

**Psychological Interventions for Amotivation and Possible Selves in Psychosis**

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### **Thesis Portfolio Abstract**

**Background** This portfolio contains a systematic review and two empirical projects in the clinical field of psychosis. The aim of the systematic review was to narratively synthesise the effectiveness of psychological treatments for amotivation as a key negative symptom. The first empirical project aimed to explore possible selves theory with regards to individuals with psychosis and significant functional difficulties, as a possible motivational factor influencing functional recovery. The second empirical project aimed to explore whether Social Recovery Cognitive Behavioural Therapy (SRCBT) had an impact on possible selves and whether any change mediated functional recovery.

**Methods** The systematic review included all psychological and psychosocial interventions for amotivation in psychosis, with focus on the most reliable measures of amotivation. The empirical projects included secondary analyses of data collected from the Improving Social Recovery in Psychosis project, where 77 individuals with psychosis and particularly low functioning were recruited.

**Results** In the systematic review, conclusions regarding efficacy of interventions could not be drawn, due to the limited number of studies and mixed results. In the first empirical paper, Possible selves in people with psychosis and particularly poor functioning were found to have low specificity, balance and enmeshment, but relatively high optimism. Possible selves were not associated with functional outcomes in this population. Equally, in the second empirical paper, SRCBT was not found to have an impact on possible selves.

**Conclusions** Ongoing research is required to explore novel treatments for amotivation in psychosis, particularly utilising outcome measures which give sufficient weight to amotivation as a construct. Whilst motivational theories suggest that possible selves were an important motivational construct impacting on functioning, perhaps change in possible selves is not necessary for behaviour change to occur. Future research is implicated with regards to

whether possible selves are subject to change once behavioural changes are consolidated following therapy.

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## **Chapter 1. General Introduction**

This thesis portfolio comprises a systematic review and two empirical research papers centring on psychosis. This chapter provides a general introduction and outlines important concepts and theories. This chapter is formatted to APA guidelines. The word count for this chapter is 2958.

## 1.1. Psychosis

Psychosis is an umbrella term for psychiatric disorders involving changes in behaviour, affect, thought and perception. Due to the often chronic course of psychosis, individuals are likely to have poor educational attainment, difficulties maintaining independent living and severe socio-occupational difficulties (Barnes et al., 2008; Bellack, Morrison, Wixted & Mueser, 1990; Couture, Penn & Roberts, 2004). Schizophrenia is the most common form of psychosis in England, costing £8.8bn per year (Kirkbride et al., 2012), with costs directly associated with lost productivity (e.g. difficulties maintaining employment, carer productivity) estimated as between £18,760-48,038 per person, per year (Jin & Mosweu, 2017).

Functional recovery has become a key interest within psychosis research. In contemporary literature, recovery is conceptualised as attaining remission in both clinical symptomatology *and* functioning (e.g. participation in occupational and social activities), as opposed to a singular emphasis on the former (Lieberman & Kopelowicz, 2005). Functional recovery is notably delayed compared to clinical recovery (Lambert, Karow, Naber, Leucht, & Schimmelmann 2010; Tohen et al., 2000), with one study concluding that only 14% of people with schizophrenia meet the criteria for functional recovery 10 years after diagnosis (Austin et al., 2013).

## 1.2. Negative Symptoms

A key aspect of psychosis thought to impact heavily on functional outcomes is the broad domain of negative symptoms.

Symptoms of psychosis are primarily divided into two domains: positive symptoms (e.g. hallucinations, delusions) and negative symptoms (e.g. amotivation, social withdrawal; National Institute for Health and Care Excellence; NICE, 2014). Negative symptoms more

generally remain poorly understood and difficult to treat (Fusar-Poli et al., 2015; Lutgens, Garipey & Malla, 2017; Veerman, Schulte & Haan, 2017). Negative symptoms are broadly characterised by an absence or loss of experience, whereby thoughts, feelings or behaviours that would normally be present in the general population are diminished or non-existent (Buchanan, 2007). This can include experience of anhedonia, asociality, avolition, blunted affect and alogia (Andreasen & Flaum, 1991).

Presence and severity of negative symptoms have been argued to be responsible for much of the personal and financial burden of psychosis, due to their critical role in functional recovery (Austin et al, 2013; Foussias, Mann, Agid, Remington, van Reekum & Zakzanis, 2011; Kirkpatrick, Fenton, Carpenter & Marder, 2006). For example, lower negative symptoms at baseline have been found to predict recovery, where each one-point increase in scores on the Negative Symptom Scale was found to reduce the chance of recovery by 45% (Austin et al., 2013). Importantly, negative symptoms have been found to have a distinct and independent effect on functional outcomes, separate from other symptom domains such as positive symptoms (Fervaha, Foussias, Agid & Remington, 2014; Rabinowitz, Levine, Garibaldi, Bugarski-Kirola, Berardo & Kapur, 2012), indicating the importance to target negative symptoms specifically.

In recent literature, some aspects of negative symptoms have been argued to contribute to functional outcomes more than others (e.g. Foussias and Remington, 2010). In order to explore this, the development of the conceptualisation of negative symptoms should be considered.

Historically, negative symptoms were viewed as a single dimension (e.g. Diagnostic and Statistical Manual of Mental Disorders-IV; DSM-IV; American Psychiatric Association, 2000). However, commonly used measurement instruments such as the Positive and Negative Syndrome Scale (PANSS; Kay, Fitzbein & Opler, 1987) and Scale for Assessment of

Negative Symptoms (SANS; Andreasen, 1983) have substantial overlap but little consensus on a definition of negative symptoms (Foussias & Remington, 2010). Investigations into the factor structure of measures indicated that perhaps the large variety of symptoms could be better conceptualised within distinct subdomains (e.g. Keefe et al., 1992). This has been explored in several studies, resulting in evidence of two distinct negative symptom domains: diminished expression and amotivation (Foussias and Remington, 2010; Liemburg et al., 2013; Marder & Galderisi, 2017; Remington et al., 2016; Sarkar, Hillner & Velligan, 2015), which have been recognised in the newer DSM-5 (American Psychiatric Association, 2013). Diminished expression encompasses symptoms such as blunted affect and alogia, which are characterised by apathetic or unchanging facial expressions or little/no change in pitch or tone of voice. Amotivation encompasses symptoms such as anhedonia, asociality and avolition, which broadly present as a lack of motivation to engage in or complete tasks, reduction in interest in maintaining or forming new social relationships or lack of capacity to experience pleasure in things.

It has been argued that amotivation is the principal negative symptom (Foussias and Remington, 2010), which has been found to directly associate with poor functioning (Fervaha, Foussias, Agid & Remington, 2013; Najas-Garcia, Gomez-Benito & Huedo-Medina, 2018) and poor quality of life (Savill et al., 2016). Some studies have shown that amotivation alone accounts for 74% of the variance in functional outcomes (Foussias et al., 2011). Therefore, the development of treatments targeting this key area appear warranted.

### **1.3. Theoretical Framework for Motivation in Psychosis**

In order to better understand amotivation and develop effective treatment strategies, it is important to consider the nature of motivational impairment within a theoretical framework. It has been argued that an appropriate overarching framework that accounts for

both the individual physiological processes and environmental factors is a combination of expectancy-value and self-determination theories (summarised by Medalia & Brekke, 2010).

Expectancy-value theory (Wigfield & Eccles, 2000) highlights two key factors as motivators: the subjective task value (attainment value, intrinsic value, utility value and cost) and expectations for success (self-competence or self-efficacy). These factors are influenced by the person's individual characteristics, such as their self-concept, beliefs and expectations, as well as environmental factors, such as culture and social influences. With regards to psychosis, self-competency is an important predictor of motivation to attempt tasks and engage in new learning (Choi & Medalia, 2010). Furthermore, expectations for success are dynamic and therefore can be subject to change (Choi, Mogami & Medalia, 2010). The value of a task is equally an important and active construct in facilitating motivation, theorised to be changeable directly via mechanisms such as provision of rewards (Medalia & Brekke, 2010) and indirectly through improving perceptions of self-competency (Choi, Fiszdon & Medalia, 2010).

Self-determination theory places motivation on a spectrum of motivation, taking into account the roles of and balance between intrinsic motivation (e.g. enjoyment, satisfaction, personal interests) and extrinsic motivation (e.g. gain rewards, avoid punishments). This theory suggests that people are motivated to engage in tasks if they have autonomy in deciding to engage, if they feel a sense of mastery and if they value the social interactions accompanying these tasks (Deci & Ryan, 2000), despite presence or absence of an external reward. This has implications for developments in treatment, such as therapy, for those with psychosis. For example, a collaborative and supportive environment should be facilitated to increase both an individual's autonomy (e.g. encouraging collaborative goal setting) and intrinsic motivation (e.g. interest and satisfaction with the treatment process), as this would improve overall motivation to engage (Choi & Medalia, 2010; Nakagami, Hoe & Brekke,

2010; Silverstein, 2010). This is especially important, as the role of intrinsic motivation has been highlighted as a core deficit in schizophrenia, resulting in poor functional outcomes (Barch, Yodkovik, Sypher-Locke & Hanewinkel, 2008; Gard, Fisher, Garrett, Genevsky & Vinogradov, 2009; Nakagami, Xie, Hoe & Brekke, 2008). Equally, extrinsic motivation is known to be diminished in people with schizophrenia (Gold, Waltz, Prentice, Morris & Heerey, 2008), which is perhaps more challenging to address.

The dual-theory framework overlaps with the cognitive model of negative symptom development and maintenance (Rector, Beck & Stolar, 2005). Negative symptoms are argued to represent functional patterns of avoidance in response to threatening stimuli (e.g. delusions, social threats), low expectancies for pleasure or success, and perceptions of limited resources. Additionally, negative symptoms themselves serve to reinforce these perceptions and beliefs, which are then often incorporated into the person's view of themselves, resulting in a negative influence on the person's perceived self-efficacy.

The dual-theory framework and cognitive model of negative symptoms clearly highlight amotivation as a changeable negative symptom in psychosis, through many motivational systems. Due to the heterogeneity of negative symptoms taken together, it appears prudent to target a significant area in order to improve efficacy of therapies. The impact of amotivation on functioning and quality of life is well documented, and in light of evidence highlighting the amenability of motivation to change, this further implicates amotivation as an ideal therapeutic target. This outlines the rationale for the systematic review section of this thesis portfolio.

#### **1.4. Functional Recovery as a Treatment Target**

While many studies advocate targeting negative symptoms such as amotivation in order to improve functioning (e.g. Foussias and Remington, 2010), some studies have

highlighted that aiming for symptomatic recovery alone provides a restricted goal, due to finding a lack of direct association between symptomatic remission and functional recovery (Oorschot et al., 2012). This would suggest that interventions should equally focus on functional recovery as a primary outcome (e.g. Liberman & Kopelowicz, 2005). Interventions specifically aimed at functional recovery are also in their early stages. The two empirical projects contained within this thesis portfolio are primarily concerned with functional recovery as an outcome. Additionally, both empirical projects focus on the novel concept of possible selves with regards to their application to individuals with psychosis and their possible role in functional recovery.

### **1.5. The Self-Concept and Possible Selves**

The self-concept is the cognitive representation of who one is as a person, constructed from beliefs held about one's own behaviour, abilities and characteristics, and observations of the responses of others. The self-concept is a multidimensional model containing various knowledge structures of the self, such as self-schema and possible selves (Markus, 1977; Markus & Wurf, 1987; Markus & Sentis, 1982; Stein, 1995).

As opposed to the orientation of the self-concept as the self in the present, possible selves sit within the self-concept as imagined representations of the self in the near or distant future, encompassing imagined scenarios of what a person expects to become, hopes to become, or fears becoming (Markus and Nurius, 1986). Possible selves are closely linked to the formation and exploration of identity (Dunkel, 2000; Dunkel & Anthis, 2001). They are future oriented and constructed based on an individual's environmental, social and cultural experiences throughout the lifespan (Cross & Markus, 1991; Hamman, Gosselin, Romano & Baunan, 2010; Hoyle & Sherrill, 2006). In this way, possible selves embody cognitive representations of highly personalised goals, by which individuals can assess their own



progress against (as moving towards or away from a desired outcome), subsequently directing and motivating behaviour (Frazier & Hooker, 2006; Wurf & Markus, 1991). Therefore, possible selves have been described as a key conceptual link between the self-concept and motivation (Oyserman, Bybee, Terry & Hart-Johnson, 2004).

Possible selves are theorised to have two primary functions: self-regulatory/motivational and self-evaluative (Bak, 2015; Markus and Nurius, 1986; Oyserman et al., 2004). Self-evaluative possible selves are those which strengthen self-esteem, optimism and hope for the future (Oyserman et al., 2004). These possible selves are described as somewhat abstract and less associated with specific details or action plans (Oyserman et al., 2004). These possible selves exert a positive influence by simply being brought to mind (Gonzales, Burgess & Mobilio, 2001). Alternatively, self-regulatory possible selves are precise and action-oriented, directing behaviour to achieve personally valued goals, particularly when action plans are connected to these goals (Bak, 2015; Oyserman et al., 2004). These possible selves are hypothesised to be directly associated with motivating behaviour (Markus & Nurius, 1986). When considering motivational theories as outlined earlier, understanding an individual's possible selves may serve to provide a greater understanding of their perceived task value and their expectations for success. Additionally, understanding an individual's possible selves may provide a means to ensure greater autonomy and meaningful/collaborative goal setting in therapy.

