as the predictor, negative symptoms as the mediator and social functioning as the outcome.

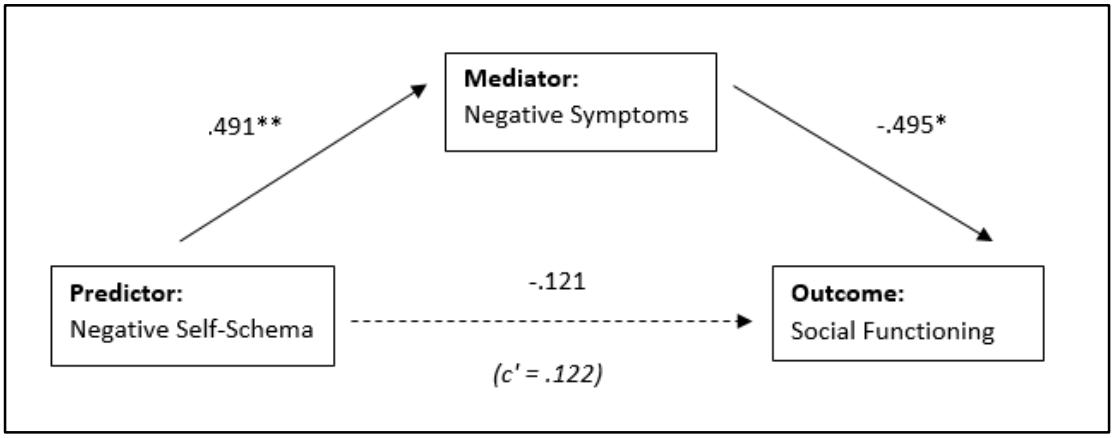

Figure 8. Standardised regression coefficients for the relationship between negative self-schema and social functioning mediated by negative symptoms. *p < .01. **p < .001

Consistent with the previous two models, the relationships at path *a* and path *b* were statistically significant, but not the direct relationship between negative self-schema and social functioning (path *c*) nor the relationship between these two variables after controlling for negative symptoms (path *c'*). The opposite signs of *c* and *c'* once again suggest suppressor variable effects. The unstandardised indirect effect (*c – c'*) was -0.62, and based on 5000 bootstrapped samples the 95% bias-corrected confidence intervals around the bootstrapped mean were LL = -1.231, UL = -0.260, which indicates a statistically significant indirect effect ($p < .05$), suggesting that the relationship between negative self-schema and social functioning may be partially mediated by negative symptoms. The completely standardised indirect effect of self-efficacy on (untransformed) social functioning was -0.217, which when multiplied by the standard deviation of 33.7 equalled -7.3129. The negative sign indicates that a one standard

deviation increase on the transformed negative self-schema variable equates to a reduction in structured activity of about 7.3 hours per week due to the indirect effect of negative self-schema on social functioning through negative symptoms.

3.4.3.4 Subjective task value as predictor variable. Figure 9 presents the standardised regression coefficients for the mediation model with subjective task value as the predictor, negative symptoms as the mediator and social functioning as the outcome variable.

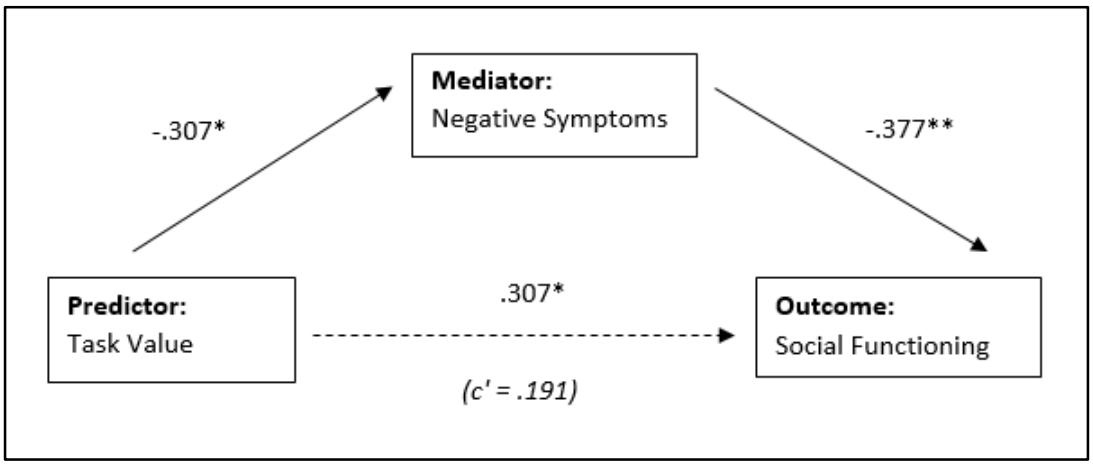

Figure 9. Standardised regression coefficients for the relationship between task value and social functioning mediated by negative symptoms. *p < .05. **p < .01.

Subjective task value was the only variable which met the conditions set by Baron and Kenny (1986), which is indicated by statistically significant relationships at paths *a*, *b* and *c*. The relationship between task value and social functioning after controlling for negative symptoms (path *c'*) was not significant, though the reduction in the magnitude of the effect suggests partial mediation. The unstandardised indirect effect (*c – c'*) was 0.60, and based on 5000 bootstrapped samples the 95% bias-corrected confidence intervals around the bootstrapped mean were LL = 0.052, UL = 1.77, which indicates a statistically significant indirect effect ($p < .05$), suggesting that the relationship between task value and social functioning may be partially mediated by negative symptoms. The completely standardised indirect effect of perceptions of task

value on (untransformed) social functioning was 0.105, which means that two individuals who differed by one standard deviation on their rating of task importance differed by about 0.105 of a standard deviation in social functioning as a result of the indirect effect of task value through negative symptoms. This equalled 0.105 x 33.7 = 3.5385, meaning that a one standard deviation difference in subjective task value equated to an increase of about 3.54 hours of structured activity per week through its indirect effect on negative symptoms.

3.4.3.5 Summary for hypothesis three. Perceptions of task value were significantly related to social functioning, but self-efficacy, positive self-schema and negative self-schema were not. Mediation models with each of the cognitive appraisals as a predictor, negative symptoms as the mediator and social functioning as the outcome variable found that each had a significant indirect effect on social functioning through their effect on negative symptoms. The indirect effect was the equivalent of around 3.5 to 7 hours of structured activity per week as a function or a one standard deviation change in the various predictors. The models with self-efficacy and self-schemas as predictors suggested that negative symptoms acted as a suppressor variable to their relationship with social functioning. These findings suggest some support for the mediation model proposed by Hypothesis Three, though should be interpreted with some caution as no control variables were included within these models.

3.5 Summary of Results Section.

This research found that higher levels of negative symptoms were significantly associated with lower levels self-efficacy, perceptions of task value, positive self-schema, and higher levels of negative self-schema. However when depression and anxiety were controlled for, these relationships were no longer significant. The relationships of these variables were not significantly stronger with the ‘diminished

experience' factor of negative symptoms as compared to the 'diminished expression' factor, and once again the relationships with either factor were found not to be significant once depression had been controlled for. In examining how these variables were related to social functioning, it was found that only subjective task value and not self-efficacy, positive self-schema or negative self-schema were significantly related to social functioning. However it was found that negative symptoms significantly mediated relationships between all of these cognitive appraisals and social functioning. The indirect effects of a one standard deviation change in negative self-schema being equivalent to around a 7 hour per week difference in social functioning via the impact on negative symptoms; while the smallest indirect effect, that of a one standard deviation change in task value on social functioning, was still equivalent to around three and a half hours of activity per week.

4. Discussion

4.1 Overview of the Discussion

This section will begin with restating the aims of the current research, then the research findings from each hypothesis will be considered and discussed in turn and evaluated with respect to the aims of the research. The consistency of the findings of the current research with previous research will be considered, and theoretical and clinical implications of the research will be discussed. The strengths and weaknesses of the current research will also be evaluated, before suggesting areas to explore in future research. Finally, the current research will be summarised and concluded.

4.2 Aims of the Research

Greater severity of negative symptoms has consistently been associated with poorer social functioning in individuals with both chronic and first-episode psychosis (Addington, Young, et al., 2003; Edwards et al., 1999; Hill & Startup, 2013; Ho et al., 1998; Milev et al., 2005; Narvaez et al., 2008; Pratt et al., 2005; Song et al., 2011). The overall aim of the current research was to investigate psychological mechanisms which may contribute to this relationship, which could provide useful therapeutic targets in the treatment of negative symptoms and improvement of social functioning in people with first-episode psychosis.

Given the role of expectancies about performance and success in cognitive models of negative symptoms (Rector et al., 2005; Staring & Van der Gaag, 2010) self-efficacy, which is a factor in motivation (Bandura, 1994) was highlighted as a potentially important area for investigation. A literature search of research which has examined the relationship between negative symptoms and self-efficacy indicated mixed findings, therefore this research aimed to clarify the nature of this relationship and whether it existed in an early psychosis sample. The findings of the literature

review also suggested that self-efficacy may only be part of the picture, therefore this research also examined the relationship of other factors thought to be related to motivation (such as subjective task value and self-schema) with negative symptoms. In line with a proposed two factor model of negative symptoms (Foussias & Remington, 2010), a further aim of this study was to determine whether self-efficacy, task value, and self-schemas were more associated with the 'diminished experience' (or amotivation) factor than the 'diminished expression' factor as might be expected. To understand the relationship of these factors to social functioning, this research aimed to replicate a mediation model which has been supported by previous work (Pratt et al., 2005; Ventura et al., 2014), which suggests that negative symptoms mediate the relationship between self-efficacy and social functioning; and to extend and test this model with subjective task value and self-schemas as predictors.

Secondary aims of this research were to improve upon methodological quality of previous studies by incorporating appropriate control variables into investigations of these relationships, and to extend the findings of previous research to individuals with first-episode psychosis. This research therefore hoped to usefully inform treatments for individuals in the early course of illness, which may assist in social recovery from a first episode of psychosis.

4.3 Summary of Research Findings

4.3.1 Hypothesis one. It was hypothesised that higher severity of negative symptoms would be associated with lower self-efficacy, lower perceptions of task value, lower ratings of positive self-schemas and higher ratings of negative self-schemas (controlling for positive symptoms, depression, anxiety and cognitive functioning). The significant inverse correlation between negative symptoms and self-efficacy suggested that people with less belief in their ability to successfully complete tasks are likely to

have higher levels of negative symptoms. Consistent with the hypothesis, the findings also suggested that higher levels of negative symptoms were associated with lower levels of importance placed on everyday tasks, lower levels of positive beliefs about the self, and higher levels of negative beliefs about the self.

Contrary to the hypothesis, the relationships between self-efficacy, self-schemas and perceptions of task value with negative symptoms did not remain significant when levels of depression and anxiety symptoms were first accounted for. Depression and anxiety symptoms accounted for 31.4% and 9% respectively of their shared variance with negative symptoms; and self-efficacy, task value, and self-schemas did not significantly contribute any further variance above this. This indicates that the variables which predicted the most amount of variance in negative symptoms in this sample were symptoms of depression and anxiety, and implied that individuals with greater negative symptom severity were likely to also have greater severity of depression and anxiety symptoms. This might indicate that low self-efficacy, positive self-schemas and perceptions of task value, and higher negative self-schemas, are also closely associated with symptoms of depression and anxiety, perhaps more so than with negative symptoms; or possibly that they are better conceptualised as aspects of depression and anxiety symptoms within this population. Theoretical and clinical implications will be discussed within the next sections.

4.3.2 Hypothesis two. It was hypothesised that self-efficacy, task value, and self-schema would all have stronger associations with symptoms related to motivational deficits (avolition and anhedonia, thought to be part of the ‘diminished experience’ factor) than others (affective flattening and alogia, which make up the ‘diminished expression’ factor). The current research found inconsistent patterns of relationships. Negative self-schemas appeared related to all negative symptoms, with higher ratings

significantly related to higher levels of affective flattening and anhedonia, and moderately (though not significantly) also to alogia and avolition. Positive self-schemas were inversely correlated with affective flattening, alogia and anhedonia, indicating that higher levels were associated with lower negative symptom severity in all three categories. These findings suggest that negative and positive beliefs about the self might be related to negative symptoms more generally (rather than a specific category), and that individuals with higher levels of negative symptoms are likely to hold fewer positive self-beliefs and more negative beliefs about themselves.

Self-efficacy was not significantly related to any of the four SANS subscales; however when alogia and affective flattening were combined, lower levels of self-efficacy were significantly associated with higher levels of diminished expression, which suggests that people with higher levels of diminished expression negative symptoms were likely to have a weaker sense that they can complete tasks successfully.

Subjective task value was the only variable that appeared to have a stronger relationship with the diminished experience factor as predicted. Lower levels of subjective task value were significantly associated with higher levels of diminished experience symptoms, and in particular, anhedonia. This suggests that individuals who experience a pervasive lack of interest or enjoyment in activities are also likely to view everyday activities as being less important to them.

When the magnitude of the relationships of diminished expression and diminished experience symptoms with the four types of cognitive appraisals was compared, there were no significant differences, offering no conclusive support for differential relationships between symptom sub-categories. It was also found again that any significant relationships with either factor became non-significant after depression

was controlled for, indicating that depression accounted for most of the variance in both negative symptom factors.

4.3.3 Hypothesis three. The final research hypothesis was that negative symptoms would mediate the relationship between the cognitive appraisals (lower self-efficacy, lower perceptions of task value, lower positive self-schemas, and higher negative self-schemas), and social functioning. As expected, a significant inverse relationship between negative symptoms and social functioning was observed, indicating that higher levels of negative symptoms were associated with engaging in fewer hours of structured activity per week. A significant relationship between perception of task importance and social functioning was also found, indicating that the more important a person perceived everyday tasks to be, the more hours per week they spent in structured activity. The mediation model suggested that negative symptoms partially mediated the relationship between subjective task value and social functioning. Greater perceptions of the importance of everyday tasks were related to lower levels of negative symptoms, which in turn were related to better social functioning. This indirect effect accounted for an increase of about 3.5 hours per week of structured activity as a result of a one standard deviation increase in subjective task value.

Levels of self-efficacy, negative self-schemas and positive self-schemas were not directly related to the amount of time per week that participants spent in structured activity, however all mediation models were tested as planned and evidence of partial mediation was found for all three variables. The significant indirect path for self-efficacy meant that higher levels of self-efficacy were related to lower levels of negative symptoms, which in turn were related to better social functioning; and this indirect effect accounted for a difference of 4.18 hours of activity per week as a result of a one standard deviation difference in self-efficacy. Likewise, greater levels of positive self-

schemas were related to lower levels of negative symptoms, which in turn were associated with better social functioning; and this indirect effect of positive self-schema accounted for a difference of 4.65 hours per week worth of activity as a result of a one standard deviation difference in positive self-schema. Finally, lower levels of negative self-schema were related to lower levels of negative symptoms, which were associated with better social functioning; and the indirect effect accounted for a difference of about 7.3 hours per week in activity as a result of a one standard deviation difference. Examinations of the total and direct effects within these models suggested that negative symptoms acted as a suppressor variable between the three cognitive appraisal types and social functioning, indicating that the inclusion of negative symptoms strengthens the relationships between the cognitive variables and social functioning (MacKinnon et al., 2000; Rucker et al., 2011).

These mediation findings should be interpreted with some caution, given the low sample size and lack of direct relationship for several of the predictors. Furthermore, depression was not included as a covariate in these mediation models as statistical power was already low. Although there was also no direct relationship between depression and social functioning in this sample, previous analyses indicated it accounted for the most variance in negative symptoms of any variable, and so may also play a role in the indirect effects. Not including depression is possibly contrary to the assumption in mediation that no significant predictors are omitted from the model (Gelfand, Mensinger, & Tenhave, 2009), therefore these mediation findings should be taken tentatively.

4.4 Links with Theory and Past Research

The findings of the current study are consistent with previous research in some respects, and inconsistent in others. This section will first consider the findings which

were expected given the research hypotheses, followed by discussion of the findings which were contrary to hypotheses and possible explanations for these unexpected findings. The theoretical implications of these findings will then be considered.

4.4.1 Findings which are consistent with hypotheses.

4.4.1.1 The relationship of self-efficacy and negative symptoms. The finding that lower levels of self-efficacy were related to higher severity of negative symptoms is consistent with previous research in both chronic (Avery et al., 2009; Hill & Startup, 2013; Pratt et al., 2005) and early psychosis samples (Macdonald et al., 1998; Ventura et al., 2014). This finding is also consistent with cognitive models of negative symptoms, which propose that expectations of successful performance or about agency are involved in the production and maintenance of negative symptoms (Rector et al., 2005; Staring & Van der Gaag, 2010). Little research to date has investigated the applicability of this model in first-episode psychosis, and this research provides some support for this.