With these ideas in mind, it can be theorised that change in possible selves could have positive implications for functional recovery, as they serve to maximise motivation to engage in desired behaviours (e.g. work, education, hobbies or social activities).

## 1.6. Changeability of Possible Selves

Models of the self-concept have long debated the resistance to change and stability of the self vs the fluidity and changeability of the self (Markus & Kunda, 1986; Onorato & Turner, 2004), with an overarching conclusion that it can be both. The self-concept is a dynamic, rich and multifaceted cognitive structure (largely containing self-schema, strategies and rules), which is influenced by social interactions, environmental cues and internal processes, such as self-appraisal and self-perceptions (Dörnyei, MacIntyre & Henry, 2015). Due to the multidimensional nature of the self-concept, simply observing it as a single construct to understand motivated behaviour is not feasible, whereby aspects can be both stable and dynamic, and cognitively active or inactive at different times (Markus & Nurius, 1986; Stein & Markus, 1996; Dörnyei et al., 2015). Instead, focus is best placed on the cognitively active ingredients of the 'working self-concept' (Markus & Nurius, 1986), which may be any dimension of the self-concept, such as possible selves.

Possible selves are argued to be more susceptible to change than other forms of self-knowledge as they represent potential, which is sensitive to external influences such as new or inconsistent information about the self (Markus & Nurius, 1986). In this way, possible selves are dynamic in that each time they are activated, they are likely to undergo subtle changes (Dörnyei et al., 2015). Equally, the power that possible selves exert (motivation, self-regulation) is dynamic, as determined by the situation the individual is in, such as activities engaged with and current state of mind (Dörnyei et al., 2015).

Possible selves are also known to be more amenable to change in relation to an individual's stage of life. Possible selves are relatively stable in later life (Frazier, Hooker, Johnson & Kaus, 2000) compared to those of adolescents, who are actively exploring and developing their identity, self-concept and possible selves (Dunkel, 2000; Dunkel & Anthis,

2001). Together, this would suggest that possible selves may be subject to change in order to maximise their motivational potential.

### **1.7. Social Recovery Cognitive Behavioural Therapy**

An important psychological therapy of focus in this thesis portfolio is Social Recovery Cognitive Behavioural Therapy (SRCBT), which is a novel intervention developed specifically to support and motivate individuals with psychosis to engage in meaningful structured activities (summarised in Fowler et al., 2019). The system around the individual is involved in the intervention (family, professionals, local activity providers) to support lasting engagement with activities, and emphasis is placed on the importance of a collaborative therapeutic relationship in facilitating change. This approach assesses individuals' values through discussion about interests and hopes for the future, and uses these to develop specific, measurable, assignable, realistic, and time-limited (SMART) goals which are linked to longer-term values. Formulations are longitudinal in nature, taking into account early events as well as social, environmental, cultural and individual factors. The formulation also takes into account the barriers which may complicate or prevent engagement with meaningful structured activity, and explores these in the form of traditional CBT maintenance cycles of avoidance. Interventions are informed by both cognitive and behavioural elements. For example, cognitive elements involve building a positive sense of self and hope about the future, through thought challenging and generating alternative explanations. Behavioural elements provide the foundation of SRCBT, and include a variety of interventions including behavioural activation and multi-layered behavioural experiments, with added components to motivate individuals to engage (e.g. through motivational interviewing, in-vivo skills building and modelling the experiments with the individual).

SRCBT links with motivational theories of psychosis, as it promotes autonomy and aims to increase enjoyment within the intervention through focusing on personally valued goals (i.e. building intrinsic motivation to engage and building task value). In-vivo skills practice and facilitating a positive sense of self throughout the intervention builds a sense of mastery and achievement, which in turn aims to raise hope and expectancy for success at tasks. Therefore, SRCBT appears well suited as an intervention to address motivational difficulties, alongside its primary outcome of levels of functioning (as an overlapping construct).

### **1.8. Improving Social Recovery in Early Psychosis (ISREP) Project**

The Improving Social Recovery in Early Psychosis (ISREP) trial (Fowler et al., 2009; Appendix A) is of key importance to the thesis portfolio, as both empirical projects conducted secondary analyses on the data collected as part of this project. Permission to use these data was obtained from the primary author (Appendix B).

The ISREP trial was a randomised controlled trial (RCT) investigating the effectiveness of SRCBT compared to treatment as usual (TAU) on structured time use for people with psychosis and enduring functional difficulties. Possible selves were collected as a tertiary outcome measure for this study (see Appendix C for the Possible Selves Inventory measure), in order to inform meaningful values and goals (as described above as an important aspect of SRCBT). The study sample in particular were recruited based on low levels of functioning, with inclusion criteria specifying unemployment or engagement in less than 16 hours paid employment or education at the time of recruitment. The ISREP study concluded that SRCBT was effective at improving structured activity in people with non-affective psychosis. Additionally, further analyses showed that SRCBT improved hope and positive beliefs about the self and others, which mediated functional recovery (Hodgekins & Fowler,

2010). Longer term outcomes suggested that 25% of individuals with non-affective psychosis within the SRCBT intervention group went on to engage in paid work within the year, compared to none of the control group, and that gains in hope were maintained 15 months following the end of therapy (Fowler, Hodgekins & French, 2019). Since the initial ISREP trial, there has been a larger study exploring the efficacy of SRCBT (Fowler et al., 2018). Results of this trial also indicated that SRCBT is a beneficial intervention for improving social recovery compared to treatment as usual in individuals with first episode psychosis and persistent severe social disability. These findings, taken together, indicate that SRCBT is a promising intervention for improving functional outcomes.

## **Chapter 2. Systematic Review**

This chapter includes a systematic review prepared for submission to The Journal of Mental Health. The paper is formatted according to the journal guidelines (Appendix D). The abstract for this review is 200 words (journal limit is 200). The word count for this review is 5370 (journal limit is 6000).

**Effect of psychological interventions on amotivation in schizophrenia: a systematic review**

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**Abstract**

**Background:** Amotivation is a significant negative symptom in schizophrenia, which has implications for functioning and quality of life. Reviews have highlighted that few psychological interventions successfully alleviate negative symptoms, however, to date no focus has been placed on interventions specifically focusing on alleviating amotivation as a crucial negative symptom domain. **Aims:** This review aimed to explore the effectiveness of psychological interventions on amotivation in schizophrenia. **Methods:** Second-generation measures of negative symptoms such as the Clinical Assessment Interview of Negative Symptoms (CAINS) and Brief Negative Symptom Scale (BNSS), were the outcome of focus as the most valid and reliable measure of amotivation. Seven eligible studies met the criteria for inclusion within the review. Due to high heterogeneity of studies, results were primarily narratively compared, and a quantitative synthesis of effect sizes was also conducted where calculable. **Results:** The results were mixed, particularly for studies with primarily cognitive and behavioural elements. Both 1:1 and group-based interventions showed some efficacy, with group-based interventions showing more mixed results. **Conclusions:** Conclusions with regards to overall efficacy of interventions on amotivation could not be drawn. Further research is needed on psychological therapies for amotivation and consensus is needed on the routine outcome measurements used going forward.

Keywords: amotivation; avolition; psychosis; measurement; psychological; intervention



## Introduction

Negative symptoms in schizophrenia are poorly understood and difficult to treat (Fusar-Poli et al., 2015; Lutgens, Garipey & Malla, 2017; Veerman, Schulte & de Haan, 2017). Negative symptoms are heterogenous, encompassing a number of symptoms, such as anhedonia, asociality, avolition, blunted affect and alogia (Andreason & Flaum, 1991). Intervention studies generally target negative symptoms broadly, and several reviews have concluded limited effectiveness of psychological and psychosocial therapies (Elis, Caponigro & Kring, 2013; Lutgens et al., 2017; Tsapakis, Dimopoulou & Tarazi, 2015).

To increase efficacy of interventions, specific domains of negative symptoms may need to be targeted. Amotivation has been argued as the principal negative symptom in schizophrenia (Foussias and Remington, 2010), and there has been growing evidence to suggest that it is at least one of two distinct overarching factors comprising negative symptoms (Liemburg et al., 2013; Sarkar, Hillner & Velligan, 2015). Amotivation is associated with poor functioning (Fervaha, Foussias, Agid, & Remington, 2013; Kirkpatrick, Fenton, Carpenter & Marder, 2006; Najas-Garcia, Gomez-Benito & Huedo-Medina, 2018) and poor quality of life (Savill et al., 2016), therefore implicating its importance as a therapeutic target.

Amotivation in schizophrenia is argued to be amenable to change in therapeutic settings. According to expectancy-value and self-determination theories (summarised by Medalia & Brekke, 2010) as well as the cognitive model of negative symptoms (Rector, Beck & Stolar, 2005), change occurs through many mechanisms such as altering expectations for success (Choi, Mogami & Medalia, 2010), improving perceptions of self-competency (Choi, Fiszdon & Medalia, 2010), improving autonomy, enjoyment and social relatedness through creating a collaborative therapeutic environment and improving intrinsic motivation (Choi & Medalia, 2010; Nakagami, Hoe & Brekke, 2010; Silverstein, 2010).

Despite growing literature on the two-factor model of negative symptoms, and specific role of amotivation on functioning and quality of life, there have been few psychological interventions specifically developed to target this key negative symptom domain. Some reviews (e.g. Lutgens et al, 2017), have made efforts to differentiate negative symptom domains to explore the effects of therapy on amotivation specifically, however this was notably disadvantaged by the assessment tools used.

There has been a lack of consensus on how best to capture change in negative symptom domains, and concerns around the efficacy of available measures. A comprehensive review of negative symptom and motivation measures (Luther, Fischer, Firmin & Salyers, 2019), argued that measures giving appropriate weight to critical negative symptom domains are crucial in capturing clinically significant change. They concluded that second generation measures of negative symptoms, such as the Clinical Assessment Interview of Negative Symptoms (CAINS) and Brief Negative Symptom Scale (BNSS), are best placed to do this. This is opposed to first generation measures such as the Positive and Negative Syndrome Scale (PANSS; Kay, Opler & Lindenmayer, 1987), which had a significantly smaller effect size regarding overlap with overall motivation.

First-generation measures are also argued to pay less attention to internal experiences in favour of behavioural indicators (Blanchard, Kring, Horan & Gur, 2011). This is problematic as internal experiences play a large role in the expression of amotivation. For example, intrinsic motivation (e.g. enjoyment, satisfaction and interest in an activity) can be present and provide motivational influence despite the presence of directly observable behaviour. Additionally, it should be noted that first-generation measures were created before the conceptualisation of negative symptoms changed towards the two-factor model, thereby utilising using items (e.g. abstract thinking), which are now considered part of a separate domain (Harvey, Koren, Reichenberg & Bowie, 2006).

The psychometric properties of second-generation measures are well established. The CAINS reliably reports on the two distinct subdomains of negative symptoms, defined as ‘expression’ and ‘experiential/motivation and pleasure’ (Kring, Gur, Blanchard, Horan & Reise, 2013; Richter et al., 2019a). Similarly, the BNSS was developed as a valid and reliable measure (Kirkpatrick et al., 2011) of the 5 domains suggested within the NIMH-MATRICES Consensus Development Conference on Negative Symptoms (Kirkpatrick et al., 2006), which have since shown to reliably combine to replicate the two-factor model (Strauss et al., 2012). There is also movement towards more active use of self-report measures alongside observer-rated measures of amotivation (Wolf et al., 2014), which stand to capture information more difficult to access from standard interviews (Lincoln, Dollfus & Lyne, 2017). This includes the Motivation and Pleasure - Self-Report (MAP-SR) outcome, which was derived from the CAINS as a reliable self-report measure of amotivation in schizophrenia (Llerena et al., 2013; Richter et al., 2019b). The Self-assessment of Negative Symptoms scale (SNS; Dollfus, Mach, & Morello, 2016) is another second-generation self-report measure of negative symptoms with good psychometric properties and in keeping with the 2-factor model.

In summary, the aim of the present paper was to investigate the effectiveness of psychological and psychosocial interventions on amotivation in schizophrenia. To reliably report on this symptom domain, only second-generation measures that have the capacity to reliably delineate amotivation from the expressive negative symptom domain were considered in this review.

## **Methods**

### *Protocol and Registration*

The review was registered with the International Prospective Register of Systematic Reviews (PROSPERO) on 2<sup>nd</sup> May 2019. Registration number CRD42019132352.

*Search Strategy*

Studies were identified via MEDLINE (EBSCO), PsycINFO (EBSCO), Embase, Scopus and The Cochrane Library. Reference lists were scanned for studies not found electronically. Articles from inception to July 2019 were included in the search, which was conducted on 8<sup>th</sup> July 2019. Database-specific search strategies were conducted using the following search terms: “Psychotic Disorders” OR psychotic OR psychosis OR psychoses OR schizo\* OR "delusional disorder\*" OR "deficit syndrome" AND Therap\* OR Psychotherap\* OR “psycho-therap\*” OR Intervention OR “Behavio\* Activation” AND Motivation OR Amotivation\* OR Anhedoni\* OR Avolition\* OR Apathy OR apathetic OR Asocial\* OR “The Clinical Assessment Interview for Negative Symptoms” OR CAINS OR “Brief Negative symptom Scale” OR BNSS OR “Motivation and Pleasure Scale” OR “Self-Evaluation of Negative Symptoms” OR “Positive and Negative Symptom Scales” OR PANSS OR “Scale for the Assessment of Negative Symptoms” OR SANS OR “Negative Symptom Assessment\*”. The search strategy around outcome measures was notably broad to account for papers that primarily reported more widely accepted measures (i.e. PANSS or SANS) with second-generation measures sometimes included as secondary measures.