The strength of the relationship found within this research was just below the standard cut-off for a medium effect size (Cohen, 1992). This is lower than that found previously with first-episode samples (r = .34 and .58 respectively; Macdonald et al., 1998; Ventura et al., 2014); though these two previous examples demonstrate that there may be variability in the strength of this relationship. One explanation could be that different measures of self-efficacy were used in all three studies. Another explanation might be the diagnostic make-up of the sample: in the Ventura et al. (2014) study the participants all had schizophrenia spectrum diagnoses, whereas Macdonald et al. (1998) included people with affective and non-affective psychoses (though still almost 70% schizophrenia spectrum disorders). In the current study, only a third had a schizophrenia spectrum diagnosis, and the weakest association with self-efficacy of the

three studies was reported. This pattern may indicate that the relationship between self-efficacy and negative symptoms is stronger in individuals with schizophrenia, or that more consistency in levels of negative symptoms in more homogenous samples might mean relationships can be more easily seen.

However, although this finding potentially provides some support for cognitive models of negative symptoms, this should be interpreted very tentatively. Given that the relationship was no longer significant after accounting for depression and anxiety, and that depression accounted for a substantial amount of the variance in negative symptoms, this may suggest that the relationships seen are better accounted for by depression. This will be discussed further in the next section.

4.4.1.2 The relationship of perceptions of task value with negative symptoms. The significant relationship between greater perceptions of value of everyday tasks with lower levels of negative symptoms was consistent with expectancy-value theory, which states that along with self-efficacy and other factors, subjective task value predicts activity- and goal-related choices and performance (Eccles & Wigfield, 2002). This is the first known research to find support for the relationship between subjective task value and negative symptoms. Although the small number of previous studies examining this relationship did not find a relationship (Bentall et al., 2010; Choi et al., 2010), this may have been due to methodological issues. Bentall and colleagues (2010) examined task value in relation to avolition only, whereas within the current study task value was only significantly related to anhedonia; therefore this previous work may have missed an important relationship by limiting the investigation to avolition. Choi et al. (2010) used the Brief Psychiatric Rating Scale rather than the SANS to measure negative symptoms, and so may not have measured the negative symptoms thought to

be most related to motivation and have failed to capture the relationship with subjective task value due to this.

Subjective task value was the only variable which correlated solely with the diminished experience subscale (specifically, anhedonia) of negative symptoms, which is thought to be more related to amotivation in psychosis (Foussias & Remington, 2010). This suggests that, in people with first-episode psychosis, lack of interest or enjoyment in activities might be particularly related to perceptions that everyday tasks are not valuable or important to them. This is consistent with previous research which found that people with psychosis were more motivated to persist with tasks if they were viewed as worthwhile, which had positive effects on learning outcomes (Choi et al., 2010). Again, this finding should be interpreted with some caution given that the relationship was no longer significant after accounting for depression and anxiety, which may suggest the relationship could be better explained by depression (even though task value was not significantly related to depression). This will be discussed further in the next section.

4.4.1.3 The relationship of self-schemas to negative symptoms. Self-schemas are also part of expectancy-value theory, thought to influence one's expectations that they will be successful and therefore their goal-related choices (Eccles & Wigfield, 2002). The current findings are consistent with previous research which found that an increase in positive self-beliefs and a decrease in negative self-beliefs were significantly associated with decrease in negative symptoms over time in first-episode psychosis (Palmier-Claus et al., 2011). Other studies have found that lower self-esteem, which correlates with self-schemas (Fowler et al., 2006), was significantly related to greater severity of negative symptoms (Lincoln et al., 2011) and was related to poorer quality of life in individuals in recovery from psychosis (Gureje, Harvey, & Herrman, 2004).

The findings of the current study indicated that negative self-schema and positive self-schema both correlated with most negative symptom scales, potentially playing a role in both diminished expression and diminished experience symptoms. While the role of specific types of beliefs is hypothesised in cognitive models (Rector et al., 2005; Staring & Van der Gaag, 2010), the current findings suggest that more general negative and positive self-beliefs may also play a role in negative symptoms. Again, this should be interpreted with caution as these relationships might also be accounted for by covariance with depression in this sample. This will be discussed further in the next section.

4.4.1.4 The relationship of negative symptoms to social functioning. The relationship found between negative symptoms and social functioning in this research is consistent with an extensive body of research which has found that higher levels of negative symptoms are associated with poorer social functioning and quality of life both in early psychosis (Addington, Young, et al., 2003; Edwards et al., 1999; Ho et al., 1998; Milev et al., 2005; Song et al., 2011) and in individuals with chronic psychotic disorders (Hill & Startup, 2013; Narvaez et al., 2008; Pratt et al., 2005). In this study, social functioning did not correlate with any of the other primary variables of interest (with the exception of task value) or with control variables, indicating that negative symptoms played a unique role in explaining a medium to large proportion of the variance in the number of hours per week individuals spend in structured activity. Previous work has proposed that negative symptoms are an important priority for recovery-focused treatment (Foussias & Remington, 2010), and their relationship with social functioning within this research supports this.

4.4.1.5 Negative symptoms mediating the relationship between cognitive appraisals and social functioning. The evidence that negative symptoms partially

mediated the relationship between self-efficacy and social functioning within this sample is consistent with previous research which found support for this mediation model in chronically ill (Pratt et al., 2005) and first-episode (Ventura et al., 2014) schizophrenia populations. It could also be predicted from the known relationship of negative symptoms with social functioning as described in the previous section (path *b* in the mediation); and the proposed relationships of expectancy appraisals with negative symptoms in cognitive models (Rector et al., 2005; Staring & Van der Gaag, 2010) which describe the path *a* relationship. Given that self-efficacy and other variables including self-schemas and subjective task value all play a role in expectancy-value theory (Eccles & Wigfield, 2002), it was expected that this model might also apply with self-schemas and task value as predictors. This is the first known research to report evidence of this, and indicated a useful extension of this mediation model given that self-schemas in particular appeared to account for more hours spent in activity (through the indirect relationship with negative symptoms) than self-efficacy. Task value also had both a significant direct and indirect effect on social functioning within this sample, possibly suggesting a better fit than other variables.

The findings from testing this mediation model deviated from expectations in one important respect, namely that relationships between self-efficacy and self-schema with social functioning were only significant via the indirect pathway. This aspect of the findings will be discussed in further detail in the next section.

4.4.2 Findings which are not consistent with hypotheses.

4.4.2.1 Relationships of cognitive functioning and positive symptoms with negative symptoms. Cognitive functioning was measured in this current study to control for its potentially confounding effect. It was unusual to find no significant relationship between cognitive functioning and negative symptoms in this sample, as

this relationship is well established, including with verbal fluency and working memory which were the cognitive functions measured within this research (Basso et al., 1998; O'Leary et al., 2000; Ventura et al., 2014). Given that levels of both negative symptoms and cognitive functioning appeared to be typical of a psychosis sample (Hovington et al., 2012; Kolb & Whishaw, 1983; Lee & Park, 2005), it is difficult to explain this finding. Some research has reported that cognitive deficits and negative symptoms have independent relationships with functional outcomes and should be treated separately (Foussias & Remington, 2010; Harvey, Koren, Reichenberg, & Bowie, 2006). The current research appears to support this perspective. Another explanation might be that the two brief cognitive measures used did not adequately measure cognitive functioning within this sample, though it had been felt necessary to use only brief measures in order to reduce the burden on participants. Another explanation could be that negative symptoms measured in this study were more representative of secondary negative symptoms, which are not thought to be related to underlying neurocognitive deficits in the way that primary symptoms are (Barnes & Paton, 2011; Foussias & Remington, 2010). This will be discussed further in the next section.

There was also no relationship found between positive and negative symptoms in this sample. This finding is in line with a range of previous factor analytical research which has found that positive and negative symptoms factors are independent of one another (Blanchard & Cohen, 2006; Kay et al., 1988; Van der Gaag et al., 2006) and confirms their status as distinct treatment targets (Kirkpatrick et al., 2006). It was useful to know that this distinction was present within the current sample.

4.4.2.2 The confounding relationships of depression and anxiety with negative symptoms. It was consistent with previous research that significant levels of depression and anxiety were found in this sample (Birchwood et al., 2007; Michail &

Birchwood, 2009; Romm et al., 2010). The finding that the relationship between self-efficacy and negative symptoms was no longer significant after controlling for depression and anxiety was contrary to previous research (Avery et al., 2009). Similarly, Palmier-Claus et al. (2011) found that the relationships of positive and negative self-beliefs with negative symptoms remained significant after controlling for depression, which was not the case in this study. However, it was not entirely surprising given that some previous research has reported that cognitions related to negative symptoms (such as defeatist and asocial beliefs, and self-esteem) were significantly correlated with negative symptoms as well as depression and anxiety (Beck et al., 2013; Grant & Beck, 2009, 2010), although Beck and colleagues (2013) still found significant relationships between negative symptoms and cognitive appraisals after controlling for depression in schizophrenia samples.

A number of potential explanations could be considered for this divergence. An unlikely explanation was that levels of depression or anxiety in the current sample were unusually high; given that depression, anxiety and negative symptoms all appeared typical of a first-episode psychosis population when compared with past research (Birchwood et al., 2000; Hovington et al., 2012; Huppert et al., 2002). Another explanation might be that previous research has mainly been with chronic, schizophrenia samples, whereas the first-episode group studied in this research was a much more diagnostically diverse group. Consistent with previous research (Lyne et al., 2012), individuals with schizophrenia spectrum disorders within this sample reported a higher number of negative symptoms compared to other diagnoses. Potentially, the variability in presentations within the current sample could make clear relationships harder to detect. Finally, it was noted that many of the studies in the earlier literature review of the relationship between negative symptoms and self-efficacy

did not include depression as a covariate, suggesting that another explanation for the disparity in findings could be failure to adequately control for these important variables in some previous research. The current findings suggest that the relationships between cognitive appraisals and negative symptoms may actually be better accounted for by depression. This will be discussed further in the next section.

4.4.2.3 The lack of distinction between the diminished expression and the diminished experience factors of negative symptoms. The current research found no clear evidence that these cognitive appraisals associated with motivation were more strongly associated with the negative symptoms also thought to be more associated with motivation (the diminished experience factor; Foussias & Remington, 2010; Kirkpatrick et al., 2006). Although this appears contrary to expectations based on the work of Foussias and Remington (2010), previous research to date has also reported mixed findings regarding this distinction. While some have found evidence to support this two-factor model of negative symptoms from the relationships of diminished experience symptoms with defeatist performance beliefs and expectancies of success (Couture et al., 2011), and self-efficacy (Avery et al., 2009); others have not found significant differences in associations with task value and self-efficacy (Bentall et al., 2010; Ventura et al., 2014). The current research unfortunately did not provide any additional clarity or support for a two-factor model of negative symptoms. Heterogeneity in the sample, small sample size and the stronger relationship of all factors with depression all potentially limited the ability to see this factor distinction if it exists; or it may be that these variables have limited utility in distinguishing between the two factors, which is not infeasible given previous research. In addition, there was a correlation of medium to large effect size between the diminished expression and diminished experience

subscales. This could also add to difficulties in distinguishing differential effects of the cognitive variables on these two subscales due to the degree of shared variance.

However, while some findings were in the opposite direction to expected (e.g. self-efficacy correlating with diminished expression and not diminished experience), they were not necessarily insensible – people who have poverty of speech and restricted expressive capacity may indeed have lower expectancies about their ability to perform everyday tasks as these symptoms could prove challenging in interactions with others. It may be that all subtypes of negative symptoms are important for motivation and functioning in first-episode psychosis, which the findings for self-schemas would possibly suggest. This area requires further research.

4.4.2.4 The lack of direct relationship between the cognitive appraisals and social functioning. Of the cognitive appraisals tested, self-schemas and self-efficacy did not directly correlate with social functioning in this population. This is contrary to previous research which has reported significant relationships between self-efficacy and social functioning ranging from r = .24 to .45 (Cardenas et al., 2013; Hill & Startup, 2013; Pratt et al., 2005; Ventura et al., 2014); although one previous study also did not find a significant relationship between self-efficacy and social functioning in people with schizophrenia (Kurtz et al., 2013). Again, small sample size and diagnostic heterogeneity in this sample may have limited the capacity to see relationships if they existed. It was also noted that this sample on average spent more hours per week in structured activity than previous samples, which might indicate that low self-efficacy and self-schemas are not impacting upon functioning to the same degree. The Time Use Survey is an objective measure of functioning which does not measure individuals' subjective interpretation of how well they are functioning; it might be that individuals don't feel efficacious but are still maintaining activity regardless. It also suggests there

may be other explanatory mechanisms for social functioning in first-episode psychosis which have not been examined in this study, and require further research.

4.4.3. Theoretical and research implications of the findings.

The vast majority of previous research into cognitive models and psychological correlates of negative symptoms of psychosis has been conducted with people who have chronic psychotic illness, mainly schizophrenia. Negative symptoms were prevalent in this first-episode sample, both in schizophrenia spectrum and other diagnostic groups. This indicates the importance of understanding the impact of negative symptoms in this very different and diverse group, to which this research makes some contribution.

The findings of the current research potentially support an aspect of cognitive models (Rector et al., 2005; Staring & Van der Gaag, 2010), that of the relationship of negative expectancies of success, performance or agency (or low self-efficacy) with negative symptoms. These models are supported by a growing body of evidence in chronic schizophrenia samples (e.g. Beck et al., 2013; Couture et al., 2011; Grant et al., 2012), and this finding indicates that this aspect (and by extension, potentially other aspects) of cognitive models might also be applicable within first-episode psychosis. However the overlapping variance of negative symptoms and depression does make it difficult to draw more definite conclusions regarding how well this model is supported in first-episode psychosis.

This research also explored other factors thought to be related to motivation, such as subjective task value and self-schemas. This drew on another explanatory model, that of expectancy-value theory (Eccles & Wigfield, 2002), which is concerned with factors related to goal-related choices and performance in general, rather than specifically negative symptoms. Although there was overlap between the two models (concepts of self-efficacy and self-schemas), subjective task value was unique to

expectancy-value theory. Subjective task value stood a little apart within the study – unlike the other cognitive appraisals examined, it was not significantly related to depression, it was solely related to the diminished experience factor of negative symptoms, and it was both directly and indirectly (via negative symptoms) related to social functioning, with the indirect effect accounting for a difference of around 3.5 hours of activity per week. This suggested that expectancy-value theory adds a useful explanatory component in the understanding of the expression of negative symptoms. This might suggest that consideration of achievement- or activity-oriented beliefs which are relevant to client goals and their personal meaning could be a useful addition to cognitive models of negative symptoms and to understanding ongoing social disability related to negative symptoms. It may be that in the context of negative symptoms of psychosis, where motivation and energy are low and an individual might expect to not enjoy an activity, a task needs to be particularly important or valued in order to overcome these barriers to acting. Given that expectancy-value models include a number of other factors which weren't explored within this study, these findings also suggest that research examining more of the components of expectancy-value theory and their relationship to negative symptoms might be a fruitful avenue for future research.

The current research also suggested that there might also be a role for more general positive and negative beliefs about the self in the expression and maintenance of negative symptoms, which is possibly as important as more task specific aspects such as negative performance expectancies. It may be that negative and positive self-schemas represent latent variables underlying the more specific types of cognitive expectancy appraisals. This explanation would also be consistent with the expectancy-value model which suggests that self-schemas come between distal factors such as early experiences

and socio-cultural influences; and proximal factors influencing performance such as expectations of success and activity-related choices (Eccles & Wigfield, 2002; Wigfield & Eccles, 2000). Alternatively, the relationships of positive and negative self-schemas might also be accounted for by the overlapping variance of depression and negative symptoms, given that the relationship between low mood and negative self-schemas has long been known (Bradley & Mathews, 1983; Segal, 1988). Indeed, the relationship between self-schemas and negative symptoms in this sample was no longer significant after the relationship with depression was accounted for, so this seems a likely explanation; this might warrant further exploration.