*Inclusion/Exclusion Criteria*

Studies were included if they met the following criteria: manuscript accessible in the English language; investigation of a psychological or psychosocial intervention (which did not need to specifically target negative symptoms); a majority ( $\geq 50\%$ ) of the sample population with a diagnosis of schizophrenia or other non-organic psychotic disorder as determined by a valid and reliable diagnostic instrument; an experimental design with a control group; report of negative symptom outcomes using second generation measures of negative symptoms (as a primary or secondary outcome) such as the CAINS, BNSS, MAP-SR or SNS; subscales of amotivation reported or obtainable from authors. The following types of studies were

excluded: those published in a language other than English; theoretical papers; medication efficacy trials (including those using psychological or psychosocial interventions as a complementary treatment); case studies; all review papers including meta-analyses; papers reporting secondary analyses on pre-existing data; qualitative studies.

### *Screening*

All citation titles were screened by the first author for their broad applicability using computer-based reference management software. Titles that clearly did not meet the inclusion criteria were removed from the citation listings. At the second stage, abstracts were screened by the first author against inclusion criteria, particularly for the presence of the desired outcome measures. Where it was clear that the desired outcome measures were not used, or where any other inclusion criteria were not met, these papers were excluded from the citation listings. Where abstracts were vague or unclear, the full text was reviewed for presence of the desired outcome measures. All authors of conference abstracts were contacted to identify whether there was any further published work. In the final stage, full texts where the desired outcome measure was identified were reviewed in detail against all inclusion and exclusion criteria.

A proportion of the titles (10%) were independently screened by a second researcher for interrater reliability. There was 96.48% agreement across researchers. Where there were disagreements at title screening (only 37 titles), these were moved to the abstract screening stage for further review. A second independent researcher also screened all papers which were identified as containing the measures of interest. There was 100% agreement between researchers with regards to papers which met criteria for inclusion.

### *Data Extraction*

Individual study characteristics were extracted based on pre-defined published criteria and following the Population, Intervention, Comparison and Outcome (PICO) structure. This included information regarding study design, intervention type, control condition, method of recruitment, inclusion/exclusion criteria, participant diagnoses, duration of intervention, duration of follow-up, frequency and type of assessment, number and mean age of participants, antipsychotic medication usage, comorbid substance use, dropout rates, and key statistical information (means, standard deviations, participant numbers at each assessment timepoint) on outcomes of interest. Where the above information or data were not published in the study report, corresponding authors were contacted.

### *Risk of Bias*

Risk of bias was assessed by the lead author in detail using the revised Cochrane risk of bias tool (Sterne et al., 2019) for both controlled and uncontrolled studies, with the aim of treating all papers with the same rigour. A rating of “low risk”, “some concerns”, or “high risk” was provided, considering the following domains; effect of randomisation process; effect of assignment to intervention, effect of adhering to intervention; missing outcome data; measurement of the outcome; and selection of the reported result.

### *Data Analysis*

Due to the high heterogeneity of the papers included in this review with regards to study design and psychological intervention, this review was informed by procedures of narrative synthesis (Popay et al., 2006). This process included a preliminary synthesis of the findings of included studies, exploration of the relationships in the data and finally assessment of the robustness of the synthesis. A meta-analysis was not conducted due to the high heterogeneity between intervention types, therefore where data were available, a quantitative synthesis of results was conducted by calculating between group effect sizes (Cohen’s *d*) for each study.

This is opposed to pre-post effect sizes which may introduce bias (Cuijpers, Weitz, Cristea, & Twisk, 2017).

## **Results**

### *Search Results and Study Selection*

The methodology for this review was guided by the PRISMA checklist and four-phase flow diagram (Moher, Liberati, Tetzlaff & Altman., 2010) as outlined in Figure 1. The initial search identified 20,573 results, of which 10,095 were duplicates. Most citations were excluded at title and abstract screen due to being clearly irrelevant. Seven studies were selected for inclusion within the review. Of these, 4 reported insufficient data. Two papers did not report the relevant negative symptoms subscale scores (Pos et al., 2016; Velligan, et al., 2015) and 2 papers did not report standard deviations required to calculate effect sizes (Palumbo et al., 2017; Schlosser et al., 2018). Authors were contacted directly for these data, with responses received from two (Pos et al., 2016; Velligan, et al., 2015). While all relevant subscale data was available to comment upon presence of an effect, effect sizes could not be calculated for the remaining two papers due to lack of response from the authors.

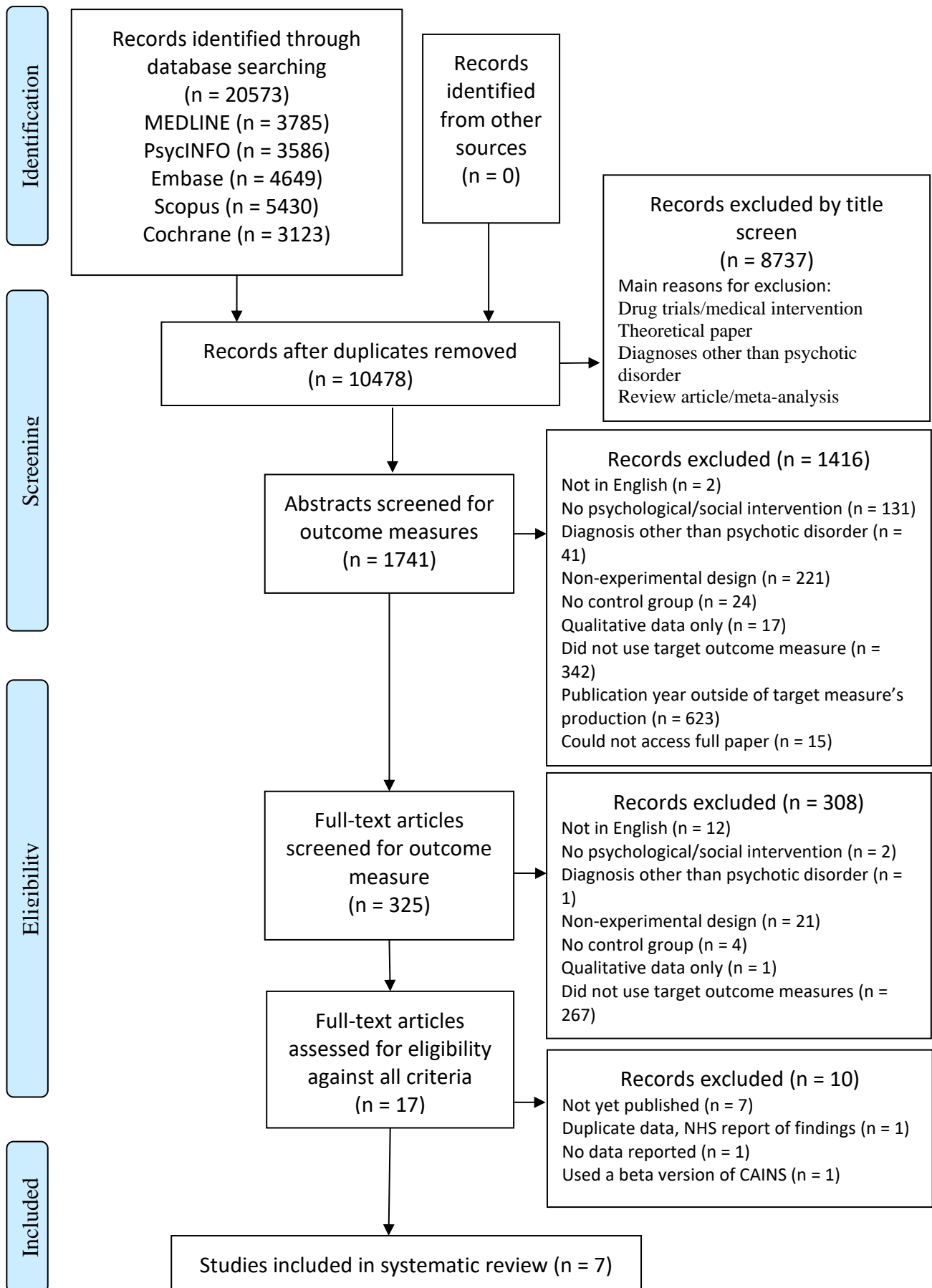


Figure 1. PRISMA study retrieval flow diagram



*Study Characteristics**Study Design*

Study characteristics are outlined in Table 1. Five studies were randomised controlled trials (Palumbo et al., 2017; Pos et al., 2016; Priebe et al., 2016; Schlosser et al., 2018; Velligan, et al., 2015), and two were controlled trials (Cho & Lee, 2018; Choi, Jaekal & Lee, 2016). Of all the studies, 3 were pilot studies (Choi et al., 2016; Palumbo et al., 2017; Velligan, et al., 2015).



|                       |           |    |             |  |              |       |              |                                  |              |       |            |   | High Risk                       |
|-----------------------|-----------|----|-------------|--|--------------|-------|--------------|----------------------------------|--------------|-------|------------|---|---------------------------------|
| Velligan et al., 2015 | Pilot RCT | 51 | USA (Texas) | Schizophrenia Schizoaffective (DSM-IV) | 41.6 (11.3)  | 66.66 | MOVE         | 1/week for 9 months = approx. 36 | TAU          | 23.53 | CAINS BNSS | 9 | LR, LR, LR, LR, LR, SC          |
|                       |           |    |             |  |              |       |              |                                  |              |       |            |   | <u>Overall</u><br>Some concerns |
| Palumbo et al., 2017  | Pilot RCT | 10 | Italy       | Schizophrenia Schizoaffective (DSM-IV) | 36.83 (9.73) | 40.00 | SoCIAL + NIT | 20 (*)                           | SSANIT + NIT | 10    | BNSS       | 0 | LR, SC, HR, LR, SC, SC          |
|                       |           |    |             |  |              |       |              |                                  |              |       |            |   | <u>Overall</u><br>High Risk     |

\* Data not available

† Risk of bias domains: effect of randomisation process; effect of assignment to intervention, effect of adhering to intervention; missing outcome data; measurement of the outcome; and selection of the reported result.

RCT = Randomised Controlled Trial, CT = Controlled Trial, ICD = International Statistical Classification of Diseases, DSM = Diagnostic and Statistical Manual of Mental Disorders, NOS = Not Otherwise Specified, BPT = Body Psychotherapy, TAU = Treatment As Usual, CBTsa = Cognitive Behavioural Therapy with Social Activation, MI = Motivational Interviewing, PRIME = Personalized Real-time Intervention for Motivational Enhancement, mBA = Motivational and Behavioural Activation, MOVE = Motivation and Enhancement Training, SoCIAL = Social Cognition Individualized Activities Lab, NIT = Neurocognitive Individualised Training, SSANIT = Social Skills And Neuro-cognitive Individualized Training, CAINS = Clinical Assessment Interview of Negative Symptoms, SNS = Self-Evaluation of Negative Symptoms, BNSS = Brief Negative Symptom Scale, MAP-SR = Motivation and Pleasure – Self Report, LR = Low Risk, SC = some concerns, HR = High Risk.

### *Participants*

All 7 studies ( $n=560$ ) recruited from a clinical population with a primary diagnosis of schizophrenia using a valid diagnostic instrument, such as the ICD-10 (Priebe et al., 2016) or DSM-IV/DSM-V (Choi et al., 2016; Cho & Lee, 2018; Palumbo et al., 2017; Pos et al., 2016; Schlosser et al., 2018; Velligan, et al., 2015). Many studies also included individuals with schizoaffective disorder in their study sample (Choi et al., 2016; Palumbo et al., 2017; Pos et al., 2016; Schlosser et al., 2018; Velligan, et al., 2015).

Most participants were prescribed antipsychotic medication across all studies (range 86-100%). Five studies excluded participants whose antipsychotic medication had changed before the study, ranging from at least 6 weeks (Priebe et al, 2016) to 6 months prior (Choi et al., 2016), and 2 studies did not comment upon changes in antipsychotic medication (Cho & Lee, 2018; Pos et al., 2016).

All studies included participants with at least moderate negative symptoms. Inclusion criteria of 4 studies involved meeting a negative symptom threshold on the PANSS (Choi et al., 2016; Pos et al., 2016; Priebe et al., 2016) or NSA-16 (Velligan, et al., 2015). The remaining 3 studies reported moderate-high levels of negative symptoms at baseline as measured by the SANS (Cho & Lee, 2018), PANSS (Schlosser et al., 2018) and BNSS (Palumbo et al., 2017). Some studies excluded significant positive symptoms as measured by the PANSS (Choi et al., 2016) or BPRS-E (Velligan, et al., 2015) and significant depressive symptoms as measured by the BPRS (Velligan, et al., 2015) or PANSS (Choi et al., 2016). Some studies excluded participants with a longer duration of psychosis, such as over 4 years (Pos et al., 2016), over 5 years (Schlosser et al., 2018) and over 10 years (Palumbo et al., 2017).

Most studies explicitly excluded participants with comorbid substance abuse ( $n=4$ ). Cho & Lee (2018) conducted their study within inpatient wards so it has been assumed drug

and alcohol use was controlled. Priebe et al.(2016) made no comment about participant drug and alcohol use. Pos et al. (2016) included participants using cannabis (42%) and did not have sufficient data to control for the effects of this.

With regard to recruitment, 5 studies recruited from community mental health clinics and outpatient treatment centres (Choi et al., 2016; Palumbo et al., 2017; Pos et al., 2016; Priebe et al., 2016; Velligan, et al., 2015). Cho and Lee (2018) recruited from an inpatient psychiatric ward and Schlosser et al. (2018) recruited through online message boards, website trial listings and flyers in clinics.

All studies reported a mixture of male and female participants with a range of 40.00% males (Palumbo et al., 2017) to 80.80% males (Pos et al., 2016). The mean (SD) age ranged from 24.06 (3.65; Schlosser et al., 2018) to 42.45 (11.24; Choi et al., 2016).

#### *Outcome Measurement*

Only one study identified in this review explored an intervention specifically targeting amotivation (Schlosser et al., 2016). Five studies explored interventions for negative symptoms more generally (n=5), and one study explored an intervention targeting social cognition, with negative symptoms as a secondary outcome (Palumbo et al., 2017). All 7 studies used at least one validated second-generation measure of negative symptoms. Two used the CAINS (Priebe et al., 2016; Velligan, et al., 2015), 4 used the BNSS (Choi et al., 2016; Palumbo et al., 2017; Pos et al., 2016; Velligan, et al., 2015), 2 used the MAP-SR (Cho & Lee, 2018; Schlosser et al., 2018) and one used the SNS (Priebe et al., 2016). Two papers used more than one second generation measure of negative symptoms (Priebe et al., 2016; Velligan et al., 2015). Where more than one measure was used, only one was chosen as part of this review. Clinician report measures were selected over self-rated measures, due to some difficulty with measurement of the amotivation factor in self-report scales (Richter et al., 2019b) and patients with chronic schizophrenia struggling to reliably self-evaluate subjective

experience over time (Goldring et al., 2019). The CAINS was chosen over the BNSS, as exploration of the two-factor structure of the BNSS showed a high correlation between the factors, suggesting some potential difficulty with delineation (Strauss et al, 2012) compared to the robust two-factor structure of the CAINS (Richter et al., 2019a). This resulted in clinician reported outcomes for a majority of studies ( $n=5$ ) and participant rated outcomes for the remainder. Subscale data of second-generation negative symptom measures were extracted from all studies included in this review.

#### *Attrition/Dropout*

The level of attrition varied between studies. Priebe et al. (2016) reported the lowest dropout rate at 7.27% whereas Schlosser et al. (2018) reported the highest at 25.58%. Overall, the average dropout rate was moderately high (17.30%) with almost one in five participants not completing treatment. The dropout rate may indicate acceptability of the intervention or may reflect the population sample itself. For example, people struggling with negative symptoms such as amotivation are likely to find it difficult to engage with interventions, particularly those that require active participation. High dropout rates can introduce bias (Hewitt, Kumaravel, Dumville & Torgerson, 2010) and therefore it is important to consider the impact on the outcomes reported. This will be discussed further within the discussion section.

#### *Risk of Bias Assessment*

Details of the risk of bias assessment for all studies are summarised in Table 1. For the controlled studies, risk of bias was assessed as either low or some concerns. Risk of bias amongst uncontrolled studies was high in relation to bias from lack of randomisation, but varied in relation to the other domains.

#### *Characteristics of Interventions*

The psychological therapies explored were varied in nature (summarised in Table 2). The average number of sessions offered by the RCTs was 20.4 (range 12-36), and 11 (range 10-

12) for controlled trials. Six of the studies utilised face-to-face methods of delivery, one of which was home-based (Velligan et al, 2015), while one study utilised a remote phone-based app (Schlosser et al, 2018). The majority ( $n=5$ ) of the studies utilised group interventions for all (Choi et al., 2016; Cho & Lee, 2018; Priebe et al., 2016) or part of the treatment (Palumbo et al., 2017; Pos et al., 2016).

The majority of studies ( $n=4$ ) adopted some form of cognitive and/or behavioural approach. Pos et al. (2016) compared Cognitive Behavioural Therapy with Social Activation (CBTsa,  $n=49$ ) to TAU ( $n=50$ ). CBTsa utilised a manualised CBT approach aimed at addressing dysfunctional beliefs and avoidance behaviours in negative symptoms (Staring, Ter Huurne & van der Gaag, 2013), which was adapted to focus on increasing social interaction and competencies. This included adding a group component to benefit from group processes, such as practicing skills and sharing experiences with peers. Schlosser et al. (2018) compared Personalised Real-time Intervention for Motivational Enhancement (PRIME,  $n=22$ ) to waitlist control ( $n=21$ ). PRIME is a mobile phone based behavioural intervention based on a CBT approach, which utilised social-reinforcement to engage and sustain goal-directed behaviour. The intervention targets motivational behaviour specifically in an attempt to engage the reward-processing process known to be disrupted in schizophrenia disorders. Velligan, et al. (2015) compared Motivation and Enhancement Training (MOVE,  $n=26$ ) to TAU ( $n=25$ ). MOVE is a manualised home-based novel intervention designed to address 5 key domains related to negative symptoms (Velligan, Maples, Roberts & Medellin, 2014). These included initiating behavioural cues in the home environment (antecedent control), behavioural experiments around anticipatory pleasure, computerised emotion perception exercises to improve emotional processing and expression, CBT to address self-defeating thoughts, and roleplays to build skills and promote independent living. Finally, Choi et al. (2016) compared a Motivational and Behavioural Activation group (mBA,  $n=23$ ) to TAU

( $n=24$ ). The mBA intervention was primarily a behavioural approach for reducing negative symptoms, combining both motivational interviewing (MI) and behavioural activation (BA) principles. The aim was to increase routine and social activities identified as pleasurable and meaningful (BA) while maintaining the participants engagement with the therapeutic process (MI). This intervention was delivered in a group setting where participants could set goals and plan activities, while problem solving possible difficulties.

Two studies adopted a broadly group psychodynamic psychotherapy approach. Priebe et al. (2016) compared a Body Psychotherapy group (BPT,  $n=140$ ) to a Pilates group ( $n=135$ ). The BPT intervention was a manualised group-based approach working under the theory of body-mind functioning (Leitan & Murray, 2014). Participants were asked to engage in touch, breathing and movement exercises. In this way, negative symptoms were addressed through several mechanisms such as; modulating body self-awareness and movement behaviour, improving emotional regulation and expression, reality-testing, improving boundary demarcation and improving prosocial capabilities. Cho & Lee (2018) compared Motivational Interviewing and Art Psychotherapy ( $n=17$ ) to TAU ( $n=18$ ). This group-based intervention included two key components, both aimed at addressing negative symptoms. Firstly, art psychotherapy focused on fostering a positive self-image, encouraging self-expression and improving communication and psychological insight. Secondly, goal-oriented MI focused on improving motivation and eliciting behavioural change, as well as improving general attendance to the art psychotherapy group.

One study (Palumbo et al., 2017) adopted a behavioural approach using social cognitive training techniques, Social Cognition Individualised Activities (SoCIAL,  $n=5$ ) was compared to Social Skills Individualised Training (SSANIT,  $n=5$ ). The SoCIAL intervention involves addressing various domains of cognitive deficit in schizophrenia, such as emotion recognition and theory of mind, through videos and vignettes. The intervention is primarily



group based with one-to-one neurocognitive individualised training. The SSANIT intervention has similar aims and structure, with a focus on communication, problem solving and behavioural rehearsal.

| Therapy  | Description  |
|--|--|
| Body Psychotherapy (BPT) group   | BPT is grounded in psychoanalysis and focuses on the interaction between the body and the mind to improve emotional, cognitive, physical and social integration.   |
| Motivational Interviewing in an Art Psychotherapy group                  | Motivational Interviewing (MI) aims to consolidate motivation for change through highlighting the discrepancy between the person's goals and their behaviour while remaining empathetic, flexible to resistance and supporting positive change. This was coupled with Art Psychotherapy, which aims to improve self-expression, communication and psychological insight. |
| Motivational and Behavioural Activation (mBA) group                      | mBA combines BA and MI principles to increase the level of routine, pleasurable and necessary social activities, while improving and maintaining people's engagement with treatment.   |
| Motivation and enhancement Training (MOVE)                               | MOVE is a manualised home-based intervention addressing 5 key domains related to negative symptoms: antecedent control, anticipatory pleasure, emotional processing and expression, CBT to address self-defeating thoughts and skills building.  |
| Personalised Real-time Intervention for Motivational Enhancement (PRIME) | PRIME is a mobile-based intervention designed to improve motivation and quality of life. People can select goals in the domains of health, social, creativity and productivity. Daily challenges are offered towards each goal. People have access to a PRIME community to share achievements as well as motivation coaches offering CBT or BA interventions remotely.   |
| Cognitive Behavioural Therapy with Social Activation (CBTsa)             | CBTsa is primarily a CBT based approach focussing on social activation, which aims to increase engagement in social activity and reduce avoidance. This was delivered primarily in a group setting, which included each person having a buddy to promote peer support. 1:1 sessions were used to supplement group work and refine personal goals.                        |
| Social Cognition Individualised Activities (SoCIAL)                      | SoCIAL is a social cognitive training programme primarily aimed at cognitive deficits in schizophrenia. There is a focus on emotion recognition and theory of mind (understanding the mental states of others), explored through various videos, vignettes and roleplays.  |
| Social Skills Individualised Training (SSANIT)                           | SSANIT is a social cognitive training and cognitive remediation training programme primarily aimed at cognitive deficits in schizophrenia. There is a focus on communication, problem solving and behavioural rehearsal.   |
| Neurocognitive Individualised Training (NIT)                             | NIT is a cognitive intervention utilising computer-based exercises to improve cognitive domains such as attention, concentration, planning, memory and perception etc.   |

Table 2. Summary of psychological therapies grouped by broad treatment types.

*Examination of Amotivation Outcomes*

See Table 3 for a summary of amotivation outcomes and calculated effect sizes. Of the RCTs, 2 did not directly report amotivation results, however they reported significant improvements in negative symptoms more generally (Pos et al., 2016; Velligan et al., 2015). Effect sizes calculated for amotivation subscales were found to be small ( $d=0.05$ ) and medium ( $d= 0.49$ ) respectively. Three RCTs directly reported effect of intervention on amotivation, 2 were found to be non-significant (Priebe et al., 2016; Schlosser et al., 2018) and one found significant improvements on amotivation (Palumbo et al, 2017). Effect size could only be calculated for Priebe et al. (2016), which was small at  $d= -0.03$ .

Of the 2 CTs, one (Cho & Lee, 2018) reported significant improvements in amotivation and one (Choi et al., 2016) reported no significant change in amotivation after controlling for differences in baseline cognitive symptoms. Effect sizes were large ( $d=1.81$ ) and medium ( $d=0.66$ ) respectively.

Table 3. Summary of efficacy of interventions

| Study                  | Design | Study groups                        | Amotivation outcomes   | Longest term available follow-up in months | Cronbach's $\alpha$ for outcome measure | Favours amotivation (+) or No treatment effect (-) | Between group effect size ( $d$ ) for amotivation |
|------------------------|--------|-------------------------------------|--|--|---|--|---|
| Priebe et al., 2016    | RCT    | BPT + TAU vs Pilates + TAU          | A significant mean reduction in scores at the end of treatment on the CAINS motivation and pleasure subscale was seen after BPT + TAU (-0.62, 95% CI -1.23 to -0.00, $P = 0.049$ , ICC = 0.022). However, this significance was lost after multiple imputation analysis to account for non-response data (-0.06, 95% CI -1.22 to 0.02, $P = 0.056$ , ICC 0.026). At 6 month follow up no significant mean difference was noted in the CAINS motivation and pleasure subscale scores. | 6  | *                                       | -  | -0.03   |
| Pos et al., 2016       | RCT    | CBTsa vs TAU                        | A significant mean reduction in scores was found on the <b>BNSS total</b> at 6 month follow-up. The researcher was provided data for BNSS subscales. A between group effect size at 6 months was calculated based on the means and pooled standard deviation of the motivation and pleasure subscale data.   | 6  | 0.81                                    | -  | 0.05  |
| Cho & Lee, 2018        | CT     | MI & Group Art Psychotherapy vs TAU | A significant effect of group ( $F = 21.92$ , $p < .001$ ) and significant group and test time interaction ( $F = 29.81$ , $p < .001$ ) was found for the MAP-SR measure. There was no significant effect of time ( $F = 1.47$ , $p = .234$ ).   | 0.5  | 0.77                                    | +  | 1.81  |
| Schlosser et al., 2018 | RCT    | PRIME vs TAU /WL                    | No significant difference was found on the MAP-SR between PRIME vs TAU/WL, $F(1, 57) = 3.79$ , $P = .06$ .   | 3  | > 0.80                                  | -  | *   |
| Choi et al., 2016      | CT     | mBA vs TAU                          | Significant interaction effects of group (mBA vs TAU) by time on BNSS motivation and pleasure subscale, $F(1, 28) P < .05$ . This significance was lost  | 0  | 0.86                                    | -  | 0.66  |

|                       |     |                              | when baseline PANSS cognitive symptoms were controlled for ( $P = 0.12$ ).   |   |        |   |      |
|-----------------------|-----|------------------------------|--|---|--------|---|------|
| Velligan et al., 2015 | RCT | MOVE vs TAU                  | A significant group by time (crossover) interaction was found for the <b>CAINS total score</b> . The researcher was provided data the CAINS subscales. A between group effect size was calculated at 9 months based on the means and pooled standard deviation of the motivation and pleasure subscale data. | 9 | > 0.80 | + | 0.49 |
| Palumbo et al., 2017  | RCT | SoCIAL + NIT vs SSANIT + NIT | A significant time effect was found in the SoCIAL group for the BNSS motivation and pleasure subscale ( $F=9.85, P < 0.04$ ).  | 0 | *      | + | *    |

\* Data not available

## Discussion

The current systematic review was the first of its kind to evaluate the efficacy of psychological interventions in alleviating the negative symptom domain of amotivation in people with psychosis, as measured by the most reliable measures of amotivation available. A total of 7 studies were included in the review, 5 RCTs and 2 CTs.