That all of the cognitive variables did not contribute a significant amount of variance in negative symptoms after depression and anxiety were accounted for, and that depression accounted for the most variance in negative symptoms, is a significant finding which has important implications for future research and for the theoretical understanding of negative symptoms. It is known that there is substantial comorbidity between psychotic disorders and depressive disorders both in first-episode and chronic psychosis (Birchwood, 2003; Buckley et al., 2009). Previous research has acknowledged the conceptual overlap between depression and negative symptoms (Hill & Startup, 2013; Siris, 2000), and certainly some of the expectancy appraisals proposed in cognitive models of negative symptoms (e.g. stigma, defeatist beliefs, low self-efficacy, negative expectancies of pleasure; Beck et al., 2013; Couture et al., 2011) overlap with factors which might be considered within models of depression. It suggests that the types of appraisals included in cognitive models of negative symptoms are not unique to negative symptoms and do not necessarily distinguish between negative symptoms and others such as depression. It might also suggest that the expression and maintenance of negative symptoms in psychosis is very similar to

processes involved in depression, but in a psychosis context – for example, individuals might have negative expectancies of acceptance because they feel stigmatised by their diagnosis, or low expectations of success due to disruptions in vocational or educational achievement due to becoming ill.

Another possible explanation for the overlap of depression and negative symptoms might be that negative symptoms in this sample were predominantly of the secondary type, which are thought to be a response to the psychosis, and therefore may be due to post-psychotic depression or anxiety. This research did not seek to establish whether negative symptoms were primary or secondary, and given that the research was conducted within a first-episode sample it may have been too early to determine if individuals were exhibiting enduring 'deficit' symptoms. However, the lack of significant relationship between cognitive functioning and negative symptoms, which might also suggest that negative symptoms were not of the neurobiological type, concords with this hypothesis. It also suggests that for future research to fully understand the relationships between depression, negative symptoms and other cognitive variables, it will be important to try to distinguish between primary and secondary negative symptoms. Measures of premorbid functioning, which was not examined within this research, may help to establish this distinction.

The outcomes of the current research suggest that it is of vital importance for future research to incorporate depression and anxiety as covariates in studies of negative symptoms. Despite the known conceptual overlap between negative symptoms, depression and anxiety, previous research has not consistently measured or reported these within similar studies. This may be a significant limitation of previous research, as the findings of the current study indicate that not controlling for these variables

would drastically undermine the confidence and reliability with which conclusions can be made about other relationships with negative symptoms.

In addition, the current research provides further support for the use of the SANS in research which examines cognitive expectancy appraisals, and perhaps particularly those related to motivation. The findings of the current research are consistent with the pattern identified within the literature review that only the studies using the SANS could report a significant relationship between negative symptoms and cognitive appraisals such as self-efficacy. The use of the SANS also makes good theoretical sense, as comparison with other measures indicated that the structure of the SANS most closely resembles components of negative symptoms in psychosis (Foussias & Remington, 2010; Kirkpatrick et al., 2006), upon which the subgroups of negative symptoms described within Rector, Beck and Stolar's (2005) cognitive model are based.

However, this research provided little support for the two-factor model of negative symptoms (Foussias & Remington, 2010; Kirkpatrick et al., 2006), which has continued to find mixed support to date in studies which have examined relationships with motivational variables. This may suggest this model needs some further refinement. As previous work in a first-episode sample also found little distinction between subscales (Ventura et al., 2014), it might be that this differentiation is not especially applicable in first-episode psychosis. This could be because symptoms are still developing and are therefore less differentiated than in chronic illness; or it might be that there are distinctions as a function of diagnosis which are difficult to determine given the fluid clinical picture at this early stage of illness. This suggests a need for further investigation of this model in first-episode psychosis.

Finally, the inconclusive support for the mediation model tested by hypothesis three has implications for theory and future research. Although significant indirect effects were found, this was not quite in line with previous findings which examined this model with self-efficacy as the predictor (Pratt et al., 2005; Ventura et al., 2014), which reported both direct and indirect effects (via negative symptoms) of self-efficacy on social functioning. Statistical power was low in this study, which may have accounted for finding only a small total effect (Rucker et al., 2011). While the findings with relation to the size of the indirect effect were promising, there were a number of factors which meant these findings need to be taken tentatively, such as the low sample size, lack of control variables, and use of cross-sectional data (which will be discussed further in the section on strengths and weaknesses). Determining whether relationships between cognitive appraisals and negative symptoms are uni-directional as suggested by Staring and Van der Gaag (2010) in their cognitive model, or bi-directional as hypothesised by Rector, Beck and Stolar (2005), could also have considerable implications for the appropriateness of testing a mediation model, which makes causal assumptions. This is an issue which requires further conceptual clarity. Also, the divergent findings might again be a function of the first-episode sample, and may suggest that in the early stages of psychosis, some of these relationships between cognitive appraisals, negative symptoms and social functioning are still developing. The lack of direct effect on social functioning of most cognitive variables may indicate that they are chronologically yet to impact on this final point of the model. This would certainly benefit from observation over time.

4.5 Clinical Implications

The prevalence of negative symptoms in this first-episode sample, both in schizophrenia spectrum and other diagnostic groups, suggests that they are an

appropriate and important treatment target in first-episode psychosis. Given the unique relationship between negative symptoms and social recovery in this research, and previous findings which have suggested that the relationship between negative symptom severity and overall functioning may strengthen over time from the first episode (Milev et al., 2005), this research also implies that addressing negative symptoms in early intervention for psychosis is key in order to limit ongoing disability and promote functional recovery.

The current research provides some support that cognitive models of negative symptoms, which have shown some promise in treatment trials with chronic schizophrenia-spectrum samples, might also be applicable within first-episode psychosis. In particular, this research suggests there is utility in addressing cognitive expectancies related to success, performance and agency in treatment, in order to reduce negative symptoms. Other types of expectancy appraisals within the models might also be similarly applicable in treatment for first-episode psychosis. Regardless of whether these appraisals are better explained by depression, anxiety or negative symptoms, they may present relevant treatment targets in first-episode psychosis, and consideration should be given to the assessment of these types of cognitive appraisals when commencing psychological work.

The findings regarding the unique relationship of subjective task value with anhedonia and with social functioning suggest it is also an important consideration in clinical work within first-episode psychosis. Expectancy-value theory suggests that when an activity is perceived as more useful in helping an individual achieve personally meaningful goals, motivation to engage in such an activity will be greater (Eccles & Wigfield, 2002). Previous research has found that motivation for learning tasks in people with schizophrenia was increased when the task was linked with personal goals

and presented in a way that provided experiences of enjoyment and mastery (Choi & Medalia, 2010). This is also consistent with service-user views that an important aspect of recovery from psychosis is the re-establishment of personal goals (Andresen et al., 2003). This demonstrates the importance of therapeutic activity being led by the client's values and linked with their overall goals, in order to both promote engagement in therapy and also facilitate functional recovery. Behaviour activation strategies which explicitly focus on building a sense of enjoyment and achievement, which are already used in CBT approaches for individuals with chronic psychosis (Perivoliotis & Cather, 2009), might also be useful in first-episode psychosis for improving motivation and goal-directed activity.

This research also demonstrated a relationship of negative self-beliefs with all types of negative symptoms, with the mediation model suggesting this could have implications for an individual's weekly level of activity. Given that CBT has been shown to improve low self-esteem (a related construct) in individuals with chronic psychosis (Gumley et al., 2006), and improvements in self-esteem in first-episode psychosis have been associated with improved global functioning (Vracotas, Iyer, Joober, & Malla, 2012), this suggests they may be a viable treatment target which has important functional outcomes in first episode of psychosis. This finding possibly highlights the importance of tackling more global, enduring schemas (or 'core beliefs') in treatment for negative symptoms to improve day-to-day functioning.

However, this research suggests that negative symptoms are likely to be only part of the clinical picture in first-episode psychosis. Just over half of the current sample reported moderate to severe symptoms of depression and just under half moderate to severe symptoms of anxiety. Individuals with high levels of negative symptoms were also likely to have high levels of depression and anxiety, and these

symptoms accounted for a greater amount of variance in negative symptoms than cognitive expectancies. This suggests the importance of assessing for levels of depression and anxiety with first-episode psychosis clients, and that an integrated cognitive approach to treatment with the goal of functional recovery in first-episode psychosis should draw not only on models of treatment for negative symptoms, but also models relevant to depression and anxiety where appropriate. Given the recognised conceptual overlap, it may be that focusing on the expectancies highlighted within cognitive models of negative symptoms will also have some beneficial effects for depression and anxiety symptoms, and likewise other models may have something to offer for negative symptoms. Some treatment trials within early intervention samples have already incorporated these additional factors into models of therapy, such as the 'social recovery-oriented CBT' provided within the ISREP trial (Fowler et al., 2009), which also targeted cognitions related to depression and social anxiety. This trial found that individuals receiving this therapy on average increased their weekly constructive activity by 12 hours compared to TAU, and that increases in activity were associated with increases in positive beliefs about themselves (Hodgekins & Fowler, 2010). The ISREP trial, along with the current research, suggests the importance of assessing and treating these other symptoms in addition to psychotic symptoms in effective early intervention for psychosis.

There is a vast body of evidence supporting the use of psychological approaches such as cognitive behaviour therapy for depression and anxiety (Cuijpers, Andersson, Donker, & van Straten, 2011; National Institute for Health and Clinical Excellence, 2009a, 2013b), and the prevalence and importance of these symptoms in first-episode psychosis and their overlap with negative symptoms may provide even more support for psychological approaches to negative symptoms. Given the complexity of the clinical

picture, both in terms of the overlap with other mental health disorders and the diagnostic uncertainty and instability that is common in first-episode psychosis (Amin et al., 1999), the flexibility that psychological approaches offer is a major strength. Use of individualised psychological formulations which are developed collaboratively with the client and can address a range of symptoms are likely to be beneficial for improving functional recovery for people with first-episode psychosis.

4.6 Strengths and Limitations of the Research

It is important to consider strengths and limitations in the design and execution of research in order to make statements about the reliability and validity of the findings and the generalisability to other similar groups. Limitations and strengths are considered in turn below.

4.6.1 Limitations of the study.

4.6.1.1 Sample size. The minimum number of people required to achieve adequate statistical power was calculated a priori to be 68, and this study recruited 51 individuals. This was despite various strategies employed to maximise recruitment, including maintaining regular contact with team managers and care coordinators, sharing recruitment with another trainee clinical psychologist, extending the recruitment time frame, and expanding recruitment to include an additional NHS trust in the East Anglia region. It may be that the symptoms of interest to the study themselves (negative symptoms) contributed to client difficulties in engaging in additional activity such as participating in research. An additional challenge was that at the time of recruitment, a major service redesign was occurring within the first NHS trust approached, which was felt to contribute to difficulties in involving some teams in the research perhaps due to understandable reluctance to commit to additional activities at what was already a very busy time. The service changes may also have made it hard to

identify suitable clients while individuals were in the process of transferring to new teams and new care coordinators. The final total of 51 also included one person whose data was not counted as it was felt not to be representative of the population of interest, and two individuals who did not complete all of the measures, therefore for some analyses sample sizes were as low as 48. This meant that the analyses were likely to be underpowered, and therefore findings should be interpreted with some caution.

4.6.1.2 Cross-sectional research and causality. This research was cross-sectional, with data collected for each individual at just one time point. Cross-sectional research can make only very limited statements about causal and developmental sequences of variables, which are better examined in longitudinal models which can study change over time. Likewise, correlational analyses can only determine whether there are significant relationships between variables and cannot be used to make causal statements about variables. However, mediation models do assume causal sequences in variables – the predictor is assumed to cause variance in the mediator (and the outcome), and the mediator is assumed to cause the outcome (Jose, 2013), based on theory and prior knowledge of the variables being examined. In the case of the model tested in this research, two previous studies (Pratt et al., 2005; Ventura et al., 2014) have found evidence to support this model with self-efficacy as the predictor, and both also tested alternative models with different causal sequences (i.e. self-efficacy as a mediator between negative symptoms and social functioning) and found that these alternative models were not supported. While the model tested was therefore derived from findings of prior research, it is nevertheless a limitation of this study that mediation analysis was performed with cross-sectional data. Longitudinal or time-lagged data, with which it is more possible to make some inferences about the presenting order of variables, would ideally be used in mediation analysis (Gelfand et

al., 2009). For that reason, alternative temporal orders of variables cannot be ruled out, particularly given that Rector et al. (2005) stated in their cognitive model of negative symptoms that relationships between expectancy appraisals and negative symptoms were likely to be bi-directional. It is a possibility that bi-directional effects exist for some variables within this research, which would not be accounted for within the mediation model. Therefore mediation findings can only be interpreted tentatively.

4.6.2 Strengths of the study.

4.6.2.1 Use of suitable control variables and suitable measurement. A strength of the current research was the measurement of potentially confounding variables and their inclusion in statistical analyses. Although a number of studies have previously found a significant relationship between self-efficacy and negative symptoms (Avery et al., 2009; Hill & Startup, 2013; Macdonald et al., 1998; Pratt et al., 2005; Ventura et al., 2014), only one of these controlled for levels of depression symptoms (Avery et al., 2009) and none for anxiety symptoms. Given that both depression and anxiety symptoms are prevalent in individuals with psychosis (Birchwood et al., 2000; Birchwood et al., 2007; Huppert et al., 2002), and there is notable conceptual overlap particularly with depression and negative symptoms (Hill & Startup, 2013; Siris, 2000), it appears important to account for their influence in relationships with negative symptoms. Appropriately accounting for control variables was one of the main goals of the current research, and the findings of this study highlighted the importance of this, as the strongest relationship observed with negative symptoms for any of the variables in this study was with symptoms of depression. In addition, careful attention was paid in this study to select appropriate measures of the key variables of interest. In particular, the systematic literature review highlighted the utility and appropriateness of the SANS in observing relationships between cognitive

appraisals associated with motivation and negative symptoms, so this was an obvious choice for the current study. It was less clear as to what the most suitable measure of self-efficacy might be given the variability within the literature, but the General Self-Efficacy Scale was chosen as a scale which was practical, very widely-used, reliable and well-validated, as well as generalisable to other populations.

4.6.2.2 Representative, early psychosis sample. The vast majority of research into the relationships of cognitive appraisals with negative symptoms and social functioning has been conducted with individuals that have tended to have a diagnosis of schizophrenia, have been unwell on average for a decade or more, and have tended to be in their 30s or 40s in terms of age. Only a small number of studies to date have examined similar relationships in individuals with first-episode psychosis, who by their nature tend to be in their 20's, have shorter average illness duration, and also have a broader array of different diagnoses. Given that the aim of early intervention is to provide appropriate treatment at first episode so as to limit the number of people who become more chronically ill, it is important that research occurs within this group to ensure that early intervention is focusing on the most helpful areas, and it is hoped that this research has added to an under-researched area.

The current sample appeared representative of individuals who have attended early intervention in psychosis services for at least 12 months with respect to age, gender and levels of positive and negative symptoms (Addington, Leriger, et al., 2003; Hovington et al., 2012; Kirkbride et al., 2012), and other key variables such as self-efficacy, social functioning, positive and negative beliefs about self and others, and cognitive functioning also appeared consistent with what would be expected in this sample (Hodgekins & Fowler, 2010; Kolb & Whishaw, 1983; Lee & Park, 2005; Vauth et al., 2007). One exception was that although the sample appeared representative of

the region of East Anglia in terms of ethnicity (Office for National Statistics, 2013), other regions are likely to be more ethnically diverse. This factor aside, the current sample appeared broadly representative of early psychosis populations and suggests the findings are likely to be generalisable beyond the current sample.

4.7 Future Directions for Research

A number of steps could be taken to improve upon this research. First, a larger sample size would improve the reliability of the findings. Future studies investigating mediation models should calculate adequate sample size to include at least depression as a covariate, though other covariates such as anxiety symptoms might also be recommended. Greater sample size might also have enabled within-sample comparisons, such as comparing groups with high- and low-level symptoms of depression, comparing diagnostic groups (as early intervention samples are by nature heterogeneous in diagnostic presentation), or comparing gender groups (for which there were a few differences noted), which could all be avenues for future research. Given that associations between negative symptoms and cognitive functioning were not found within this research despite a range of previous research which as suggested relationships between the two, use of more comprehensive measures in future studies might also be helpful, as it is possible it was not adequately controlled within this study due to inadequate measurement.

Although this research examined several variables, it is possible that there are others which might account for the pattern of relationships observed. Indeed, only a small proportion of the variance in negative symptoms was accounted for in the regression analyses. The current research has also investigated just one type of cognitive appraisal within the Rector, Beck and Stolar (2005) and Staring and Van der Gaag (2010) cognitive models of negative symptoms, which are still in relatively early

stages of being tested and applied. Future research might consider examining several of the cognitive aspects and their relationship to each other, similar to the work of Couture et al. (2011). Aspects of expectancy-value theory, in particular subjective task value, might also warrant further investigation within early intervention samples.

Other potential candidates for inclusion in similar studies might include insight, given that lower levels of insight in people with psychosis have been reported in a number of studies (Colis, Steer, & Beck, 2006; Pini, Cassano, Dell'Osso, & Amador, 2001) and have been found to moderate relationships between variables such as self-efficacy and negative symptoms (Kurtz et al., 2013; Shahar et al., 2004). Another useful area of investigation, which previous research has found to be related to social functioning following first-episode psychosis, would be to examine pre-morbid functioning (Addington & Addington, 2005; Romm, Melle, Thoresen, Andreassen, & Rossberg, 2011). Having some knowledge of premorbid functioning might also make the identification of primary and secondary negative symptoms a possibility, which could be a useful distinction.

Given that the current research found that depression accounted for the largest amount of variance in negative symptoms and was also related to self-efficacy and self-schemas, further investigation of the nature of these relationships might be a useful avenue of investigation. Depression was not significantly related to social functioning but was related to other variables within the model, which suggests it might act as a moderator to the mediation model (Jose, 2013), or to the relationships between cognitive appraisals and negative symptoms. Future research examining this could help understand the complex and overlapping relationships between variables observed in this study. Research examining both the overlap and distinct features in models of

depression and negative symptoms could also help to provide some conceptual clarity within these areas.

It might also be useful, given the acknowledged similarities in depression and negative symptom models, to investigate whether specific interventions and therapeutic techniques for depression are also useful in psychological treatments for negative symptoms, and whether recent therapeutic innovations might also be adopted in psychosis. One example of this might be whether compassion-focused therapy (Gilbert, 2010) might also have utility in addressing stigma and negative self-schemas in psychosis.

Finally, as this research and others (Pratt et al., 2005; Ventura et al., 2014) have suggested support for the role of negative symptoms as mediators of social functioning and variables such as self-efficacy, longitudinal or time-lagged research to test this model could be conducted to provide more conclusive support. This would be useful particularly as other models hypothesise that variables such as self-efficacy and subjective task value may actually have bi-directional relationships with symptom or behavioural outcomes (Choi et al., 2010; Rector et al., 2005), and whether the nature of relationships in the model is bi-directional or uni-directional could have considerable implications for the delivery of treatment based upon these models.

4.8 Conclusion

This research adds to the small but growing body of research which has examined the impact of negative symptoms in first-episode psychosis. Negative symptoms were found to be prevalent in this sample, and given their association with poorer social functioning in this sample and in previous research (Addington, Young, et al., 2003; Edwards et al., 1999; Ho et al., 1998; Milev et al., 2005; Song et al., 2011),

this research has emphasised their importance as a treatment target in first-episode psychosis.

The vast majority of research on psychosis to date has been conducted with more chronically ill samples of people who typically have schizophrenia spectrum diagnoses, therefore this research contributes valuable data towards understanding whether the same explanatory mechanisms for negative symptoms found in such samples might also apply in the more diagnostically diverse population of individuals with first-episode psychosis. The findings of this research suggest that cognitive models of negative symptoms (Rector et al., 2005; Staring & Van der Gaag, 2010), as well as aspects of motivational theories such as expectancy-value theory, may provide useful explanatory models for understanding cognitive appraisals associated with negative symptoms in first-episode psychosis. Self-efficacy, self-schemas and subjective task value were all found to be significantly related to levels of negative symptoms. Additionally, all of these variables had an effect on social functioning indirectly through their relationship with negative symptoms, accounting for potential increases of between 3.5 and 7.5 hours per week in structured activity as a result of one standard deviation difference. These findings suggest that such cognitive appraisals may therefore represent useful treatment targets in addressing negative symptoms and their associated social disability. Future research could examine these factors longitudinally or with a time-lag design in order to draw more reliable conclusions about the temporal sequence of the development of these types of cognitive expectancies, negative symptoms, and their relationship with social functioning following first-episode psychosis.

A key finding of the current study is that symptoms of depression and anxiety also play an important role in explaining some of the variance in negative symptoms in

first-episode psychosis. Depression in particular was highly correlated with the cognitive variables examined within this study and also accounted for more variance in negative symptoms, rendering the associations of other variables with negative symptoms non-significant when depression was first controlled for. This suggests that the findings regarding the relationships of cognitive appraisals with negative symptoms may in fact be due to depression. This finding has highlighted the vital importance of future research to measure these variables and factor them in to analyses in order to avoid confounding, which may have been an issue in previous research.

This research suggests that treatment for negative symptoms in first-episode psychosis should attend to enduring negative self-schemas as well as the specific cognitive appraisals within the cognitive model of negative symptoms, and ensure that treatment targets are linked to goals which are personally meaningful and valuable for the client in order to optimise functional recovery. In addition, treatment needs to assess and attend to symptoms of depression and anxiety, which are also likely to impact on the success of treatment of negative symptoms. That there is an extensive evidence base for the efficacy of psychological therapies such as CBT in reducing symptoms of depression and anxiety, and a growing amount of evidence for cognitive approaches to negative symptoms. This research supports an integrated psychological approach to working with both negative symptoms and other associated symptoms such as depression and anxiety, to improve functional recovery following first-episode psychosis.

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6. Appendices

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Appendix A:
The Scale for the Assessment of Negative Symptoms (Andreasen, 1984)

SCALE FOR THE ASSESSMENT OF NEGATIVE SYMPTOMS

(SANS)

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AFFECTIVE FLATTENING OR BLUNTING

Affective flattening or blunting manifests itself as a characteristic impoverishment of emotional expression, reactivity, and feeling. Affective flattening can be evaluated by observation of the subject's behaviour and responsiveness during a routine interview. The rating of some items may be affected by drugs, since the Parkinsonian side-effect of phenothiazines may lead to mask-like faces and diminished associated movements. Other aspects of affect, such as responsivity or appropriateness, will not be affected, however.

Unchanging Facial Expression

The subject's face appears wooden, mechanical, frozen. It does not change expression, or changes less than normally expected, as the emotional content of discourse change. Since phenothiazines may partially mimic this effect, the interviewer should be careful to note whether or not the subject is on medication, but should not try to "correct" the rating accordingly.

Not at all: Subject is normal or labile	0
Questionable decrease	1
Mild: Occasionally the subject's expression is not as full as expected	2
Moderate: Subject's expressions are dulled overall, but not absent	3
Marked: Subject's face has a flat "set" look, but flickers of affect arise occasionally	4
Severe: Subject's face looks "wooden" and changes little, if at all throughout the interview	5

Decreased Spontaneous Movements

The subject sits quietly throughout the interview and shows few or no spontaneous movements. He does not shift position, move his legs, move his hands, etc., or does so less than normally expected.

Not at all: Subject moves normally or is overactive	0
Questionable decrease	1
Mild: Some decrease in spontaneous movements	2
Moderate: Subject moves three or four times during the interview	3
Marked: Subject moves once or twice during the interview	4
Severe: Subject sits immobile throughout the interview	5

Paucity of Expressive Gestures The subject does not use his body as an aid in expressing his ideas, through such means as hand gestures, sitting forward in his chair when intent on a subject, leaning back when relaxed, etc. This may occur in addition to decreased spontaneous movements.	Not at all: Subject uses expressive gestures normally or excessively	0
	Questionable decrease	1
	Mild: Some decrease in expressive gestures	2
	Moderate: Subject uses body as an aid in expression at least three or four times	3
	Marked: Subject uses body as an aid in expression only once or twice	4
	Severe: Subject never uses body as an aid in expression	5
Poor Eye Contact The subject avoids looking at others or using his eyes as an aid in expression. He appears to be staring into space even when he is talking.	Not at all: Good eye contact and expression	0
	Questionable decrease	1
	Mild: Some decrease in eye contact and eye expression	2
	Moderate: Subject's eye contact is decreased by at least half of normal	3
	Marked: Subject's eye contact is very infrequent	4
	Severe: Subject almost never looks at interviewer	5
Affective Nonresponsivity Failure to smile or laugh when prompted may be tested by smiling or joking in a way which would usually elicit a smile from a normal individual. The examiner may also ask, "Have you forgotten how to smile?" while smiling himself.	Not at all	0
	Questionable decrease	1
	Mild: Slight but definite lack in responsivity	2
	Moderate: Subject occasionally seems to miss the cues to respond	3
	Marked: Subject seems to miss the cues to respond most of the time	4
	Severe: Subject is essentially unresponsive, even on prompting	5

Lack of Vocal Inflections While speaking the subject fails to show normal vocal emphasis patterns. Speech has a monotonic quality, and important words are not emphasized through changes in pitch or volume. Subject also may fail to change volume with changes of subject so that he does not drop his voice when discussing private topics nor raise it as he discusses things which are exciting or for which louder speech might be appropriate.	Not at all: Normal vocal inflections	0
	Questionable decrease	1
	Mild: Slight decrease in vocal inflections	2
	Moderate: Interviewer notices several instances of flattened vocal inflections	3
	Marked: Obvious decrease in vocal inflections	4
	Severe: Subject's speech is a continuous monotone	5
Global Rating of Affective Flattening The global rating should focus on overall severity of affective flattening or blunting. Special emphasis should be given to such core features as unresponsiveness, inappropriateness, and an overall decrease in emotional intensity.	No flattening: Normal affect	0
	Questionable affective flattening	1
	Mild affective flattening	2
	Moderate affective flattening	3
	Marked affective flattening	4
	Severe affective flattening	5
Inappropriate Affect Affect expressed is inappropriate or incongruous, not simply flat or blunted. Most typically, this manifestation of affective disturbance takes the form of smiling or assuming a silly facial expression while talking about a serious or sad subject. (Occasionally subjects may smile or laugh when talking about a serious subject which they find uncomfortable or embarrassing. Although their smiling may seem inappropriate, it is due to anxiety and therefore should not be rated as inappropriate affect.) Do not rate affective flattening or blunting as inappropriate.	Not at all: Affect is not inappropriate	0
	Questionable	1
	Mild: At least one instance of inappropriate smiling or other inappropriate affect	2
	Moderate: Subject exhibits two to four instances of inappropriate affect	3
	Marked: Subject exhibits five to ten instances of inappropriate affect	4
	Severe: Subject's affect is inappropriate most of the time	5

ALOGIA

Alogia is a general term coined to refer to the impoverished thinking and cognition that often occur in subjects with schizophrenia (Greek a = no, none; logos = mind, thought). Subjects with alogia have thinking processes that seem empty, turgid, or slow. Since thinking cannot be observed directly, it is inferred from the subject's speech. The two major manifestations of alogia are nonfluent empty speech (poverty of speech) and fluent empty speech (poverty of content of speech). Blocking and increased latency or response may also reflect alogia.

Poverty of Speech

Restriction in the amount of spontaneous speech, so that replies to questions tend to be brief, concrete, and unelaborated. Unprompted additional information is rarely provided. Replies may be monosyllabic, and some questions may be left unanswered altogether. When confronted with this speech pattern, the interviewer may find himself frequently prompting the subject in order to encourage elaboration of replies. To elicit this finding, the examiner must allow the subject adequate time to answer and to elaborate his answer.

No poverty of speech: A substantial and appropriate number of replies to questions include additional information 0

Questionable poverty of speech 1

Mild: Occasional replies do not include elaborated information even though this is appropriate 2

Moderate: Some replies do not include appropriately elaborated information, and some replies are monosyllabic or very brief--("Yes." "No." "Maybe." "I don't know." "Last week.") 3

Marked: Answers are rarely more than a sentence or a few words in length 4

Severe: Subject says almost nothing and occasionally fails to answer questions 5

Poverty of Content of Speech

Although replies are long enough so that speech is adequate in amount, it conveys little information. Language tends to be vague, often over-abstract or over-concrete, repetitive, and stereotyped. The interviewer may recognize this finding by observing that the subject has spoken at some length but has not given adequate information to answer the question. Alternatively, the subject may provide enough information, but require many words to do so, so that a lengthy reply can be summarized in a sentence or two. Sometimes the interviewer may characterize the speech as "empty philosophizing."

Exclusions: This finding differs from circumstantiality in that the circumstantial subject tends to provide a wealth of detail.

Example: Interviewer: "Why is it, do you think, that people believe in God?" Subject: "Well, first of all because he uh, he are the person that is their personal savoir. He walks with me and talks with me. And uh, the understanding that I have, um, a lot of peoples, they don't really, uh, know they own personal self. Because, uh, they ain't, they all, just don't know they personal self. They don't, know that he uh, seemed like to me, a lot of 'em don't understand that he walks and talks with them."

No poverty of content	0
Questionable	1
Mild: Occasional replies are too vague to be comprehensible or can be markedly condensed	2
Moderate: Frequent replies which are vague or can be markedly condensed to make up at least a quarter of the interview	3
Marked: At least half of the subject's speech is composed of vague or incomprehensible replies	4
Severe: Nearly all the speech is vague, incomprehensible, or can be markedly condensed	5

Blocking

Interruption of a train of speech before a thought or idea has been completed. After a period of silence which may last from a few seconds to minutes, the person indicates that she/he cannot recall what he had been saying or meant to say. Blocking should only be judged to be present if a person voluntarily describes losing his thought or if, upon questioning by the interviewer, the person indicates that that was the reason for pausing.

No blocking	0
Questionable	1
Mild: A single instance noted during a forty-five minute period	2
Moderate: Occurs twice during forty-five minutes	3
Marked: Occurs three or four times during forty-five minutes	4
Severe: Occurs more than four times in forty-five minutes	5

Increased Latency of Response The subject takes a longer time to reply to questions than is usually considered normal. He may seem "distant" and sometimes the examiner may wonder if he has even heard the question. Prompting usually indicates that the subject is aware of the question, but has been having difficulty in formulating his thoughts in order to make an appropriate reply.	Not at all	0
	Questionable	1
	Mild: Occasional brief pauses before replying	2
	Moderate: Often pauses several seconds before replying	3
	Marked: Usually pauses at least ten to fifteen seconds before replying	4
	Severe: Long pauses prior to nearly all replies.	5

Global Rating of Alogia Since the core features of alogia are poverty of speech and poverty of content of speech, the global rating should place particular emphasis on them.	No alogia	0
	Questionable	1
	Mild: Mild but definite impoverishment in thinking	2
	Moderate: Significant evidence for impoverished thinking	3
	Marked: Subject's thinking seems impoverished much of the time	4
	Severe: Subject's thinking seems impoverished nearly all of the time	5

AVOLITION-APATHY

Avolition manifests itself as a characteristic lack of energy, drive, and interest. Subjects are unable to mobilize themselves to initiate or persist in completing many different kinds of tasks. Unlike the diminished energy or interest of depression, the avolitional symptom complex in schizophrenia is usually not accompanied by saddened or depressed affect. The avolitional symptom complex often leads to severe social and economic impairment.