Although efforts were made to reduce heterogeneity with robust inclusion criteria regarding population, study design and outcome measurements, a broad range of interventions were included in the review. However, as all studies reported a measure of amotivation and aimed to reduce an aspect of negative symptomatology, this allowed the studies to be narratively compared.

Quality and risk of bias varied according to study design. The majority of RCTs (n=3) were rated as having some concerns due to bias in selection of the reported results (due to lack of evidence of a pre-specified analysis plan), and one RCT was rated as overall low risk (Priebe et al., 2016). One RCT (Palumbo et al., 2017) was rated as high risk due to using completer analysis methods as opposed to the more robust intent-to-treat analysis, however there were low levels of attrition (10%) explained reasonably as separate to course of symptomatology of the participant (i.e. the potential 'true value'), which somewhat mitigates the impact of this approach on the conclusions that can be drawn. Both CTs were rated as high risk due to lack of randomisation and assessor blinding, however one CT (Cho & Lee, 2018) was additionally rated high risk due to choosing completer analysis alongside high attrition (16.67%), bringing into question the conclusions that can be drawn from the results (which notably had the largest effect size of 1.81).

### *Efficacy of Psychological Interventions on Amotivation*

Taking into account the limitations discussed, the 5 RCTs were found to report reasonably reliable results, whereas the 2 CTs must be interpreted with caution. This means that of the 7

studies, 2 have reported reliable change in support of psychological interventions for amotivation in schizophrenia (Palumbo et al., 2017; Velligan et al., 2015).

One study that found significant results supporting psychological interventions for amotivation broadly utilised cognitive behavioural interventions (MOVE) with a medium between-group effect size for amotivation ( $d=0.49$ ). This is compared to two RCTs (pos et al., 2016; Schlosser et al., 2018) which reliably reported non-significant change in amotivation following broadly cognitive behavioural interventions (CBTsa and PRIME). It is therefore difficult to draw conclusions regarding the efficacy of cognitive and behavioural interventions, due to the fact that relatively few studies were included in this review and the mixed effects reported. This finding is contrary to trends found in similar reviews (e.g. Elis et al., 2013; Lutgens et al., 2019; Tsapakis et al., 2015), which found cognitive behavioural interventions showed modest utility for reducing negative symptoms more broadly.

The MOVE intervention had the highest number of sessions ( $n=36$ ) and was the only home-based treatment, which is likely to lend itself to the nature of the target population. In contrast, the PRIME study was the only study to utilise a non-face-to-face intervention, which required participants to independently engage with the intervention. This may have been problematic for participants, considering the difficulties of the target population with motivation to engage in tasks independently, which is perhaps reflected by having the highest attrition rate (25.58%) of all 7 studies. The CBTsa intervention had the second highest number of participants ( $n=99$ ) and was fairly robust in terms of study quality, however, several participants (42%) were actively using cannabis throughout the trial, which may have confounded the results in light of evidence that the effects of cannabis use on negative symptoms and functioning are inconsistent and not well understood (Zammit et al., 2008).

The second intervention that found a significant improvement in amotivation utilised a social cognitive training approach (SoCIAL). The effect size could not be calculated due to

unavailability of standard deviation data post-treatment. This study notably had the smallest sample size of all 7 papers ( $n=10$ ), which suggests low statistical power and a high likelihood of sampling errors. This study was one of two to include an active control group, allowing some comment on the efficacy of treatment compared to other established efficacious treatments. However, conclusions cannot be drawn regarding overall efficacy of social cognitive training interventions on amotivation from a single pilot study with a small sample size.

One RCT (Priebe et al., 2016) reliably reported no significant difference in amotivation between 7 groups at follow-up, after following a broadly psychodynamic intervention (BPT). This was the highest quality study in the review with the highest number of participants ( $n=275$ ), lowest attrition 7.27 and utility of an active control group. Again, it is difficult to draw conclusions based on a single study with regards to efficacy of interventions informed by psychodynamic psychotherapy.

Both CTs reported change in support of their respective psychological interventions (cognitive behavioural and psychodynamic) at much greater effect sizes respectively ( $d=0.66$  and  $d=1.81$ ), but were at much higher risk of bias, therefore conclusions that could be drawn are limited. The slightly higher quality study was that of Choi et al. (2016) adding some support for cognitive behavioural therapies, however significance was lost when baseline cognitive differences on the PANSS were controlled for.

The two studies that reliably reported significant improvements in amotivation utilised 1:1 interventions as part or all of their treatment, compared to one study reporting reliable non-significance using 1:1 interventions for part of the intervention, suggesting that amotivation interventions can be efficacious in a 1:1 format. The results for group-based interventions showed that one of the two studies that reliably reported significant change utilised group-based interventions, compared to two studies that reliably reported non-



significance utilising group-based interventions. The mixed results for both 1:1 and group-based interventions suggest that it is likely the content of the intervention rather than the format that is impacting on efficacy. Whilst some interventions do not lend to being facilitated within a group format (e.g. MOVE), this review suggests that groups can be an effective delivery method for interventions. This is notable as groups hold potential benefits such as cost effectiveness (e.g. Tucker & Oei, 2007) and the ability to target amotivation treatment outcomes (e.g. asociality) in a 'live' environment (Pos et al, 2016).

### *Strengths and Limitations*

This review employed a robust search strategy with a highly inclusive nature to ensure that relevant papers were identified. This comprehensive search allowed for clear conclusions to be drawn regarding availability of evidence for amotivation interventions. Equally, studies were all assessed for quality and bias using a robust tool (e.g. Sterne et al., 2019), which allowed for appropriate weighting between studies of lesser and greater quality.

Due to focusing on second-generation measures, this review was able to reliably comment on the impact of interventions on amotivation specifically. Although these measures were used primarily as secondary outcomes, this review has offered a first look into this crucial negative symptom domain.

Due to the recent development of second-generation measures of negative symptoms and the strict inclusion and exclusion criteria of this review, there were only a small number of studies eligible for inclusion. Whilst a majority of studies were rated as having only some concerns with regards to bias, this does limit the conclusions that can be drawn.

This review included peer reviewed studies only, which ensures a degree of quality of papers included, though this can hold a risk of publication bias towards significant results (Hopewell, Loudon, Clarke, Oxman & Dickersin, 2009). However, the mixture of significant and non-significant results is indicative that this review represents a balanced picture.

Only one study in this review examined a therapy designed to reduce amotivation specifically. Three of the papers included in this review were pilot studies, and more generally most studies included low participant numbers, therefore potentially lacking power to detect significance, which limits conclusions that can be drawn. These factors combined highlight the need for further studies and development of interventions to reduce this negative symptom domain.

### **Conclusions, Clinical Implications and Future Directions**

Overall, this review offers a first look at the efficacy of psychological interventions for amotivation as a specific domain of negative symptoms, as reliably measured by second generation measures of negative symptoms. Due to the limitations presented by the literature/evidence base, such as few available studies, small sample sizes and varying levels of bias, clear conclusions regarding overall efficacy of interventions cannot be drawn. This indicates a clear need for more research into effective interventions for amotivation.

Few interventions identified through this review were specifically designed to address amotivation in psychosis. Alongside this, there was a huge variety in available interventions for treatment of negative symptoms, with each study exploring a notably different or novel intervention. This has highlighted a clear need for future research into amotivation specific interventions, alongside the use of second-generation measures as the primary outcome. This may include further exploration of interventions (both 1:1 and group-based) that focus on behavioural components, such as building perceived competency (through in-vivo behavioural experiments or skills training) and increasing intrinsic motivators such as perceived sense of enjoyment and social relatedness from engaging in behaviours. These components were seen across both the MOVE and SoCIAL interventions, as the interventions which facilitated the most reliable change. This review also highlighted some evidence

towards exploration of interventions with a cognitive component. For example, this could include challenging beliefs about self-competency as a known influencer of motivation. This is also in the knowledge that CBT models acknowledge that behavioural change can occur as a result of cognitive shifts.

It was not within the scope of this systematic review to explore the relationship between reductions in amotivation and functional recovery within the included studies. Amotivation is argued to be a critical factor associated with functional recovery in psychosis (Fervaha et al., 2014; Foussias and Remington, 2010; Rabinowitz Levine, Garibaldi, Bugarski-Kirola, Berardo & Kapur, 2012), therefore future research may wish to explore whether therapies that reduce amotivation have a subsequent impact on functional recovery.

Finally, there is also a clear need for unification with regards to ways of measuring negative symptoms, with a suggested move towards second generation outcome measures in intervention research and clinical practice.

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### **Conflicts of Interest**

The authors declare that they have no conflicts of interest.

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### **Chapter 3. Bridging Chapter**

This chapter provides a bridge between the systematic review and the empirical papers to follow. This chapter is formatted to APA guidelines. The word count for this chapter is 78.

The effectiveness of psychological therapies on negative symptoms are limited. The systematic review focussed on effectiveness of interventions at reducing amotivation specifically as a key negative symptom, however, conclusions that could be drawn were limited by the lack of available studies and mixed results. The focus of the thesis now shifts to consider the role that possible selves may play in functional recovery from psychosis, with motivation theorised as a key mechanism by which possible selves initiate change.

#### **Chapter 4. Empirical Project 1**

This chapter includes an empirical research project prepared for submission to the journal *Schizophrenia Research*. The paper is formatted according to the journal guidelines (Appendix E). The abstract for this review is 228 words (journal limit is 250). The word count for this paper is 3884 (journal limit is 4000).

**Title**

Applying possible selves theory to psychosis: what are they and what is their relationship to negative symptoms and functioning?

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**Abstract**

Possible selves are imagined representations of the self in the near or distant future, encompassing what a person expects to become, hopes to become, or fears becoming. Possible selves are fundamentally linked to identity and a person's self-concept, which due to the timing of onset of psychosis, is often in a state of confusion and conflict. This study involved the application of possible selves theory to psychosis, with the broad aim of describing the content of possible selves in this population. This study also sought to investigate the impact of possible selves on symptoms and functioning in psychosis, by exploring four key aspects of possible selves: balance, specificity, enmeshment and optimism. Seventy-three participants completed the possible selves inventory (PSI) along with measures of symptomatology, functioning, mood and cognitive ability. Descriptive statistics were calculated, and correlational and between-groups analyses were conducted. Hoped-for possible selves most frequently related to personal development, whereas feared possible selves most frequently related to wellbeing. Balance was low across the population, as was specificity and enmeshment. Conversely, optimism was found to be relatively high. Feared possible selves were found to be the most enmeshed, indicating a high degree of fear around future mental health outcomes. Balance, specificity, enmeshment and optimism were not associated with functioning, negative symptoms, mood or neuropsychological outcomes. Findings are discussed in detail, along with clinical implications and directions for future research.

*Keywords:*

Psychosis

Identity

Selves

Functioning

Motivation

Optimism

## 1. Introduction

### *1.1. Psychosis, Identity and Possible Selves*

Psychosis often occurs in adolescence and early-adulthood (Hafner et al., 1998; Volkmar, 1995), which overlaps with a crucial period of life during which a person develops their identity and self-concept (Becht et al., 2016; Erikson, 1968). Due to the timing of psychosis, individuals often feel a sense of uncertainty and instability with regards to their identity, as they strive to establish a stable sense of self in the face of often severe and disabling symptoms (Cogan et al., 2019). This experience has been well established across several reviews, many of which also highlight the resultant impact on recovery (Ben-David & Kealy, 2019; Boydell et al., 2010; García-Mieres et al., 2019).

An extension to identity and self-concept (the self in the present) are possible selves, which are imagined representations of the self in the near or distant future, encompassing what a person expects to become, hopes to become or fears becoming (Markus and Nurius, 1986). Possible selves are future oriented and are comparable to goals, by which an individual can assess their own progress and subsequently direct their behaviour to move closer to that goal (Frazier & Hooker, 2006; Wurf & Markus, 1991). Therefore, possible selves are argued to be self-regulatory/motivational in nature (Bak, 2015; Markus and Nurius, 1986; Oyserman et al., 2004).

Possible selves have recently been applied to psychosis due to its timing and impact on motivation and functioning. Norman et al. (2014) found that feared possible selves were an important independent predictor of self-esteem and depression in psychosis. They concluded that addressing feared possible selves may be an important aspect of recovery. Further to this, there are several other ways possible selves have been theorised to impact recovery from psychosis.