<u>Grooming and Hygiene</u> The subject displays less attention to grooming and hygiene than normal. Clothing may appear sloppy, outdated, or soiled. The subject may bathe infrequently and not care for hair, nails, or teeth-- leading to such manifestations as greasy or uncombed hair, dirty hands, body odour, or unclean teeth and bad breath. Overall, the appearance is dilapidated and dishevelled. In extreme cases, the subject may even have poor toilet habits. *How often do you bathe or shower?* *Do you change your clothes every day?* *How often do you do laundry?*	No evidence of poor grooming and hygiene	0
	Questionable	1
	Mild: Some slight but definite indication of inattention to appearance, i.e., messy hair or dishevelled clothes	2
	Moderate: Appearance is somewhat dishevelled, i.e., greasy hair, dirty clothes	3
	Marked: Subject's attempts to keep up grooming or hygiene are minimal	4
	Severe: Subject's clothes, body and environment are dirty and smelly	5
<u>Impersistence at Work or School</u> The subject has had difficulty in seeking or maintaining employment (or schoolwork) as appropriate for his or her age and sex. If a student, he/she does not do homework and may even fail to attend class. Grades will tend to reflect this. If a college student, there may be a pattern of registering for courses, but having to drop several or all of them before the semester is completed. If of working age, the subject may have found it difficult to work at a job because of inability to persist in completing tasks and apparent irresponsibility. He may go to work irregularly, wander away early, complete them in a disorganized manner. He may simply sit around the house and not seek any employment or seek it only in an infrequent and desultory manner. If a housewife or retired person, the subject may fail to complete chores, such as shopping or cleaning, or complete them in an apparently careless and half-hearted way. *Have you been having any problems at (work, school)?* *Do you ever start some project and just never get around to finishing it?*	No evidence of impersistence at work or school	0
	Questionable	1
	Mild: Slight indications of impersistence, i.e., missing a couple days of school or work	2
	Moderate: Subject often has poor performance at work or school	3
	Marked: Subject has much difficulty maintaining even a below normal level of work or school	4
	Severe: Subject consistently fails to maintain a record at work or school	5

Physical Anergia The subject tends to be physically inert. He may sit in a chair for hours at a time and not initiate any spontaneous activity. If encouraged to become involved in an activity, he may participate only briefly and then wander away or disengage himself and return to sitting alone. He may spend large amounts of time in some relatively mindless and physically inactive task such as watching TV or playing solitaire. His family may report that he spends most of his time at home "doing nothing except sitting around". Either at home or in an inpatient setting he may spend much of his time sitting in his room. *Are there times when you lie or sit around most of the day?* *(Does this ever last longer than one day?)*	No Evidence of Physical Anergia	0
	Questionable	1
	Mild Anergia	2
	Moderate: Subject lies in bed or sits immobile at least a quarter of normal waking hours	3
	Marked: Subject lies in bed or sits immobile at least half of normal waking hours	4
	Severe: Subject lies in bed or sits immobile for most of the day	5

Global Rating of Avolition - Apathy The global rating should reflect the overall severity of the avolition symptoms, given expectational norms for the subject's age and social status or origin. In making the global rating, strong weight may be given to only one or two prominent symptoms if they are particularly striking.	No Avolition	0
	Questionable	1
	Mild, But Definitely Present	2
	Moderate Avolition	3
	Marked Avolition	4
	Severe Avolition	5

ANHEDONIA-ASOCIALITY

This symptom complex encompasses the schizophrenic subject's difficulties in experiencing interest or pleasure. It may express itself as a loss of interest in pleasurable activities, an inability to experience pleasure when participating in activities normally considered pleasurable, or a lack of involvement in social relationships of various kinds.

Recreational Interests and Activities The subject may have few or no interests, activities, or hobbies. Although this symptom may begin insidiously or slowly, there will usually be some obvious decline from an earlier level of interest and activity. Subjects with relatively milder loss of interest will engage in some activities which are passive or non-demanding, such as watching TV, or will show only occasional or sporadic interest. Subjects with the most extreme loss will appear to have a complete and intractable inability to become involved in or enjoy activities. The rating in this area should take both the quality and quantity of recreational interests into account. *Have you felt interested in the things you usually enjoy? (Have they been as fun as usual?)* *Have you been watching TV or listening to the radio?*	No Inability to Enjoy Recreational Interests or Activities	0
	Questionable	1
	Mild Inability to Enjoy Recreational Activities	2
	Moderate: Subject often is not "up" for recreational activities	3
	Marked: Subject has little interest in and derives only mild pleasure from recreational activities	4
	Severe: Subject has no interest in and derives no pleasure from recreational activities	5
Sexual Interest and Activity The subject may show a decrement in sexual interest and activity, as judged by what would be normal for the subject's age and marital status. Individuals who are married may manifest disinterest in sex or may engage in intercourse only at the partner's request. In extreme cases, the subject may not engage in any sex at all. Single subjects may go for long periods of time without sexual involvement and make no effort to satisfy this drive. Whether married or single, they may report that they subjectively feel only minimal sex drive or that they take little enjoyment in sexual intercourse or in masturbatory activity even when they engage in it. *Have you noticed any changes in your sex drive?*	No Inability to Enjoy Sexual Activities	0
	Questionable Decrement in Sexual Interest and Activity	1
	Mild Decrement in Sexual Interest and Activity	2
	Moderate: Subject occasionally has noticed decreased interests in and/or enjoyment from sexual activities	3
	Marked: Subject has little interest in and/or derives little pleasure from sexual activities	4
	Severe: Subject has no interest in and/or derives no pleasure from sexual activities	5

Ability to Feel Intimacy and Closeness

The subject may display an inability to form close and intimate relationships of a type appropriate for his age, sex, and family status. In the case of a younger person, this area should be rated in terms of relationships with the opposite sex and with parents and siblings. In the case of an older person who is married, the relationship with spouse and with children should be evaluated, while older unmarried individuals should be judged in terms of relationships with the opposite sex and any family members who live nearby. Subjects may display few or no feelings of affection to available family members. Or they may have arranged their lives so that they are completely isolated from any intimate relationships, living alone and making no effort to initiate contacts with family or members of the opposite sex.

Have you been having any problems with your (family, spouse)?

How would you feel about visiting with your (family, parents, spouse, etc.)?

No Inability to Feel Intimacy and Closeness 0

Questionable Inability 1

Mild, But Definite Inability to Feel Intimacy and Closeness 2

Moderate: Subject appears to enjoy family or significant others but does not appear to "look forward" to visits 3

Marked: Subject appears neutral toward visits from family or significant others. Brightens only mildly 4

Severe: Subject prefers no contact with or is hostile toward family or significant others 5

Relationships with Friends and Peers

Subjects may also be relatively restricted in their relationships with friends and peers of either sex. They may have few or no friends, make little or no effort to develop such relationships, and choose to spend all or most of their time alone.

Have you been spending much time with friends?

Do you enjoy spending time alone, or would you rather have more friends?

No Inability to Form Close Friendships 0

Questionable Inability to Form Friendships 1

Mild, But Definite Inability to Form Friendships 2

Moderate: Subject able to interact, but sees friends/acquaintances only two to three times per month 3

Marked: Subject has difficulty forming and/or keeping friendships. Sees friends/ acquaintances only one to two times per month 4

Severe: Subject has no friends and no interest in developing any social ties 5

Global Rating of Anhedonia-Asociality

The global rating should reflect the overall severity of the anhedonia-asociality complex, taking into account the norms appropriate for the subject's age, sex, and family status.

No Evidence of Anhedonia-Asociality 0

Questionable Evidence of Anhedonia-Asociality 1

Mild, But Definite Evidence of Anhedonia-Asociality 2

Moderate Evidence of Anhedonia-Asociality 3

Marked Evidence of Anhedonia-Asociality 4

Severe Evidence of Anhedonia-Asociality 5

ATTENTION

Attention is often poor in schizophrenics. The subject may have trouble focusing his attention, or he may only be able to focus sporadically and erratically. He may ignore attempts to converse with him, wander away while in the middle of an activity or task, or appear to be inattentive when engaged in formal testing or interviewing. He may or may not be aware of his difficulty in focusing his attention.

Social Inattentiveness While involved in social situations or activities, the subject appears inattentive. He looks away during conversations, does not pick up the topic during a discussion, or appears uninvolved or unengaged. He may abruptly terminate a discussion or a task without any apparent reason. He may seem "spacey" or "out of it". He may seem to have poor concentration when playing games, reading, or watching TV.	No Indication of Inattentiveness	0
	Questionable Signs	1
	Mild, But Definite Signs of Inattentiveness	2
	Moderate: Subject occasionally misses what is happening in the environment	3
	Marked: Subject often misses what is happening in the environment; has trouble with reading comprehension	4
	Severe: Subject unable to follow conversation, remember what he's read, or follow TV plot	5

Inattentiveness During Mental Status Testing The subject may perform poorly on simple tests of intellectual functioning in spite of adequate education and intellectual ability. This should be assessed by having the subject spell "world" backwards and by serial 7's (at least a tenth grade education) or serial 3's (at least a sixth grade education) for a series of five subtractions. A perfect score is 10.	No Errors	0
	Questionable: No errors but subject performs in a halting manner or makes/corrects an error	1
	Mild, But Definite (One Error)	2
	Moderate (Two Errors)	3
	Marked (Three Errors)	4
	Severe (More Than Three Errors)	5

Global Rating of Attention This rating should assess the subject's overall ability to attend or concentrate, and include both clinical appearance and performance on tasks.	No Indications of Inattentiveness	0
	Questionable	1
	Mild, But Definite Inattentiveness	2
	Moderate Inattentiveness	3
	Marked Inattentiveness	4
	Severe Inattentiveness	5

Appendix B: The General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995)

For each of the following statements, please tick the box below the choice that is closest to how much you agree with the statement. The questions ask about your opinion – there are no right or wrong answers.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I can always manage to solve difficult problems if I try hard enough.				
If someone opposes me, I can find the means and ways to get what I want.				
It is easy for me to stick to my aims and accomplish my goals.				
I am confident that I could deal efficiently with unexpected events.				
Thanks to my resourcefulness, I know how to handle unforeseen situations.				
I can solve most problems if I invest the necessary effort.				
I can remain calm when facing difficulties because I can rely on my coping abilities.				
When I am confronted with a problem, I can usually find several solutions.				
If I am in trouble, I can usually think of a solution.				
I can usually handle whatever comes my way.				

Appendix C: The Brief Core Schema Scales (Fowler et al., 2006)

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.

				Believe it slightly	Believe it moderate ly	Believe it very much	Believe it totally
MYSELF							
I am unloved	NO	YES	→	1	2	3	4
I am worthless	NO	YES	→	1	2	3	4
I am weak	NO	YES	→	1	2	3	4
I am vulnerable	NO	YES	→	1	2	3	4
I am bad	NO	YES	→	1	2	3	4
I am a failure	NO	YES	→	1	2	3	4
I am respected	NO	YES	→	1	2	3	4
I am valuable	NO	YES	→	1	2	3	4
I am talented	NO	YES	→	1	2	3	4
I am successful	NO	YES	→	1	2	3	4
I am good	NO	YES	→	1	2	3	4
I am interesting	NO	YES	→	1	2	3	4
OTHER PEOPLE							
Other people are hostile	NO	YES	→	1	2	3	4
Other people are harsh	NO	YES	→	1	2	3	4
Other people are unforgiving	NO	YES	→	1	2	3	4
Other people are bad	NO	YES	→	1	2	3	4
Other people are devious	NO	YES	→	1	2	3	4
Other people are nasty	NO	YES	→	1	2	3	4
Other people are fair	NO	YES	→	1	2	3	4
Other people are good	NO	YES	→	1	2	3	4
Other people are trustworthy	NO	YES	→	1	2	3	4
Other people are accepting	NO	YES	→	1	2	3	4
Other people are supportive	NO	YES	→	1	2	3	4
Other people are truthful	NO	YES	→	1	2	3	4

Appendix D: The Time Use Survey (adapted from Short, 2006)

EMPLOYMENT

1. Did you do any paid work in the last month, either as an employee or self-employed?

YES → ASK DETAILS
NO → GO TO QU 3

Details

2. How many hours a week do you usually work in your main job? Include any overtime. How many hours have you worked in the last month?

Usual hours/week:
Hours worked in last month:

3. Over the last month have you been away from your main job?

YES → ASK DETAILS
NO → GO TO QU 4

Details

4. Have you ever had a paid job?

YES → ASK DETAILS
NO → GO TO 'EDUCATION AND TRAINING' SECTION

Details (What was the job? When left job, etc)

EDUCATION AND TRAINING

1. Are you studying for any formal qualifications at the moment?

YES → ASK DETAILS
NO → GO TO QU 2

Details (e.g. what, where, full/part time, hours in the last month)

2. In the last month, have you been on any taught courses or undertaken learning of any of the following sorts:

Taught courses meant to lead to qualifications (even if you did not obtain them)	
Taught courses designed to help you develop skills that you might use in a job	
Courses or instruction or tuition in driving, in playing a musical instrument, in an art or craft, in a sport or in any practical skill	
Evening classes (e.g. art/craft, languages, cookery)	
Learning which involved working on your own from a package of materials provided	

IF YES TO ANY OF THE ABOVE → ASK DETAILS
IF NONE OF THE ABOVE → GO TO 'VOLUNTARY WORK' SECTION

Details (e.g. what, where, full/part time, hours in the last month)

3. On how many occasions in the last month did you spend time studying at home outside of teaching sessions? How many hours?

Details (e.g. what, where, full/part time, hours in the last month)

VOLUNTARY WORK

1. Have you done any voluntary work through a group or on behalf of an organisation at any time during the last month? Have you done any unpaid work for anybody else e.g. running errands for elderly relatives?

YES → ASK DETAILS
NO → GO TO 'LEISURE ACTIVITIES'

Details of voluntary work *How many times in the past month?* *How long do you normally spend doing this?*

LEISURE ACTIVITIES

1. I am now going to ask some questions about things that some people do in their spare time. For each activity that I mention could you please tell me whether or not you have done this in the last month, AND how often?

ACTIVITY	NUMBER OF TIMES	AMOUNT OF TIME
Been to cinema		
Been to an event as a spectator (e.g. sports event, theatre, live music performance)		
Been to a museum, art gallery or heritage site		
Been to a library		
Been out to eat or drink at a café, restaurant, pub or wine bar		
Been to a shopping centre, or mall, apart from regular shopping for food and household items		
Been to some other place of entertainment (e.g. dance, club, bingo, casino)		
Been on any other outdoor trips (including going to places of natural beauty, picnics, going for a drive or going to the beach)		
Been involved in any community based activities (e.g. Scouts, going to church)		

2. I am now going to ask about sports activities. Could you please tell me whether or not you took part in any of these sports in the last month AND how often?

ACTIVITY	NUMBER OF TIMES	AMOUNT OF TIME
Swimming		
Cycling		
Gym/weight training		
Exercise classes (e.g. aerobics, martial arts)		
Team sports (e.g. rugby, football, cricket, hockey, netball)		
Racquet sports (e.g. tennis, badminton, squash)		
Jogging, cross country, road running		
Walking or hiking for 2 miles or more (recreationally)		
Climbing/mountaineering		
Fishing		
Golf		
Horse riding		
Pub games (e.g. snooker, pool, darts)		

3. How much time do you spend socialising? How many occasions in the last month have you seen friends, either visiting them or receiving visitors? How much time did you tend to spend socialising on each occasion on average?

Details

CHILD CARE

1. Are you responsible for the care of any children?

YES → ASK 2
NO → GO TO 'HOUSEWORK AND CHORES'

2. How many children do you have? How old are they? Are you their primary carer?

Details

3. How much time do you spend doing things with your children?

Physical care (e.g. feeding, dressing, washing)	
Supervision (inside and outside)	
Teaching children (e.g. helping with homework)	
Reading, playing and talking with children	
Accompanying child (e.g. to school, doctor, friend's house, etc)	

HOUSEWORK AND CHORES

1. How many people do you live with? Who is mainly responsible for the housework?

Details

2. How much time do you spend doing housework and chores per week?

Food management and preparation	
Cleaning, dusting, vacuuming, washing dishes	
Food shopping	
Washing	
Gardening	
DIY and repairs	

TIME USE INTERVIEW SCORE SHEET

EMPLOYMENT

- Is paid work in the last month present or absent?

☐ Present = 'YES' response to Question 1

☐ Absent = 'NO' response to Question 1

- Type of work/job title (Question 1)

- Hours per week in paid employment over the last month

NB. This should be calculated by adding all hours spent in employment (from Questions 1 and 2) and multiplying by 12 then dividing by 52 to get a weekly average.

- Have they been away from main job?

☐ Present = 'YES' response to Question 3

☐ Absent = 'NO' response to Question 3

- Reason for being away from job, e.g. Maternity leave.

- Has paid work ever been present?

☐ Present = 'YES' response to Question 4

☐ Absent = 'NO' response to Question 4

If yes:

Number of weeks since last worked
(Response to Question 4)

What was the last paid job? (Question 4)

EDUCATION

- Current education present or absent?

☐ Present = any 'YES' response to Questions 1 and 2

☐ Absent = 'NO' responses to Questions 1 and 2

- Hours per week in education over the last month

☐ NB. This should be calculated by adding all hours spent in education (from Questions 1, 2 and 3) and multiplying by 12 then dividing by 52 to get a weekly average.

VOLUNTARY WORK

- Is voluntary work present or absent?

☐ Present = 'YES' response to Question 1

☐ Absent = 'NO' response to Question 1

- Hours per week spent in voluntary work over the last month

☐ NB. This should be calculated by multiplying number of times by average length of time and multiply by 12 then dividing by 52 to get a weekly average.

LEISURE ACTIVITIES

- Are leisure activities present or absent?