### *1.2. Balance*

Higgins' (1987; 1989) self-discrepancy theory states that people are motivated to minimise discrepancy between their actual and ideal self. Individuals with psychosis report desires to rebuild and grow as part of their recovery process (Pitt et al., 2007), therefore it may be understandable that when these desired selves are perceived as distant from the current self, this would act to motivate behaviour to address this. Further to this, it has been argued that when hoped-for/expected possible selves are balanced with a countervailing feared possible selves in the same domain, this will have maximal effectiveness in motivating change (Oyserman & Markus, 1990). For example, a hoped-for/expected possible self of "have a job" coupled with a feared self of "never getting a job" may motivate an individual towards job-seeking behaviour.

### *1.3. Specificity*

The degree to which possible selves provide self-regulation and motivate action is directly related to the level of detail included in the possible self (Oyserman et al., 2004; Oyserman et al., 2006; Ruvolo & Markus, 1992), whereby greater detail is indicative of increased engagement with activities. Individuals with psychosis may experience difficulties with generating specific possible selves due to negative symptoms (e.g. alogia), or as a result of global cognitive deficits such as impairments with verbal memory and semantic fluency (Sheffield et al., 2018). Greater clarity of possible selves has also been linked to greater optimism and lower anxiety and negative affect (McElwee & Haugh, 2010).

### *1.4. Enmeshment*

Enmeshment is the degree to which an illness is perceived as an aspect of a person's self-concept. For people with psychosis, there is a risk the person conceptually moves from "having" psychosis to "being" psychotic, therefore losing their identity as separate to illness (Estroff, 1989). This may decrease functioning (e.g. social withdrawal), as well as increase

low self-esteem and depression (Lally, 1989). In a study of possible selves and pain experience, enmeshment of hoped-for selves with pain was strongly related to hopelessness, depression and lower acceptance (defined as engaging with meaningful action despite experience of pain; Morley et al., 2005). The Self-Regulation Model (SRM; Leventhal et al., 1997) suggests that individuals develop mental representations of their conditions, which guide health-related behaviours and impact upon subsequent illness outcomes. When applied to mental health, beliefs about greater negative consequences of mental illness can significantly predict poorer outcome (Lobban et al., 2004). Enmeshed possible selves in psychosis may therefore encompass future feared selves related to ongoing symptoms, or hoped-for selves relating to recovery, resulting in negative consequences for both symptomatology and functioning.

### *1.5. Optimism*

Optimism in psychosis is inversely related to depression and highly correlated with self-esteem and confidence in one's own self-worth and abilities (Lecomte et al., 2010; Lysaker et al., 2008; Scheier et al., 1994). Also, variance in optimism has been found to be explained in part by high capacity for leisure activities in those with psychosis (Lecomte et al., 2010). This suggests optimism plays a role for motivating engagement with activities in those with psychosis. With regards to possible selves, positively framed possible selves are thought to serve a self-enhancing function, whereby they can improve self-esteem, optimism and hope when simply brought to mind (Gonzales et al., 2001; Oyserman et al., 2004). For example, having positive expectations for the future is associated with confidence and self-worth (Lecomte et al., 2010; Scheier et al., 1994). Hope and optimism about achieving possible selves has also been found to positively relate to functional outcomes in psychosis (Clarke, 2016), which further indicates optimism as important to functional recovery.

### *1.6. Research Questions*

The primary research question was: what are possible selves like with regards to content, enmeshment, specificity, balance and optimism in people with psychosis and low functioning? The secondary research question was: what are the relationships between possible selves and symptoms, functioning and neuropsychological outcomes?

## **2. Methods**

### *2.1. Design*

This study is a secondary analysis of baseline data collected for the Improving Social Recovery in Early Psychosis trial (ISREP; Fowler et al., 2009). Seventy-seven participants were recruited from secondary mental health services, with the following inclusion criteria: Diagnosis of affective or non-affective psychosis, persisting social disability, illness duration  $\leq 8$  years, positive symptoms in relative remission (score  $\leq 4$  on PANSS individual items), and either unemployed or currently engaged in  $< 16$ h paid employment or education.

Exclusion criteria were: organic psychotic disorders, acute psychotic episodes, a primary diagnosis of drug dependency. All measures were administered during an initial baseline assessment interview before random allocation into groups (SRCBT vs TAU). The primary measure for this study was hours per week in structured activity assessed using the Time Use Survey. Several other secondary and tertiary measures were collected, including the PSI.

Participants of the ISREP study were given a formal explanation of the study and gave written consent to participate before baseline assessment and randomisation.

Of the 77 ISREP participants, possible selves data were available for 73, therefore only data for this subset were utilised for this study. The 73 participants had a mean (SD) age of 29.0 (6.8) and length of illness of 4.81 (2.29) years. There were 71.4% male participants, 90.9% were white and 65.34% had non-affective psychosis. All participants were taking

antipsychotic medication. The length of unemployment was high with a mean (SD) of 242.1 (182.7) weeks.

## 2.2. Outcome Measures

The Possible Selves Interview (PSI; Markus & Nurius, 1986) is a structured interview that gathers information about an individual's imagined future selves. It is possible for a total of 9 verbal descriptions of possible selves to be generated, 3 in each domain of hoped-for, expected and feared. Each possible self is rated quantitatively on three areas: how much the person believes the possible self describes them currently, how much it will describe them in the future and how much they would like it to describe them. These questions use 0-4 Likert ratings, where 0 represents "not at all" and 4 represents "very much". Structured surveys and interviews are the primary method for assessing possible selves, with 64% of published papers on possible selves between 1986 and 2004 using this methodology (Packard & Conway, 2006). The study team developed a coding manual (supplemental document A), which included coding possible selves based on content. Areas coded included domain, balance, optimism, enmeshment and specificity (See Figure 1 for an overview). A second independent researcher coded 25% of all possible selves experimental data. Krippendorff's alpha (Krippendorff, 1970;  $\alpha$ ) was excellent for all coding aspects at  $\alpha = >0.80$ .

The Time Use Survey (TUS; adapted from UK 2000 Time Use Survey; Short, 2006) was used to assess functioning. The TUS is a structured interview schedule designed to assess time spent in activity. The TUS produces various scores on time use in different domains (e.g. work, education, childcare, chores, and leisure and sports activities) and has a scoring guide allowing for hours per week in each domain to be calculated. Total hours per week in structured activity are calculated by summing all of the domains. Below 30 hours of activity per week indicates functional disability (Hodgekins et al., 2015).

The Beck Depression Inventory (BDI-II; Beck et al., 1996) is a 21-item measure of depression, with each item producing a score between 0 and 3 depending on symptom severity over a time period of 2 weeks. This results in a range of scores from 0 to 63, with a cut off score of 29 or above indicating severe depression.

The Beck Hopelessness Scale (BHS; Beck et al., 1974) is a 20-item true or false self-report measure of hopelessness, comprised of three domains: motivation, expectations and feelings about the future. Scores range from 0-20 and can be categorised from none/mild hopelessness to severe.

The Positive and Negative Syndrome Scale (PANSS; Kay et al., 1989) is a 30-item measure of positive (7-item), negative (7-item) and general psychopathology symptoms (16-item) in schizophrenia. Negative symptoms can be split between expressive/amotivation and experiential symptoms to fit the two-factor model (Khan et al., 2017).

The Repeatable Battery for the Assessment of Neuropsychological Status (RBANS; Randolph et al., 1998) yields scaled scores in 5 cognitive domains of immediate and delayed memory, attention, language and visuospatial. The memory and semantic fluency subscales were used as a control measure to ensure differences in possible selves did not depend on these cognitive domains.

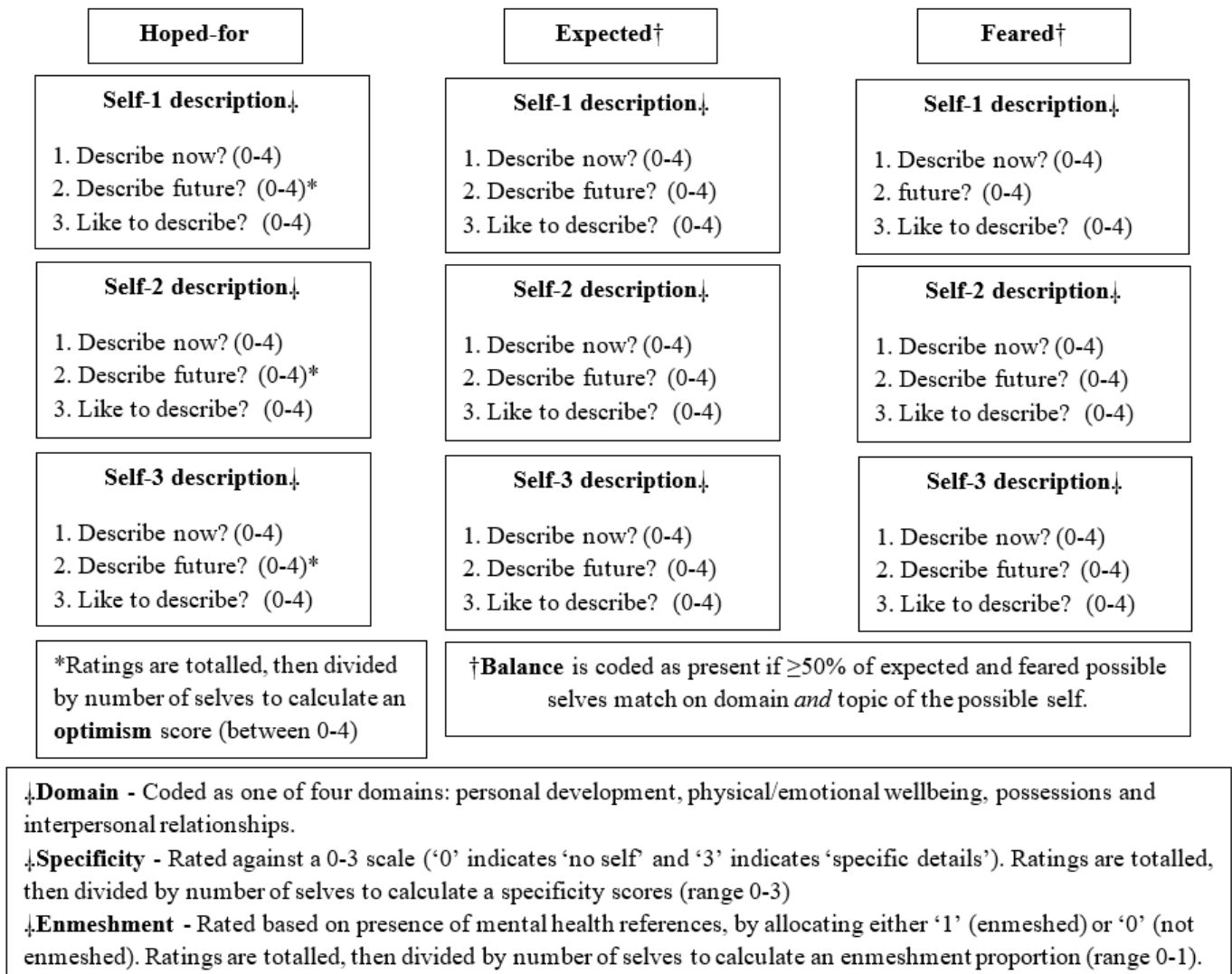


Figure 1. Diagram summarising the Possible Selves Interview data and details on the coding of general domain, optimism, balance, specificity and enmeshment.

### 2.3. Ethical Considerations

Full ethical approval was sought from the Health Research Authority for the ISREP study. This research fell under the remit of the initial ethical approval as the analyses were not unplanned.

### 2.4. Analysis Plan – Statistical Analysis

For research question 1, descriptive statistics were explored for each aspect of possible selves. This included general domain, specificity, optimism, balance, enmeshment and the three supplementary Likert questions, split by hoped-for, expected and feared selves. A Kruskal-Wallis test was conducted to explore differences between hoped, expected and feared selves on the Likert question “how much does this describe you now?”, to gain an understanding of how much possible selves describe the current self. A Bonferroni correction was applied at  $p < .016$  to reduce the likelihood of Type I errors (Coolican, 2009).

For research question 2, descriptive statistics were explored for symptom measures, neuropsychological data and functioning. Relationships between variables were explored using Pearson’s  $r$  correlation or Spearman’s (rho) rank correlation for variables measured at an interval or ordinal level respectively.

Between-groups analyses were conducted using independent samples  $t$ -tests and Mann-Whitney  $U$  tests, to explore differences between balanced and non-balanced groups on all variables.

All analyses were conducted using the Statistical Package for Social Sciences (IBM Corp, 2016). Non-parametric test statistics were used for all possible selves variables, as ordinal level data. Relevant Bonferroni corrections were applied to all statistical analyses, the  $p$ -values for which are displayed below each results table.

### 3. Results

#### 3.1. Research Question 1: What are possible selves like in people with psychosis and low functioning?

Possible selves generated were notably short. Examples of the length and content of the possible selves for each hoped-for, expected and feared across the 4 domains are shown in Table 1.

| Domain                       | Hoped-for                                  | Expected                        | Feared                            |
|------------------------------|--|---------------------------------|-----------------------------------|
| Personal Development         | “Be successful.”                           | “Go back to college”            | “Having to get a job”             |
| Possessions                  | “A house in the country with a garden”     | “Stay living in current flat”   | “Losing benefits”                 |
| Emotional/physical Wellbeing | “Be myself, free from anxiety and illness” | “I will still be on medication” | “Being really depressed”          |
| Interpersonal Relationships  | “Get married and have children”            | “Relationship”                  | “To be alone and not settle down” |

Table 1. Examples of possible selves from each hoped-for, expected and feared selves across the 4 domains.