☐ Present

☐ Absent

- Hours per week spent in leisure activities over the last month

☐ NB. This should be calculated by multiplying number of times by average length of time for each activity. Then sum all of these and multiply by 12 then dividing by 52 to get a weekly average.

- Are sport/physical activities present or absent (taken from Question 2)

☐ Present

☐ Absent

- Hours per week spent in sport/physical activities over the last month

☐ NB. This should be calculated by multiplying number of times by average length of time for each activity. Then sum all of these and multiply by 12 then dividing by 52 to get a weekly average.

- Hours per week over last month spent:

☐ Socialising ☐ Non-direct socialising (e.g. social networking)

CHILDCARE

- Childcare

☐ Applicable ☐ Non-applicable

- How many children? ☐ Age of youngest child? ☐

- Primary carer?

☐ Yes

☐ No

- Hours per week spent on childcare

☐ NB. Taken from estimate of average time including items from checklist in estimate

HOUSEWORK AND CHORES

- Hours per week spent on housework and chores

☐ NB. Taken from estimate of average time including items from checklist in estimate

Appendix E: The Task Motivation Questionnaire (adapted from MacCarthy et al., 1986)

This questionnaire is about everyday tasks you might carry out. For each activity, please answer the questions below it by circling the answer which you think is most accurate for you. There are no right or wrong answers, so just be as honest as you can and give your best estimate.

1. **GOING SHOPPING**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

2. **HAVING A MEAL IN A RESTAURANT**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

3. **COOKING A MEAL**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

4. **DOING HOUSEHOLD CHORES**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

5. **TRAVELLING ON PUBLIC TRANSPORT**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

6. **USING PUBLIC AMENITIES (e.g. a local swimming pool)**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

7. **READING**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

8. **WRITING ANYTHING (e.g. a letter)**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

9. **MANAGING A PERSONAL BUDGET**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

10. **MANAGING A HOUSEHOLD BUDGET**

How often do you usually carry out this activity?

Never	Rarely	Approximately monthly	Approximately weekly	Most days

How important is this activity to you?

Not important to me at all	Not very important to me	Fairly important to me	Very important to me

How difficult is it for you to perform this activity?

Not at all difficult for me	Not very difficult for me	Fairly difficult for me	Very difficult for me

How successful do you think your efforts to perform this activity are likely to be?

My efforts would be very successful	My efforts would be fairly successful	My efforts would not be very successful	My efforts would not be successful at all

Appendix F: The Depression Anxiety Stress Scales (P. F. Lovibond & S. H. Lovibond, 1995)

(see next page)

DASS

Name:

Date:

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found myself getting upset by quite trivial things	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I just couldn't seem to get going	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I had a feeling of shakiness (e.g., legs going to give way)	0	1	2	3
8	I found it difficult to relax	0	1	2	3
9	I found myself in situations that made me so anxious I was most relieved when they ended	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting upset rather easily	0	1	2	3
12	I felt that I was using a lot of nervous energy	0	1	2	3
13	I felt sad and depressed	0	1	2	3
14	I found myself getting impatient when I was delayed in any way (e.g., lifts, traffic lights, being kept waiting)	0	1	2	3
15	I had a feeling of faintness	0	1	2	3
16	I felt that I had lost interest in just about everything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I perspired noticeably (e.g., hands sweaty) in the absence of high temperatures or physical exertion	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life wasn't worthwhile	0	1	2	3

Reminder of rating scale:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

22	I found it hard to wind down	0	1	2	3
23	I had difficulty in swallowing	0	1	2	3
24	I couldn't seem to get any enjoyment out of the things I did	0	1	2	3
25	I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	0	1	2	3
26	I felt down-hearted and blue	0	1	2	3
27	I found that I was very irritable	0	1	2	3
28	I felt I was close to panic	0	1	2	3
29	I found it hard to calm down after something upset me	0	1	2	3
30	I feared that I would be "thrown" by some trivial but unfamiliar task	0	1	2	3
31	I was unable to become enthusiastic about anything	0	1	2	3
32	I found it difficult to tolerate interruptions to what I was doing	0	1	2	3
33	I was in a state of nervous tension	0	1	2	3
34	I felt I was pretty worthless	0	1	2	3
35	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
36	I felt terrified	0	1	2	3
37	I could see nothing in the future to be hopeful about	0	1	2	3
38	I felt that life was meaningless	0	1	2	3
39	I found myself getting agitated	0	1	2	3
40	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
41	I experienced trembling (e.g., in the hands)	0	1	2	3
42	I found it difficult to work up the initiative to do things	0	1	2	3

Appendix G: The Controlled Oral Word Association Test (Benton et al., 1994)

Say: "I will say a letter of the alphabet. Then I want you to give me as many words that begin with that letter as quickly as you can. For example, if I say "b" you might give me "bad, battle, bed..." I do not want you to use words that are proper nouns such as "Boston" or "Bob". Also, do not use the same word with different endings such as "eat" and "eating". Any questions? Begin when I say the letter. The first letter is F. Go ahead."

Begin timing immediately. Allow one minute for each letter (F, A, S). Say "good" after each one minute performance. If the participant stops before the end of the minute, encourage him or her to try and think of more words.

Write down all words said (even if repetitions or not within rules, these can be discounted at the end) in the order in which they were produced. If repetitions occur that may be acceptable if an alternative meaning was intended (e.g. "four" and "for", "son" and "sun"), ask what was meant by the word after the one-minute period. Include only acceptable words in total.

F	**A**	**S**
Total =	Total =	Total =

Appendix H: Demographic Questionnaire

Gender (please circle): Male Female

Age (in years): _____

Ethnicity (please circle):

1. White
2. Mixed / Multiple ethnic groups
3. Asian / Asian British
4. Black / African / Caribbean / Black British
5. Other ethnic group (please describe) _____

What is your highest level of educational qualification?

1. None
2. CSEs
3. GCSEs/O levels
4. A levels
5. Degree
6. Other (Please state_____)

Are you working at the moment (paid or voluntary)? YES/NO

If so, is it full-time, part-time or voluntary? _____

What is your job? _____

How long have you been attending the EI clinic? _____ (months/years)

Have you been given a diagnosis? (please circle) YES NO

If so, what is it? _____

How much time has passed since your most recent psychotic episode (in months)?_____

What medication are you currently taking? (Name and dosage)

_____

_____

Have you previously had any psychological therapy or counselling?
If so, can you remember what type of therapy it was?

_____

_____

From patient notes:

Clinic attended: _____

Length of time with the EI clinic: _____ (months/years)

Diagnosis given? YES NO

What is the diagnosis? _____

Current medication and dosage:

_____

_____

Previous psychological counselling:

_____

Appendix I: Participant Information Sheet (NSFT)

(see next page)

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University of East Anglia

Participant Information Sheet

Recovery after Psychosis: Values, Beliefs and Motivation (REC reference no: 13/EE/0145)

My name is Megan Maidment and I am a trainee clinical psychologist at the University of East Anglia. I would like to invite you to take part in a research study. Before you decide, I would like to explain why the research is being carried out and what it will involve for you. Please read the following information carefully, and take time to decide whether or not you wish to take part.

What is the purpose of the study?
The aim of this study is to explore some of the reasons that influence people's recovery following a psychotic episode. I am interested in learning if people's beliefs about different day to day tasks (for example, how important they are and how likely to succeed a person thinks they are) as well as beliefs about themselves might be related to differences in symptoms and experiences for people recovering from psychosis. The study is being carried out as part of a clinical psychology doctorate course at the University of East Anglia under the supervision of Dr Joanne Hodgekins and Dr Sian Coker. This study has been reviewed by the East of England – Norfolk Research Ethics Committee and the Research and Development Department at the Norfolk and Suffolk NHS Foundation Trust, and has received ethical approval.

Why have I been invited?
You have been invited as you are currently under the care of the Early Intervention Service in Norfolk or Suffolk, and I think you will be able to contribute valuable information to the study by telling me about your experiences. I am hoping to talk with a number of people (at least 68 participants) across East Anglia.

Do I have to take part?
It is up to you whether or not to take part in this study. If you decide not to take part, this will not affect any health care treatment you receive either now or in the future. If you decide to take part and then change your mind, you can withdraw from the study at any time without giving a reason.

What will happen if I take part?
If you think you might like to take part, you can phone or email me, Megan Maidment (see contact details at the top of this page), or you can tell the person who told you about the study (e.g. your care coordinator) that you would like to take part and they will arrange for me to phone you. I will discuss the study with you and give you the chance to ask any questions. After that, if you decide to go ahead and take part, you will be asked to meet with me either at home or at the clinic you usually attend. You will have an interview about your symptoms and experiences of psychosis and how you get on with day-to-day tasks. You will also be asked to fill in three questionnaires about thoughts and beliefs you may have about yourself, and to do some short problem-solving tasks. The whole process will take about an hour and a half to two hours, and you can take breaks during the interview if you like. With your permission I will also look in your medical notes to gain further information that is relevant to the study. You will be asked on the day to sign a consent

form to say that you are willing to take part in the study and to let me use the information from the interview and questionnaires for research purposes. You will have plenty of opportunity to ask any questions on the day, or you can phone me or ask your care coordinator prior to the meeting.

How will my information be recorded?
I will take written notes during the interview, and the interview will be recorded on a digital audio recorder. This will not happen without your permission.

Will my taking part in this study be anonymous and kept confidential?
All of the data I collect is stored anonymously, with name and address removed. Written and audio-recorded information will be kept in a locked cabinet on university premises. Information that we enter into the computer will be password protected. Once the study is completed, all the information will be stored in a locked drawer at the University of East Anglia for 5 years, in line with the current policy. All the collected data will be kept confidential, unless you tell me that you would like information shared with your care team. The only exception to this would be if you told me something which suggested that you or someone else could be at a serious risk of harm. In this case I would have a duty to pass this information on to your care coordinator.

What are the risks and benefits of taking part?
Your taking part in the study will help us to understand more about the nature of psychosis, which will help us to develop better treatments to help people and improve services in the future. As a thank you for taking part, you will be entered into a raffle to win a £50 gift voucher. There are no expected risks to taking part. Some of the questions will ask about your current and past experiences, so it is possible that you might find parts of the interview upsetting. However, you will not be forced to discuss anything you do not wish to talk about during the assessments. If you find that the interview makes you distressed or worried, we will stop the interview and I will help you get in touch with your care coordinator for support. You could also talk with your care coordinator if for any reason you become upset after the interview.

What will happen to the results of the research study?
The information collected will be written up as a report, which will be assessed as one of the requirements for my Clinical Psychology Doctorate studies. The results may also be published in a relevant journal. You will not be able to be identified in any of these reports. If you wish to find out about the results of the study, a summary report will be available to you, as well as services involved in the research, after the research has finished (however we will not be able to discuss individual results). If you participate, you can let me know at the session if you want to receive this summary.

What if I want to make a complaint?
If you have any concerns or complaints about any aspect of the study you should contact Dr Joanne Hodgekins, who is the Academic Supervisor representing the University of East Anglia, at University of East Anglia, School of Medicine, Health Policy and Practice, Elizabeth Fry Building, Norwich NR4 7TJ; phone: (01603) 591258. If you wish to complain formally or wish to seek independent advice, you can contact the Patient Advice and Liaison Service, at Hellesdon Hospital, Drayton High Road, Norwich, NR6 5BE; phone: 0800 279 7257 (Norfolk) or 0800 585544 (Suffolk).

Further information
If you would like more information about the study, please speak to your care-coordinator or contact myself, Megan Maidment, on 07960 267 272 or email megan.maidment@uea.ac.uk. ***Thank you very much!***

Appendix J: Participant Information Sheet (SEPT)

(see next page)

Researcher: Megan Maidment
Trainee Clinical Psychologist
Faculty of Medicine and Health Sciences
Elizabeth Fry Building
University of East Anglia, Norwich NR4 7TJ
email: megan.maidment@uea.ac.uk
phone: 07960 267 272

University of East Anglia

Participant Information Sheet

Recovery after Psychosis: Values, Beliefs and Motivation (REC reference no: 13/EE/0145)

My name is Megan Maidment and I am a trainee clinical psychologist at the University of East Anglia. I would like to invite you to take part in a research study. Before you decide, I would like to explain why the research is being carried out and what it will involve for you. Please read the following information carefully, and take time to decide whether or not you wish to take part.

What is the purpose of the study?
The aim of this study is to explore some of the reasons that influence people's recovery following a psychotic episode. I am interested in learning if people's beliefs about different day to day tasks (for example, how important they are and how likely to succeed a person thinks they are) as well as beliefs about themselves might be related to differences in symptoms and experiences for people recovering from psychosis. The study is being carried out as part of a clinical psychology doctorate course at the University of East Anglia under the supervision of Dr Joanne Hodgekins and Dr Sian Coker. This study has been reviewed by the East of England – Norfolk Research Ethics Committee and the Research and Development Department at the South Essex Partnership University NHS Foundation Trust (SEPT), and has received ethical approval.

Why have I been invited?
You have been invited as you are currently under the care of the Early Intervention Service in South Essex and Bedfordshire, and I think you will be able to contribute valuable information to the study by telling me about your experiences. I am hoping to talk with a number of people (at least 68 participants) across East Anglia.

Do I have to take part?
It is up to you whether or not to take part in this study. If you decide not to take part, this will not affect any health care treatment you receive either now or in the future. If you decide to take part and then change your mind, you can withdraw from the study at any time without giving a reason.

What will happen if I take part?
If you think you might like to take part, you can phone or email me, Megan Maidment (see contact details at the top of this page), or you can tell the person who told you about the study (e.g. your care coordinator) that you would like to take part and they will arrange for me to phone you. I will discuss the study with you and give you the chance to ask any questions. After that, if you decide to go ahead and take part, you will be asked to meet with me either at home or at the clinic you usually attend. You will have an interview about your symptoms and experiences of psychosis and how you get on with day-to-day tasks. You will also be asked to fill in three questionnaires about thoughts and beliefs you may have about yourself, and to do some short problem-solving tasks. The whole process will take about an hour and a half to two hours, and you can take breaks during the interview if you like. With your permission I will also look in your medical notes to gain further information that is relevant to the study. You will be asked on the day to sign a consent form to say that you are willing to take part in the study and to let me use the information from the interview and questionnaires for research purposes. You will have plenty of

opportunity to ask any questions on the day, or you can phone me or ask your care coordinator prior to the meeting.

How will my information be recorded?
I will take written notes during the interview, and the interview will be recorded on a digital audio recorder. This will not happen without your permission.

Will my taking part in this study be anonymous and kept confidential?
All of the data I collect is stored anonymously, with name and address removed. Written and audio-recorded information will be kept in a locked cabinet on university premises. Information that we enter into the computer will be password protected. Once the study is completed, all the information will be stored in a locked drawer at the University of East Anglia for 5 years, in line with the current policy. All the collected data will be kept confidential, unless you tell me that you would like information shared with your care team. The only exception to this would be if you told me something which suggested that you or someone else could be at a serious risk of harm. In this case I would have a duty to pass this information on to your care coordinator.

What are the risks and benefits of taking part?
Your taking part in the study will help us to understand more about the nature of psychosis, which will help us to develop better treatments to help people and improve services in the future. As a thank you for taking part, you will be entered into a raffle to win a £50 gift voucher. There are no expected risks to taking part. Some of the questions will ask about your current and past experiences, so it is possible that you might find parts of the interview upsetting. However, you will not be forced to discuss anything you do not wish to talk about during the assessments. If you find that the interview makes you distressed or worried, we will stop the interview and I will help you get in touch with your care coordinator for support. You could also talk with your care coordinator if for any reason you become upset after the interview.

What will happen to the results of the research study?
The information collected will be written up as a report, which will be assessed as one of the requirements for my Clinical Psychology Doctorate studies. The results may also be published in a relevant journal. You will not be able to be identified in any of these reports. If you wish to find out about the results of the study, a summary report will be available to you, as well as services involved in the research, after the research has finished (however we will not be able to discuss individual results). If you participate, you can let me know at the session if you want to receive this summary.

What if I want to make a complaint?
If you have any concerns or complaints about any aspect of the study you should contact Dr Joanne Hodgekins, who is the Academic Supervisor representing the University of East Anglia, at University of East Anglia, School of Medicine, Health Policy and Practice, Elizabeth Fry Building, Norwich NR4 7TJ; phone: (01603) 591258. If you wish to complain formally or wish to seek independent advice, you can contact the Patient Advice and Liaison Service, at Charter House, Alma Street, Luton, Bedfordshire, LU1 2PJ; or phone: 0800 013 1223.

Further information
If you would like more information about the study, please speak to your care-coordinator or contact myself, Megan Maidment, on 07960 267 272 or email megan.maidment@uea.ac.uk.

Thank you very much!

Appendix K: Consent Form

PARTICIPANT CONSENT FORM

University of East Anglia

Recovery after Psychosis: Values, Beliefs and Motivation (REC reference no: 13/EE/0145)

Researcher: Megan Maidment, Trainee Clinical Psychologist. Email: megan.maidment@uea.ac.uk

Please read each statement and initial the box beside it if you agree.

(please initial the boxes)

1. I have read the Participant Information Sheet (*Version and Date*). I understand what the study is about and have had a chance to ask questions. ☐

2. I understand that my participation in the study is voluntary and that I can stop taking part at any time, without giving any reason, without my medical care or legal rights being affected. ☐

3. I understand that my personal information and information I provide about myself will be kept anonymous and confidential. However, if the researcher is concerned for my safety or the safety of others I understand that they are obliged to inform services (e.g. my care coordinator). ☐

4. I am happy for information gained in the study which might help my treatment to be passed on to the Early Intervention team. ☐

5. I consent to my interview being audio recorded. ☐

6. I am willing to let the researcher access my medical notes. ☐

7. I wish to be informed about the results of this study. Please send information to: ☐

_____

8. I agree to take part in this study ☐

_____	_____	_____
Your name (PLEASE PRINT)	Your signature	Date
_____	_____	_____
Researcher's name (PLEASE PRINT)	Researcher's signature	Date

Thank you for your time

2 copies to be made – original for researcher, one copy for research participant, one copy to be kept with participant's notes

Appendix L: Further Information about Shared Aspects of Research

Recruitment and data collection for this research was shared with another trainee clinical psychologist who was also conducting research in the same population. The following tasks were shared equally between both researchers:

- Initial contact with teams to inform team managers about the research, and attending team meetings to deliver a presentation about both research projects (these were attended by both researchers at the same time where possible)
- Ongoing liaison with care coordinators regarding study referrals
- Contacting potential participants by telephone to explain the study
- Carrying out research appointments with consenting participants, including gaining informed consent and collecting data using measures for both studies
- Accessing participants' medical notes following their appointment, and putting consent forms and a brief note about study participation on file
- Scoring and data entry of participant data from completed sessions
- Administrative tasks such as sending appointment letters to participants and posting consent forms to them following the appointment if requested

Measures for both studies were conducted within the same appointment by one researcher, so that each participant only needed to meet with one researcher on one occasion to participate in both studies (to minimise participant burden). Both researchers were trained in the measures and familiar with the details of both studies, and a small number of early appointments were undertaken jointly with both researchers to enable checks that the assessments were being carried out consistently and accurately. There was considerable overlap in the measures used, and measures for

both studies could easily be completed within the same research session which typically lasted 90 minutes to 2 hours.

The additional measures that were completed within research appointments (which are not discussed within this thesis as they were solely for the other trainee clinical psychologist's research) were:

- The Autobiographical Memory Test (Williams & Broadbent, 1986)
- The Higgins Selves Questionnaire (Higgins, 1987)
- The Impact of Events Scale - Revised (Weiss & Marmar, 1997)
- The Life Events Questionnaire (Blake et al., 1995)

It was made clear to potential participants that data for two separate research studies (with separate information and consent forms) were being collected within the meeting. Potential participants were given the option to participate in one or both studies, however in all cases participants chose to complete both.

Appendix M: Ethical Approval and Correspondence

NRES Committee East of England - Norfolk
Nottingham REC Centre
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Telephone: 0115 8839436

14 May 2013

Mrs Megan Maidment
Department of Psychological Sciences
Norwich Medical School, University of East Anglia
Norwich
NR4 7TJ

Dear Mrs Maidment

Study title:	**The influence of negative symptoms, motivation, values and self-beliefs on social recovery following first-episode psychosis**
REC reference:	**13/EE/0145**
Protocol number:	**N/A**
IRAS project ID:	**126109**

Thank you for your letter of 13th May 2013, responding to the Proportionate Review Sub-Committee's request for changes to the documentation for the above study.

The revised documentation has been reviewed and approved by the sub-committee.

We plan to publish your research summary wording for the above study on the NRES website, together with your contact details, unless you expressly withhold permission to do so. Publication will be no earlier than three months from the date of this favourable opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to withhold permission to publish, please contact the Co-ordinator Miss Zoe Birtwistle, NRESCommittee.EastMidlands-Derby@nhs.net.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which can be made available to host organisations to facilitate their permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.

Approved documents

The documents reviewed and approved by the Committee are:

Document	*Version*	*Date*	
Advertisement	1	01 April 2013	
Covering Letter	Letter from Megan Maidment	01 May 2013	
Evidence of insurance or indemnity	Zurich Municipal - UEA	15 May 2013	
Investigator CV	Professor David Fowler	12 November 2012	
Letter of invitation to participant	1	05 March 2013	
Other: CV	Dr joanne Hodgekins	01 May 2013	
Other: CV	Mrs Megan Maidment	05 March 2013	
Other: Personal Details Form	1	05 March 2013	
Other: Thesis Proposal - List of Amendments		06 December 2012	

Participant Consent Form	1	05 March 2013	
Participant Information Sheet	1	05 March 2013	
Participant Information Sheet: Care Coordinator Leaflet	1	01 April 2013	
Protocol	1	05 March 2013	
Questionnaire: SANS	1	05 March 2013	
Questionnaire: DASS	1	05 March 2013	
Questionnaire: TMQ	1	05 March 2013	
Questionnaire: BCSS	1	05 March 2013	
Questionnaire: COWAT	1	05 March 2013	
Questionnaire: GSES	1	05 March 2013	
Questionnaire: Time Use Interview	1	05 March 2013	
REC application	126109/443255/1/881	10 April 2013	
Response to Request for Further Information	Letter Mrs Maidment	13 May 2013	

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

Further information is available at National Research Ethics Service website > After Review

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at http://www.hra.nhs.uk/hra-training/

With the Committee's best wishes for the success of this project.

Yours sincerely

Dr Elizabeth Lund
Chair

Email: NRESCommittee.EastofEngland@nhs.net

Enclosures: *"After ethical review – guidance for researchers" [SL-AR2]*

Copy to: *Ms Sue Steel*

Dr Bonnie Teague, Norfolk and Suffolk NHS Foundation Trust

NRES Committee East of England - Norfolk

Nottingham REC Centre
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Tel: 0115 8839368

14 August 2013

Mrs Megan Maidment
Department of Psychological Sciences
Norwich Medical School, University of East Anglia
Norwich
NR4 7TJ

Dear Mrs Maidment

Study title: **The influence of negative symptoms, motivation, values and self-beliefs on social recovery following first-episode psychosis**
REC reference: **13/EE/0145**
Protocol number: **N/A**
Amendment number: 1 - 09/07/2013
Amendment date: **17 July 2013**
IRAS project ID: **126109**

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion
of the amendment on the basis described in the notice of amendment form and supporting
documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Protocol	2	09 July 2013
Participant Information Sheet: Participant Information Sheet (NSFT)	2	09 July 2013
Care Coordinator Leaflet	2	09 July 2013
Covering Letter	From Megan Maidment	30 July 2013
Clinical Team Poster	2	09 July 2013
Investigator CV	Sian Coker	
RGC Outcome Letter	From Dr Wilson	06 June 2013
Notice of Substantial Amendment (non-CTIMPs)	1 - 09/07/2013	17 July 2013

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the
relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for
Research Ethics Committees in the UK.

We are pleased to welcome researchers and R & D staff at our NRES committee members'
training days – see details at http://www.hra.nhs.uk/hra-training/

13/EE/0145: Please quote this number on all correspondence

Yours sincerely

Dr Michael Sheldon
Chair

Enclosures: List of names and professions of members who took part in the review

Copy to: Ms Bonnie Teague, Norfolk and Suffolk Foundation Trust
Ms Sue Steel

NRES Committee East of England - Norfolk

Attendance at Sub-Committee of the REC meeting held by the Committee in correspondence

Name, Profession, Capacity
Dr Michael Sheldon (Chair), Retired Clinical Psychologist, Lay
Dr Robert Stone, General Practitioner, Expert

Health Research Authority

NRES Committee East of England - Norfolk

Nottingham REC Centre
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Tel: 0115 8839368

16 January 2014

Mrs. Megan Maidment
Department of Psychological Sciences
Norwich Medical School, University of East Anglia
Norwich
NR4 7TJ

Dear Mrs. Maidment

Study title:	**The influence of negative symptoms, motivation, values and self-beliefs on social recovery following first-episode psychosis**
REC reference:	**13/EE/0145**
Protocol number:	**N/A**
Amendment number:	**Minor amendment 1**
Amendment date:	**07 January 2014**
IRAS project ID:	**126109**

Thank you for your letter of 07 January 2014, notifying the Committee of the above amendment.

The Committee does not consider this to be a “substantial amendment“ as defined in the Standard Operating Procedures for Research Ethics Committees. The amendment does not therefore require an ethical opinion from the Committee and may be implemented immediately, provided that it does not affect the approval for the research given by the R&D office for the relevant NHS care organisation.

Documents received

The documents received were as follows:

Document	Version	Date	
Covering Letter	Letter from Megan Maidment	07 January 2014	
Notification of a Minor Amendment	Letter from Megan Maidment	07 January 2014	

Participant Information Sheet: South Essex Partnership University NHSFT	3	03 January 2014	
Protocol	3	03 January 2014	
Participant Information Sheet: Cambs and Peterborough NHSFT	3	03 January 2014	
Participant Consent Form	3	03 January 2014	

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

13/EE/0145: Please quote this number on all correspondence

Yours sincerely

Ms Tracy Leavesley
REC Manager

E-mail: NRESCommittee.EastofEngland-Norfolk@nhs.net

Copy to: *Ms Bonnie Teague, Norfolk and Suffolk Foundation Trust*

Ms Sue Steel

Appendix N: Research and Development Approval – Norfolk and Suffolk NHS Foundation Trust

Norfolk and Suffolk NHS
NHS Foundation Trust

Research and Development
The Knowledge Centre
Hellesdon Hospital
Drayton High Road
Norwich
NR6 5BE

Telephone 01603 421255
E mail: RDofficemailbox@nsft.nhs.uk

Miss Claire Stubbins and Mrs Megan Maidment
Department of Psychological Sciences
Norwich Medical School
University of East Anglia
Norwich
NR4 7TJ

6th June 2013

Dear Claire and Megan,

Re: 2013MH13: Recovery after Psychosis: Values, Beliefs and Motivation
2013MH14: Memory and Self-Concent after Psychosis

Thank you for submitting the above project for local research governance approval. The Committee reviewed the application on the meeting of the 30th May 2013, and has made the following comments:

- The committee complimented the proposals for being well thought out and well-written. This is low risk to the Trust from a governance perspective. The committee understood that the studies had been reviewed separately by 2 ethics committees and different queries had been raised.
- The committee asked how the PANSS questionnaire would be scored. From previous experience of researchers it has been advised that it may prove difficult to recruit 68 patients with a PANSS score of 2 or less for each question. It was felt that an average score of positive and negative symptoms separately may be more achievable.
- The committee would like further information regarding interviews being audio recorded. If the interviews are not being transcribed, what is the need to have these interviews recorded? Also if the participant does not consent to the interview being recorded, would they still be able to take part in the study?
- The committee advised that whilst talking through the participant information sheet, the researcher shows the participant an example of the 'problem solving tasks' which they will have to complete.
- The committee asked for the results of the study if these are published.

The Committee are happy to receive a response to these queries by email at the address above, and the final approval decision will be delegated to the Chair of the committee.

POSITIVE ABOUT DISABLED PEOPLE
MINDFUL EMPLOYER
Chair: Gary E Page
Chief Executive: Aidan Thomas
Trust Headquarters: Hellesdon Hospital,
Drayton High Road, Norwich, NR6 5BE
Tel: 01603 421421 Fax: 01603 421440 www.nsft.nhs.uk
Stonewall DIVERSITY CHAMPION
PRACTICE

The committee understands that the study has received NHS Ethical Approval for both of the studies.

If you have any queries regarding this or any other project, please contact, Bonnie Teague, Research Manager, at the above address.

Yours sincerely,

Dr Jon Wilson
Deputy Medical Director (Research) and NSFT Research Governance Chair

Chair: Gary E Page
Chief Executive: Aidan Thomas
Trust Headquarters: Hellesdon Hospital,
Drayton High Road, Norwich, NR6 5BE
Tel: 01603 421421 Fax: 01603 421440 www.nsft.nhs.uk

POSITIVE ABOUT DISABLED PEOPLE
MINDFUL EMPLOYER
Stonewall DIVERSITY CHAMPION

Norfolk and Suffolk NHS
NHS Foundation Trust

Research and Development
The Knowledge Centre
Hellesdon Hospital
Drayton High Road
Norwich
NR6 5BE

Telephone 01603 421255
E mail: RDofficemailbox@nsft.nhs.uk

Mrs Megan Maidment
Department of Psychological Sciences
Norwich Medical School
University of East Anglia
Norwich
NR4 7TJ

19th June 2013

Dear Mrs Maidment,

Re: 2013MH13: Recovery after Psychosis: Values, Beliefs and Motivation

Thank you for submitting the above project for local research governance approval. I am pleased to inform you that your project has been given full approval and you may begin your research at the following site:

- Norfolk & Suffolk NHS Foundation Trust

I have enclosed two copies of the Standard Terms and Conditions of Approval. Please sign both copies returning one copy to the Research and Development office, at the above address, and keeping the other in your study file. Failure to return the standard terms and conditions may affect the conditions of approval. **Under the agreed Standard Terms and Conditions of Approval you must inform the R&D department of any proposed changes to this study and submit annual progress reports to the R&D department.**

Any researcher(s) whose substantive employer is not the Norfolk & Suffolk NHS Foundation Trust must have a Letter of Access or Honorary Research contract and evidence of Good Clinical Practice (GCP) training before coming on site to conduct their research in this project. Please note that you cannot take part in this study until you have this documentation. If a Letter of Access / Honorary Research Contract has not been issued – please contact us immediately.

If you have any queries regarding this or any other project, please contact, Tom Rhodes, Research Governance Administrator, at the above address.

The reference number for this study is: **2013MH13,** and this should be quoted on all correspondence.

Yours sincerely,

Dr Jon Wilson
Deputy Medical Director (Research)

POSITIVE ABOUT DISABLED PEOPLE
MINDFUL EMPLOYER
Chair: Gary E Page
Chief Executive: Aidan Thomas
Trust Headquarters: Hellesdon Hospital,
Drayton High Road, Norwich, NR6 5BE
Tel: 01603 421421 Fax: 01603 421440 www.nsft.nhs.uk
Stonewall DIVERSITY CHAMPION
PRACTICE

Your research governance approval is valid providing you comply with the conditions set out below:

1. You commence your research within one year of the date of this letter. If you do not begin your work within this time, you will be required to resubmit your application.
2. You notify the Research and Development Office should you deviate or make changes to the approved documents.
3. You alert the Research and Development Office by contacting the address above, if significant developments occur as the study progresses, whether in relations to the safety of individuals or to scientific direction.
4. You complete and return the standard annual self-report study monitoring form when requested to do so at the end of each financial year. Failure to do this will result in the suspension of research governance approval.
5. You comply fully with the Department of Health Research Governance Framework and Trust Research Policies, and in particular that you ensure that you are aware of and fully discharge your responsibilities in respect to Data Protection, Health and Safety, financial probity, ethics and scientific quality. You should refer in particular to Sections 3.5 and 3.6 of the Research Governance Framework.
6. You ensure that all information regarding patients or staff remains secure and strictly confidential at all times. You ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice, Data Protection Act and Human Rights Act. Unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.
7. **UKCRN Portfolio Studies only**: You will make local Trust research team members aware that it is expected that the "first participant, first visit" date should be within 70 days of the full submission for Trust Research Governance Approval, and this date must be reported to the Research and Development office using the email address above. Delay to recruitment due to study-wide developments must be reported to the Trust as soon as possible.
8. **UKCRN Portfolio Studies only**: You will report and upload Trust recruitment to the UKCRN portfolio accurately and in a timely manner, and will provide recruitment figures to the Trust upon request.