##### 3.1.1. Possible Selves Domains and Missingness

Across all possible selves, the highest proportion related to the domain of personal development (26.98%) and the lowest proportion related to possessions (8.95%). This trend was also reflected in hoped-for and expected selves. Feared possible selves slightly differed, in that the highest proportion was related to emotional/physical wellbeing (29.87%). Missingness was relatively high across all possible selves (24.96%). Hoped-for selves had the lowest proportion of missing selves (11.69%), whereas expected selves had the highest (33.33%). These descriptive statistics are summarised in Table 2.



### 3.1.2. Possible Selves Likert Questions

Participants' mean scores appeared to indicate that hoped-for, expected and feared selves did not describe the current self (range 0.75-1.30). The Kruskal-Wallis statistic reported statistically significant differences between hoped-for, expected and feared selves on participants perceptions of how much the selves describe them ( $H(2) = 14.482, p = .001$ ). Post-hoc comparisons reported a significant difference between hoped-for and feared selves ( $H(2) = -52.215, p < .000$ ), and hoped-for and expected selves ( $H(2) = -38.151, p = .009$ ), indicating that both feared and expected selves described the current self more than hoped-for selves. Descriptive data for the Likert scale questions are displayed in Table 3.

### 3.1.3. Enmeshment, Balance, Specificity and Optimism

The proportion of selves enmeshed with illness across hoped for, expected and feared selves was low (15.77%). Feared possible selves had the highest proportion enmeshed (31.48%) in relation to hoped-for (8.33%) and expected (9.09%) selves. See Table 2 for these data. After accounting for missing possible selves, the proportion of enmeshed feared selves was 0.41 (see Table 4)

Balance was low across all participants for both expected-feared (22.1%) and hoped-feared (24.7%). Specificity scores for participants were low at a mean of 1.51 (0.26) across all selves produced. The highest mean specificity score was for hoped-for selves at 1.66 (0.46), and the lowest was for feared selves at 1.34 (0.40). Mean optimism scores were 2.58 (0.90), which indicated moderate optimism for hoped for selves. Tables 4 and 5 summarise these data.

| Domain                       | Hoped (n = 231) |       | Expected (n = 231) |       | Feared (n = 231) |       | Total (n = 693) |       |
|------------------------------|-----------------|-------|--------------------|-------|------------------|-------|-----------------|-------|
|                              | n               | %     | n                  | %     | n                | %     | n               | %     |
| Personal Development         | 88              | 38.10 | 70                 | 30.30 | 29               | 12.55 | 187             | 26.98 |
| Possessions                  | 29              | 12.55 | 18                 | 7.79  | 15               | 6.49  | 62              | 8.95  |
| Emotional/Physical wellbeing | 29              | 12.55 | 26                 | 11.26 | 69               | 29.87 | 124             | 17.89 |
| Interpersonal relations      | 58              | 25.11 | 40                 | 17.32 | 49               | 21.21 | 147             | 21.20 |
| Missing/none                 | 27              | 11.69 | 77                 | 33.33 | 69               | 29.87 | 173             | 24.96 |
| Enmeshment                   | Hoped (n = 204) |       | Expected (n = 154) |       | Feared (n = 162) |       | Total (n = 520) |       |
|                              | n               | %     | n                  | %     | n                | %     | n               | %     |
| Not enmeshed                 | 187             | 91.67 | 140                | 90.91 | 111              | 68.52 | 438             | 84.23 |
| enmeshed                     | 17              | 8.33  | 14                 | 9.09  | 51               | 31.48 | 82              | 15.77 |

Table 2. Descriptive statistics for domains and enmeshment proportion of all possible selves generated across the sample of 73 participants.

|  | Hoped-for possible selves |        |             | Expected possible selves |        |             | Feared possible selves |        |             |
|--|---------------------------|--------|-------------|--------------------------|--------|-------------|------------------------|--------|-------------|
|  | n                         | Median | Mean (SD)   | n                        | Median | Mean (SD)   | n                      | Median | Mean (SD)   |
| How much does this describe you now?           | 204                       | 0.00   | 0.75 (1.20) | 153                      | 0.00   | 1.13 (1.43) | 161                    | 1.00   | 1.30 (1.49) |
| How much will this describe you in the future? | 203                       | 3.00   | 2.53 (1.13) | 152                      | 3.00   | 3.22 (0.84) | 156                    | 1.00   | 1.31 (1.21) |
| How much would you like this to describe you?  | 204                       | 4.00   | 3.97 (0.49) | 153                      | 4.00   | 3.37 (1.15) | 161                    | 0.00   | 0.04 (0.23) |

Table 3. Descriptive statistics for the three Likert questions, split by all possible selves generated by the 73 participants.

|                        | Hoped-for possible selves |        |             | Expected possible selves |        |             | Feared possible selves |        |             | Total |        |             |
|------------------------|---------------------------|--------|-------------|--------------------------|--------|-------------|------------------------|--------|-------------|-------|--------|-------------|
|                        | n                         | Median | Mean (SD)   | n                        | Median | Mean (SD)   | n                      | Median | Mean (SD)   | n     | Median | Mean (SD)   |
| Enmeshment Proportion† | 72                        | 0.00   | 0.09 (0.19) | 58                       | 0.00   | 0.12 (0.25) | 70                     | 0.33   | 0.41 (0.58) | 73    | 0.11   | 0.17 (0.18) |
| Specificity score†     | 72                        | 1.67   | 1.66 (0.46) | 62                       | 1.33   | 1.46 (0.39) | 71                     | 1.33   | 1.34 (0.40) | 71    | 1.50   | 1.51 (0.26) |
| Optimism score†        | 71                        | 2.67   | 2.58 (0.90) | -                        | -      | -           | -                      | -      | -           | -     | -      | -           |

Table 4. Descriptive statistics for enmeshment proportion, specificity scores and optimism scores across the 73 participants. †Participants are coded as having missing data for a category (hoped-for/expected/feared) if all 3 selves for each category are blank. The participant is coded as having missing total score only if they have provided no selves at all.

| Balance           | Expected - Feared |       | Hoped - Feared |       |
|-------------------|-------------------|-------|----------------|-------|
|                   | n                 | %     | n              | %     |
| No                | 48                | 62.30 | 53             | 73.60 |
| Yes               | 17                | 22.10 | 19             | 24.70 |
| Missing/no selves | 8                 | 11.00 | 1              | 1.40  |

Table 5. Balance proportion for the 73 participants for both hoped-for and expected vs. feared possible selves.

3.2. *Research Question 2: What are the relationships between possible selves and symptoms, functioning and neuropsychological outcomes?*

Descriptive statistics for symptoms, functioning and neuropsychological variables are displayed in Table 6. Mean BDI-II scores met the cut-off for “moderate depression” (Beck et al., 1996) and mean BHS scores met the cut-off for “moderate hopelessness” (Beck et al., 1974). Mean (SD) negative symptoms were 13.37 (3.43), with the expressive/amotivation subscale at 8.08 (2.61), indicating mild-moderate levels of negative symptoms (Leucht et al., 2005). Functioning was notably low in the population at a mean 29.29 hours structured activity, which is below the cut-off for functional disability on the TUS (Short, 2006). There were no differences between individuals with affective and non-affective psychosis on baseline functioning, symptoms or possible selves data ( $p > .05$ ).

| Measure                                | N  | Mean  | SD    |
|--|----|-------|-------|
| PANSS Total                            | 73 | 56.23 | 10.64 |
| PANSS Positive                         | 73 | 12.11 | 3.87  |
| PANSS Negative                         | 73 | 13.37 | 3.43  |
| PANSS Negative: Expressive/amotivation | 73 | 8.08  | 2.61  |
| BDI-II                                 | 69 | 21.67 | 12.92 |
| BHS                                    | 71 | 8.91  | 5.81  |
| Hours in structured activity           | 73 | 29.29 | 19.70 |
| RBANS Semantic Fluency                 | 73 | 16.01 | 5.24  |
| RBANS Immediate Memory                 | 73 | 15.15 | 4.16  |
| RBANS Delayed Memory                   | 73 | 7.98  | 2.89  |

Table 6. Descriptive statistics for Symptoms, functioning and neuropsychological data.

### *3.2.1. Relationship Testing*

There were no significant correlations between possible selves variables and functioning, symptoms, mood or neuropsychological variables. The correlation matrix is displayed in Table 7. Equally, there were no significant differences between balanced and non-balanced groups on symptoms, functioning, neuropsychological domains of interest or possible selves factors ( $p > .05$ ). This has been summarised in Table 8.

|                       |                  | 1       | 2       | 3      | 4     | 5      | 6      | 7     | 8    | 9     | 10    | 11 |
|-----------------------|------------------|---------|---------|--------|-------|--------|--------|-------|------|-------|-------|----|
| 1 Semantic Fluency    | Pearson          |         |         |        |       |        |        |       |      |       |       |    |
|                       | Sig.             | -       |         |        |       |        |        |       |      |       |       |    |
|                       | N                |         |         |        |       |        |        |       |      |       |       |    |
| 2 Immediate Memory    | Pearson          | .347*†  |         |        |       |        |        |       |      |       |       |    |
|                       | Sig.             | .002    | -       |        |       |        |        |       |      |       |       |    |
|                       | N                | 77      |         |        |       |        |        |       |      |       |       |    |
| 3 Delayed Memory      | Pearson          | .327*†  | .758*†  |        |       |        |        |       |      |       |       |    |
|                       | Sig.             | .004    | .000    | -      |       |        |        |       |      |       |       |    |
|                       | N                | 77      | 77      |        |       |        |        |       |      |       |       |    |
| 4 PANSS Positive      | Pearson          | -.057   | -.018   | .048   |       |        |        |       |      |       |       |    |
|                       | Sig.             | .624    | .878    | .687   | -     |        |        |       |      |       |       |    |
|                       | N                | 77      | 77      | 77     |       |        |        |       |      |       |       |    |
| 5 PANSS Negative      | Pearson          | -.403*† | -.328*† | -.296† | .270† |        |        |       |      |       |       |    |
|                       | Sig.             | .000    | .004    | .009   | .018  | -      |        |       |      |       |       |    |
|                       | N                | 77      | 77      | 77     | 77    |        |        |       |      |       |       |    |
| 6 BDI                 | Pearson          | .047    | -.049   | -.092  | .234† | .141   |        |       |      |       |       |    |
|                       | Sig.             | .691    | .681    | .438   | .046  | .234   | -      |       |      |       |       |    |
|                       | N                | 73      | 73      | 73     | 73    | 73     |        |       |      |       |       |    |
| 7 BHS                 | Pearson          | .098    | .035    | -.095  | .215  | -.061  | .648*† |       |      |       |       |    |
|                       | Sig.             | .406    | .768    | .420   | .066  | .606   | .000   | -     |      |       |       |    |
|                       | N                | 74      | 74      | 74     | 74    | 74     | 72     |       |      |       |       |    |
| 8 Structured activity | Pearson/Spearman | .260†   | .174    | .106   | -.034 | -.206  | -.013  | -.039 |      |       |       |    |
|                       | Sig.             | .022    | .131    | .359   | .766  | .073   | .915   | .743  | -    |       |       |    |
|                       | N                | 77      | 77      | 77     | 77    | 77     | 73     | 74    |      |       |       |    |
| 9 Optimism            | Spearman         | .136    | .065    | .043   | .012  | -.252† | -.291† | .146  | .026 |       |       |    |
|                       | Sig.             | .254    | .585    | .721   | .922  | .033   | .016   | .228  | .827 | -     |       |    |
|                       | N                | 72      | 72      | 72     | 72    | 72     | 68     | 70    | 72   |       |       |    |
| 10 Enmeshment Total   | Spearman         | .060    | -.042   | -.110  | .038  | .173   | .175   | .083  | .003 | .172  |       |    |
|                       | Sig.             | .616    | .726    | .354   | .749  | .144   | .149   | .492  | .977 | .144  | -     |    |
|                       | N                | 73      | 73      | 73     | 73    | 73     | 69     | 71    | 73   | 71    |       |    |
| 11 Specificity Total  | Spearman         | -.111   | .019    | -.058  | .044  | .049   | .028   | .025  | .215 | -.080 | -.078 |    |
|                       | Sig.             | .355    | .873    | .632   | .717  | .687   | .821   | .838  | .072 | .511  | .517  | -  |
|                       | N                | 71      | 71      | 71     | 71    | 71     | 67     | 69    | 71   | 70    | 71    |    |

Table 7. Correlation matrix exploring key associations between variables for each participant (n = 73), measured at ordinal or interval level.