List of Approved Documents:

Documents	Version	Date
Protocol	1	09.02.13
Patient Information Sheets and Consent		
Participant Consent Form	1	01.04.13
Participant Information Sheet	1	01.04.13
Other Study Docs		
Care Coorinator Leaflet	1	05.03.13
Team Poster	1	05.03.13
Letter of invitation to participant	1	05.03.13
The Depression Anxiety Stress Scales	1	05.03.13
The Impact of Events Scale	1	05.03.13
Life Events Checklist	1	05.03.13
Personal Details Form	1	05.03.13
Scale for the ssessment of Negative Symptoms	1	05.03.13
COWAT Instruction and Record Sheet	1	05.03.13
The Autobiographical Memory Test	1	05.03.13
Higgins (1987) Seles Questionnaire	1	05.03.13

POSITIVE ABOUT DISABLED PEOPLE
MINDFUL EMPLOYER
Chair: Gary E Page
Chief Executive: Aidan Thomas
Trust Headquarters: Hellesdon Hospital,
Drayton High Road, Norwich, NR6 5BE
Tel: 01603 421421 Fax: 01603 421440 www.nsft.nhs.uk
Stonewall DIVERSITY CHAMPION
PRACTICE

Appendix O: Research and Development Approval – South Essex Partnership University Foundation Trust

Local Services, Local Solutions

SEPT

25th February 2014

Ms M Maidment
Department of Psychological Studies
Norwich Medical School
University of East Anglia
Norwich
NR4 7TJ

Research Department
Pride House
Christy Close
Laindon
Essex
SS15 6EA

Tel: 01268 407725
sarah.thurlow@sept.nhs.uk

Dear Megan

Research Study – The influence of negative symptoms, motivation, values and self-beliefs on social recovery following first-episode psychosis.

Further to my email of the 4th February and subsequent email of 6th February, I am pleased to confirm that your research study was reviewed by the Research Governance Group (RGG) at their meeting on 30th January and your study was given final approval by Chair's action on the 6th February. You will need a letter of access to conduct your research in SEPT and I will send this under separate cover in due course.

The Trust has to meet rigorous standards set by the Department of Health for research governance so your research must be carried out subject to the following conditions:

- The research must be carried out in strict accordance with the protocol submitted and any changes to that protocol must be approved by the University of Essex and SEPT's RGG before the research is undertaken or continues.

- You must report any adverse events/serious untoward incidents relating to this research to me as soon as practicable. I can be contacted by telephone on 01268 407725 or 07940 425856. In my absence, incidents should be reported to Mrs Sarah Browne, the Associate Director of Clinical Governance & Quality on 01582 708986 or 07813 068871. In addition, you must complete one of the Trust's adverse incident forms and follow the requirements as set out in the Trust's adverse incident reporting policy. A copy of this form must be submitted to **me** as soon as possible. A copy of the Trust's adverse incident reporting policy can be located on the Trust's intranet or alternatively, please contact me and I will be happy to supply you with a copy.

- In cases where the research will take place over a period of more than 12 months, you are required to send to me a copy of the report on the study progress.

- Any research terminated prematurely must be notified to me immediately.

- The full final report from the study should be sent to me within 3 months of final report so that the RGG can consider it. You are also required to supply a summary or abstract of the study that would be suitable for dissemination.

- As a result of the Research Governance Framework for Health and Social Care, the Trust now has an obligation to monitor research being undertaken within the Trust.

  You might be required to complete a short questionnaire although this will be no more than once a year. The questionnaire will be completed for you with as much information already known in order to reduce the amount of your time that you have to spend on this. In addition, the Trust is required to randomly select 10% of research studies to be audited. If your study is selected as part of this audit process, you will be notified to ensure your availability.

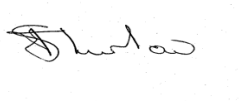
The RGG, on behalf of the Trust, will revoke or suspend its approval to any research that does not comply with these conditions or where there is any misconduct or fraud.

I would like to reassure you that these conditions are applied simply to ensure that the Trust meets its obligations under the Research Governance Framework for Health and Social Care. Please contact me if I can help with any issues that might arise for you as a result.

I wish you every success with your research and look forward to receiving a copy of the study report in due course.

Kind regards

Yours sincerely



Sarah Thurlow
Head of Research

Cc: Dr Joanne Hodgekins – Academic supervisor
Cc: Dr Sian Coker – Academic supervisor
Cc: Mrs Sue Steel – Sponsor contact
Cc: Dr Sarah Cooke – Clinical Psychologist, Early Intervention

Local Services, Local Solutions

SEPT

26th February 2014

Research Department
Pride House
Christy Close
Laindon
Essex
SS15 6EA

Tel: 01268 407725
sarah.thurlow@sept.nhs.uk

Ms M Maidment
Department of Psychological Studies
Norwich Medical School
University of East Anglia
Norwich
NR4 7TJ

Dear Megan

Letter of access for research
Research Study – The influence of negative symptoms, motivation, values and self-beliefs on social recovery following first-episode psychosis

This letter confirms your right of access to conduct research through South Essex Partnership University NHS Foundation Trust for the purpose and on the terms and conditions set out below. This right of access commences on the 26th February 2014 and ends on 31st December 2014 unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation.

The information supplied about your role in research at South Essex Partnership University NHS Foundation Trust has been reviewed and you do not require an honorary research contract with this NHS organisation.

You are considered to be a legal visitor to South Essex Partnership University NHS Foundation Trust premises. You are not entitled to any form of payment or access to other benefits provided by this NHS organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking research through South Essex Partnership University NHS Foundation Trust, you will remain accountable to your employer North Essex Partnership University NHS Foundation Trust and the University of Essex but you are required to follow the reasonable instructions of Sarah Thurlow in this NHS organisation or those given on her behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any
investigation by this NHS organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with South Essex Partnership University NHS Foundation Trust policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with South Essex Partnership University NHS Foundation Trust in discharging its duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on South Essex Partnership University NHS Foundation Trust premises. You must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of any other contract holder and you must act appropriately, responsibly and professionally at all times.

If you have a physical or mental health condition or disability which may affect your research role and which might require special adjustments to your role, if you have not already done so, you must notify your employer and the Trust R&D department on 01268 407725 prior to commencing your research role at the Trust.

You are required to ensure that all information regarding patients or staff remains secure and strictly confidential at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice (http://www.dh.gov.uk/assetRoot/04/06/92/54/04069254.pdf) and the Data Protection Act 1998. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

You should ensure that, where you are issued with an identity or security card, a bleep number, email or library account, keys or protective clothing, these are returned upon termination of this arrangement. Please also ensure that while on the premises you wear your ID badge at all times, or are able to prove your identity if challenged. Please note that this NHS organisation accepts no responsibility for damage to or loss of personal property.

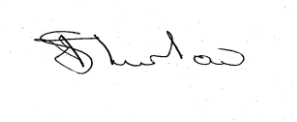
We may terminate your right to attend at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence. You must not undertake regulated activity if you are barred from such work. If you are barred from working with adults or children, this letter of access is immediately terminated. Your employer will immediately withdraw you from undertaking this or any other regulated activity. You MUST stop undertaking any regulated activity immediately.

Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

South Essex Partnership University NHS Foundation Trust will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

If your circumstances change in relation to your health, criminal record, professional registration or suitability to work with adults or children, or any other aspect that may impact on your suitability to conduct research or your current role or involvement in research changes, or any of the information provided in your Research Passport changes, you must inform your employer through their normal procedures. You must also inform your nominated manager in this NHS organisation and the Chair of the Research Governance Approval Group.

Yours sincerely



Sarah Thurlow
Head of Research
South Essex Partnership University NHS Foundation Trust

Cc: Dr Joanne Hodgekins – Academic Supervisor
Cc: Dr Sian Coker – Academic Supervisor
Cc: Mrs Sue Steel – Sponsor Contact
Cc: Dr Sarah Cooke – Clinical Psychologist, Early Intervention, SEPT

Appendix P: Skewness and Kurtosis Values Before and After Data Transformation

Table P1

Skewness and Kurtosis Data for Study Variables Before Transformations

	Skewness	*SE*	z-score	Kurtosis	*SE*	z-score
Negative Symptoms – Total	0.21	.340	0.62	-1.06	.668	-1.59
Affective Flattening	0.96	.340	2.82*	0.10	.668	0.15
Alogia	0.89	.340	2.62*	-0.68	.668	-1.02
Avolition/ Apathy	-0.29	.340	-0.85	-1.03	.668	-1.54
Anhedonia/ Asociality	0.12	.340	0.35	-1.17	.668	-1.75
General Self-Efficacy	0.13	.340	0.38	0.48	.668	0.72
Negative Self Schema	1.29	.343	3.76*	1.76	.674	2.61*
Positive Self Schema	0.61	.343	1.78	-0.35	.674	-0.52
Subjective Task Value	0.54	.343	1.57	0.63	.674	0.93
Social Functioning (Structured Activity)	1.32	.337	3.92*	1.61	.662	2.43*
Positive Symptoms	0.91	.340	2.68*	0.13	.668	0.19
Depression Symptoms	0.71	.340	2.09*	-0.23	.668	-0.34
Anxiety Symptoms	0.84	.340	2.47*	-0.47	.668	-0.70
Verbal Fluency	0.45	.340	1.32	0.13	.668	0.19
Digit Span	0.33	.340	0.97	0.11	.668	0.16

* significant at $p = .05$

Table P2

Data for Skewed and Leptokurtic Variables After Square Root Transformations

	Skewness	*SE*	z-score	Kurtosis	*SE*	z-score
Affective Flattening	0.39	.340	1.14	-1.06	.668	-1.59
Alogia	0.62	.340	1.82	-1.17	.668	-1.75
Negative Self Schema	0.41	.343	1.20	-0.39	.674	-0.58
Social Functioning (Structured Activity)	0.57	.337	1.69	-0.44	.662	-0.66
Positive Symptoms	0.65	.340	1.91	-0.41	.668	0.61
Depression Symptoms	-0.05	.340	-0.15	-0.83	.668	-1.22
Anxiety Symptoms	0.26	.340	0.76	-1.12	.668	-1.68

* significant at $p = .05$

Appendix Q: End of Study Report for Ethics Committee

Faculty of Medicine and Health Sciences
Elizabeth Fry Building
University of East Anglia
Norwich, NR4 7TJ
email: megan.maidment@uea.ac.uk

End of Study Report:
The influence of negative symptoms, motivation, values and self-beliefs on social recovery following first episode psychosis (REC reference no: 13/EE/0145)
Chief Investigator: Megan Maidment

Background to the research

Impairment in social functioning following psychosis is associated with negative symptoms, particularly reduced motivation (Foussias & Remington, 2010). Cognitive models of negative symptoms propose that expectancy appraisals are involved in the expression and maintenance of negative symptoms (Rector, Beck, & Stolar, 2005; Staring & Van der Gaag, 2010). Theories of motivation (e.g. expectancy-value theory; Eccles and Wigfield 2002) describe how self-efficacy beliefs, appraisals of task value, and self-schema may influence behaviour, but minimal research has applied these models to the understanding of negative symptoms and functional outcomes in first-episode psychosis.

Objectives of the research

1. To investigate the relationships between negative symptoms and self-efficacy (expectancies of success), self-schemas (beliefs about the self) and appraisals of how much a task or activity is valued.
2. To determine whether self-efficacy, self-schemas and task value have a stronger relationship with some types of negative symptoms (i.e. those thought to be more related to motivation) than others (i.e. those thought to be more related to reduced expressivity).
3. To investigate the relationships between self-efficacy, self-schemas and task value with social functioning, and determine whether this relationship is explained of influenced by their relationships with negative symptoms.

All of the research objectives were met for this study.

Research method

A cross-sectional, correlational study was conducted to explore relationships between negative symptoms and appraisals of self-efficacy, task value and self-schema in a clinical sample of individuals with first-episode psychosis. Fifty-one participants completed measures examining negative symptoms of psychosis, social functioning, and cognitive appraisals. Scores on these measures were then analysed statistically using bivariate correlation, multiple regression and mediation. No ethical issues were encountered at any stage of the study.

Results

- Regarding the first objective, significant relationships between negative symptoms and appraisals of self-efficacy, task value and self-schema were found, however these relationships were not significant after controlling for depression and anxiety symptoms.
- Regarding the second objective, there was no difference found in the strength of relationships between self-efficacy, subjective task value and self-schema and the negative symptoms associated with motivation compared with other negative symptoms.
- Regarding the third objective, self-efficacy and self-schema were not significantly correlated with social functioning, but task value was. Negative symptoms were found to statistically mediate the relationship between all cognitive appraisals (self-efficacy, self-schemas and task value) and social functioning, meaning that for all variables there was a significant indirect effect of the cognitive appraisals on social functioning via their influence on negative symptoms of psychosis.

Conclusions from the research

This research adds to a small but growing body of research examining the impact of negative symptoms in first-episode psychosis. The findings suggest that negative symptoms are prevalent and represent an appropriate treatment target in early psychosis. Their relationship with self-efficacy, self-schemas and task value indicate that interventions targeting these types of cognitive appraisals through psychological intervention are likely to be of benefit to reducing all types of negative symptoms and ultimately improving social functioning as a result. The current research also indicated that depression and anxiety symptoms accounted for the most variance in negative symptoms in this sample. This highlights the importance of assessing and intervening with these symptoms in clinical practice to improve functioning, and to ensure these variables are included in future research in order to avoid confounding. This study addresses some methodological limitations of previous research, and provides some support for the applicability of cognitive models which have mainly been tested in chronically ill samples to people with early psychosis as well.

Plans for publication and dissemination

Findings will be disseminated via poster at the UEA Clinical Doctorate Conference on 30th September 2014. A poster on this research has also been accepted for presentation and the International Early Psychosis Association (IEPA) conference in Tokyo, Japan in November 2014. The chief investigator also plans to write and submit this research for publication in a peer-reviewed journal, which is yet to be completed.

The majority of participants have requested a summary of research findings, which will be forwarded in September 2014. A summary will also be provided to teams which assisted with recruitment if requested.

Appendix R: Summary of Findings for Research Participants

Faculty of Medicine and Health Sciences
Elizabeth Fry Building
University of East Anglia
Norwich, NR4 7TJ
email: megan.maidment@uea.ac.uk
phone: 07960 267 272

Research Study:
Recovery after Psychosis: Values, Beliefs and Motivation

Dear …,

Thank you for your involvement in this research study, which explored some of the factors which influence people's recovery from psychosis. Research like this would not happen without people generously offering their time as you have, and I very much appreciate your participation.

When you took part in this research, you told me that you would like to know about what I find out. I have enclosed a leaflet for you which gives a general summary of the findings from this study.

I hope this answers your questions about the study. If not, please feel free to get in contact with me – contact details are at the top of this letter.

Thank you very much once again for taking part in this research.

Yours sincerely,

Megan Maidment

Trainee Clinical Psychologist
University of East Anglia

Faculty of Medicine and Health Sciences
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University of East Anglia
Norwich, NR4 7TJ
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phone: 07960 267 272

University of East Anglia

Summary of Research Findings
Recovery after Psychosis: Values, Beliefs and Motivation

Background to the study

Often when people are recovering from psychosis, they continue to experience what is known as 'negative symptoms', which sometimes make it hard for people to feel motivated or have energy to do things, to feel enjoyment in leisure activities, or to feel close to people around them. We know that there are certain styles of thinking that can affect our motivation, including things like having a good sense of self-efficacy (the belief of being able to perform a task successfully to achieve the results you want), how much people value a particular task, and people's general positive or negative beliefs about themselves. Our aim in this study was to see if there was a relationship between these types of thinking and negative symptoms, and how much this might affect the amount of everyday activity that people took part in. This will help us to develop treatments which take these things into account and hopefully improve people's recovery.

What did we do?

We asked a group of people who had been involved with an early intervention in psychosis team to fill in some questionnaires and be interviewed. The questionnaires and interviews were about some of the types of thinking (self-efficacy, self-beliefs, value of everyday tasks) as well as symptoms of psychosis and other symptoms like those associated with depression and anxiety, and also how people spent their time over the past month. We analysed all this information with computerised statistics programs, to see if there were relationships between these different things.

What did we find out?

We found out that types of thinking like self-efficacy, self-beliefs and value of everyday tasks are related to negative symptoms. If people had more negative symptoms, they tended to believe they were less able to successfully perform tasks, were less likely to value everyday tasks, and had more negative and less positive beliefs about themselves. People who had higher levels of negative symptoms also tended to participate in fewer hours of activity per week, which was also related to these types of thinking. We also found out that people who had more negative symptoms also often had more symptoms of depression and anxiety, which suggests this is another important area to focus on in treatments.