\*Correlation is significant at  $p < 0.0045$  (2-tailed). † Correlation is significant at  $p < .05$  (2-tailed) without Bonferroni correction.

|                              | Non-balanced |               | Balanced      | <i>t</i> | <i>p</i> |
|------------------------------|--------------|---------------|---------------|----------|----------|
|                              | N            | Mean (SD)     | Mean (SD)     |          |          |
| PANSS Positive               | 65           | 12.10 (3.96)  | 12.12 (3.39)  | -.051    | .959     |
| PANSS Negative               | 65           | 13.71 (3.58)  | 13.18 (3.00)  | .547     | .586     |
| BDI-II                       | 62           | 20.04 (12.43) | 25.71 (14.55) | -1.526   | .132     |
| BHS                          | 64           | 8.57 (5.85)   | 9.01 (5.70)   | -.266    | .791     |
| Hours in structured activity | 65           | 27.31 (18.77) | 33.58 (18.16) | -1.192   | .238     |
| RBANS Semantic Fluency       | 65           | 16.04 (5.72)  | 16.47 (4.36)  | -.281    | .780     |
| RBANS Immediate Memory       | 65           | 15.27 (4.00)  | 14.88 (4.96)  | .323     | .748     |
| RBANS Delayed Memory         | 65           | 7.96 (2.66)   | 8.06 (3.68)   | -.121    | .904     |
|                              | N            | Mean rank     | Mean rank     | <i>U</i> | <i>p</i> |
| Optimism                     | 65           | 32.07         | 35.62         | 452.50   | .408     |
| Enmeshment                   | 65           | 30.32         | 40.56         | 536.50   | .048†    |
| Specificity                  | 64           | 32.91         | 31.28         | 364.50   | .762     |

Table 8. Results of *t*-tests and Mann-Whitney *U* tests comparing balance groups on experimental variables. Bonferroni correction applied at  $P < .0045$ . † Significant at  $p < .05$  without Bonferroni correction.

#### 4. Discussion

The primary purpose of this study was to explore the content of possible selves in a population with psychosis and low functioning. A secondary purpose was to explore the relationship between possible selves and functioning, symptoms, mood and neuropsychological outcomes.

##### 4.1. Content of the Possible Selves

There was a high proportion of ‘missing’ selves across the sample, which may be due to diminished speech output and complexity (Kerns, 2007; Marini et al., 2008).

With regards to domains, personal development occurred with the highest frequency across all domains of hoped-for, expected and feared selves, perhaps indicating motivation to achieve goals in this area (e.g. Hoppmann et al., 2007). Feared possible selves did not follow

this trend, whereby selves most frequently related to physical/emotional wellbeing, perhaps indicative of fears of relapse and ongoing symptomatology in this population.

Hoped-for possible selves were perceived as significantly less like the current self than both expected and feared selves. Identifying with a feared self may represent a barrier to change, equally, this may serve to motivate behaviour to become closer to hoped-for selves (e.g. Higgins 1987; 1989).

#### *4.2. Enmeshment, Balance, Specificity and Optimism*

Enmeshment with illness of all possible selves taken together was generally low, however, examining feared possible selves showed a higher proportion of enmeshment in relation to hoped-for and expected selves, suggesting that poor mental health was largely a feared outcome to be avoided (Markus & Nurius, 1986).

Balance was low overall, which is indicative of poor motivational power of possible selves in this population (Oyserman & Markus, 1990). Balance was lower than found in previous studies (Clarke, 2016) which may be related to differing methodology. This study observed the written content of selves to calculate balance, compared to solely observing the domain rating. It is notable that differing methodology in reporting balance has led to inconsistent findings in previous research (e.g. Aloise-Young et al., 2001).

Participants were not specific about their possible selves, as indicated by short descriptions and low specificity scores across all domains. No significant relationship between specificity and fluency or memory capabilities was found, indicating specificity was independent of cognitive ability. Low specificity indicates that self-regulatory properties of the possible selves are limited (Bak, 2015; Markus and Nurius, 1986; Oyserman et al., 2004).

Finally, the population appeared to be optimistic about achieving hoped-for selves, as observed from the mean optimism score across participants. Optimism in those with mental illness is not unexpected or uncommon (Lecomte et al, 2010), which this study reflects. This



finding suggests that population hold some confidence in their self-worth and abilities (Lecomte et al.,2010; Lysaker et al., 2008; Scheier et al., 1994).

This study represented a particular subset of people with psychosis: a group of individuals with low functioning, alongside high hopelessness and high depression. This profile is likely to have had an impact on how possible selves were reported. Equally, the nature of the possible selves reported could account for the low mood, hopelessness and functioning.

One interpretation of the data could be that motivational deficits related to psychosis made production of specific possible selves quite challenging. Low balance across the sample is also indicative of poor motivation, which again relates to the study sample as having poor functioning and feeling depressed and hopeless. Low motivation was not reflected in negative or expressive/amotivation symptom scores however, perhaps due to a mix of both affective and non-affective diagnoses in the sample.

#### *4.3. Possible Selves and Functioning*

There were no significant associations found between possible selves variables and neuropsychological variables, symptoms and functioning. Lack of associations may also be due to ceiling and floor effects. Participants scored highly on depression and amotivation and low on functioning, specificity, balance and enmeshment overall, potentially resulting in a lack of movement of mean scores and difficulties with non-parametric tests in rank ordering.

Lack of association between optimism about achieving hoped-for possible and functioning was contrary to the literature discussed and findings in previous studies (Clarke, 2016). This lack of association may be related to the population under study. Clarke (2016) observed possible selves in those with first episode psychosis (FEP), where this study specifically involved longer durations of psychosis and low functioning. Differences in findings may also be due to the different measurements of functioning between studies. The

current study used time use as a direct measure of behaviour compared to quality of life scales used in previous studies (Clarke, 2016) which measure how satisfied a person is. For example, a person may be spending few hours engaging in activities (low time use) but be satisfied with how they spend their time (high quality of life).

Low specificity and lack of association with functional outcomes may also be indicative of possible selves being more self-enhancing in nature, rather than self-regulatory (Hoyle & Sherrill, 2006; Oyserman et al., 2004). This would mean that the possible selves primarily served to reinforce self-esteem and optimism rather than influence behaviour, which could explain the relatively high optimism scores.

A possible explanation for the lack of associations found may be as a result of the possible selves measure itself, and the method of coding of possible selves variables. It may be that the measure and coding strategy failed to provide valid representations of the constructs in question. This could explain the lack of associations between variables such as optimism about achieving hoped-for possible selves and overall hopelessness, which would reasonably have been expected to share a relationship.

Although not a primary aim of this paper, it is also notable that there was no significant correlation between functioning and negative symptoms, as found in previous research (Fervaha et al., 2014; Rabinowitz et al., 2012). This may be a factor of the study sample as a mix of affective and non-affective psychoses.

#### *4.4. Strengths and Limitations*

This study has provided an initial step in exploring possible selves held by people with psychosis and poor functioning. A large sample size was used in this study with a huge amount of descriptive data available for possible selves. This allowed for a comprehensive exploration for the content of possible selves and their associations with functioning and symptoms.

The possible selves descriptions were short in nature, limiting the way this data could be used. For example, specificity coding could only include a 0-3 scale, which may have limited measurement sensitivity (Cummins & Gullone, 2000). Also, basing ratings on a single Likert scale, as with optimism may raise concerns regarding validity. However, single item Likert scales have shown to be a reliable and valid methodology (e.g. Abdel-Khalek, 2006).

It is important to consider that perhaps the possible selves measure, or method of coding, did not accurately represent the constructs under investigation. While the development of the coding manual was rigorous, it may be beneficial to further explore the validity and reliability of this measure for future research.

## **5. Conclusions and Clinical Implications**

This study provided a first look at the possible selves of people with psychosis and poor functioning. Overall, possible selves lacked specificity and balance, suggesting low motivational properties. Participants were optimistic about achieving hoped-for selves, suggesting the sample held some confidence and self-worth. Feared possible selves appeared to be particularly enmeshed, indicating fears around ongoing mental health difficulties. Possible selves were not associated with functioning, symptoms, mood or neuropsychological outcomes.

The results of this study suggest that the possible selves of people with psychosis and poor functioning may provide little motivational power, particularly due to their low specificity and balance. A potential clinical implication is the need for interventions specifically targeted at improving a positive sense of self in people with psychosis and low functioning. This would serve to maximise the motivational properties of possible selves.

## **6. Future Research**

A key area for future research is with interventions to potentially change possible selves. Possible selves are thought to be amenable to change, due to their sensitivity to external influences such as new or inconsistent information about the self (Markus & Nurius, 1986). In this way, possible selves are dynamic in that each time they are activated, they are likely to undergo subtle changes (Dörnyei et al., 2015). A therapeutic environment aimed at instilling a positive sense of self and deliberately eliciting possible selves in the therapeutic process is warranted, particularly in individuals with low functioning.

Finally, future research with use of a non-clinical control group, or groups at different stages of psychosis (e.g. FEP vs long-term) would be useful. This would allow for observation of differences in possible selves between these groups.

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### **Chapter 5. Empirical Project 2**

This chapter includes an empirical research project prepared for submission to the journal *Schizophrenia Research*. The paper is formatted according to the journal guidelines (Appendix E). The abstract for this review is 245 words (journal limit is 250). The word count for this paper is 3288 (journal limit is 4000).

**Title**

Investigating the Impact of Social Recovery CBT on Possible Selves in Psychosis.

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**Abstract**

**Background.** Psychosis often occurs in adolescence, a crucial period in which a young person develops and explores who they are (self-concept) and who they hope, expect and fear becoming (possible selves). This important stage of life is understandably disrupted by the onset of psychosis, resulting in consequences for both symptomatic and functional recovery. Possible selves are powerful motivators providing direction and impetus for change, and therefore could be a valuable therapeutic target to help improve functional outcomes in psychosis. Possible selves act as motivators through various mechanisms, such as how balanced, specific and enmeshed they are, alongside how optimistic individuals feel about achieving/avoiding them. This study explores whether Social Recovery CBT (SRCBT) has an effect on the possible selves of young people with psychosis, and whether any changes mediate functional outcomes. **Method.** Secondary data for 49 individuals with a diagnosis of psychosis were accessed from a randomised controlled trial, where SRCBT was compared to treatment as usual, delivered over a 9-month period. The Possible Selves Interview was administered at both baseline and follow-up, alongside symptom and functioning measures. **Results.** There were no significant differences in post-treatment possible selves (balance, specificity, optimism or enmeshment) between treatment and control groups. **Conclusions.** This study provides some evidence that whilst it improves functioning, SRCBT does not change possible selves. Results suggest that change in possible selves was not required to motivate behavioural change in this population. Further research is indicated for longer term follow-ups to assess future cognitive change.

*Keywords:*

Psychosis  
Self-concept  
Functioning  
Possible  
Motivation  
Balance

## 1. Introduction

### 1.1. *Psychosis, Functional Impairment and Possible Selves*

Psychosis can result in a wide range of difficulties, with functional impairment presenting as a common and disabling feature, with consequences such as difficulties maintaining social relationships, employment and education (Bellack et al., 1990; Couture et al., 2004).

Psychosis often occurs in adolescence and early-adulthood (Hafner et al., 1998; Volkmar, 1995), which overlaps with a crucial period of life where a person develops their identity and self-concept (Becht et al., 2016). Due to the timing of onset at this crucial time of development, psychosis results in a sense of uncertainty and instability in the individual's identity and self-concept, resulting in consequences for both clinical and functional recovery (Ben-David & Kealey, 2019; Boydell et al., 2010; García-Mieres et al., 2019). Self-consolidation following psychosis is strongly associated with resumption of social roles and meaning-making of psychotic experiences (Connell et al., 2015), implicating self-concept as an important aspect of recovery from psychosis.

One key dimension within self-concept is 'possible selves', which contrary to the self in the 'now', comprise of cognitive representations of hopes, expectations and fears about one's future self (Markus and Nurius, 1986). In psychosis, negative possible selves have been found to predict lower self-esteem and negative mood states, indicating that feared possible selves may have an important role in recovery from psychosis (Norman et al., 2014). In addition, hope and optimism about achieving possible selves has been found to positively correlate with functional recovery, indicating beliefs about possible selves motivate individuals to engage in constructive behaviours (Clarke, 2016).

Possible selves are also understood to be powerful motivators and regulators of goal-directed behaviour, providing direction and incentive for change (Bak, 2015; Markus and

Nurius, 1986; Oyserman et al., 2004). Lack of motivation (amotivation) is a key negative symptom in psychosis (e.g. Foussias & Remington, 2010), which is broadly treatment resistant and strongly linked to functional impairment (Fervaha et al., 2013; Foussias et al., 2011; Kirkpatrick et al., 2006; Najas et al., 2018). Thus, possible selves have the potential to be a useful therapeutic target in order to increase motivation. According to Higgins's (1987, 1989) self-discrepancy theory, people are motivated to minimise discrepancy between their actual self and their ideal self, leading to the idea that possible selves may act to motivate behaviour. This idea has been evidenced in studies aimed at enhancing school involvement (e.g. Oyserman et al., 2002), where possible selves were found to regulate behaviour motivated to achieve personally valued academic goals. Additionally, when a possible self is 'balanced' (e.g. a hoped-for or expected self is matched by a feared self in the same domain), this is argued to provide maximal motivational power (Oyserman & Markus, 1990; Oyserman et al., 2002). It may be that improvement in functioning is more likely where there are balanced possible selves increasing motivation for change. Possible selves are also argued to encourage goal-directed behaviour when they are detailed and clearly elaborated (Ruvolo & Markus, 1992). For example, the more elaborate the possible selves are, the more positively they will impact goal attainment (Oyserman et al., 2004; Oyserman et al., 2006). This indicates that the detail of the content of the selves is also important to direct behaviour.

Significant life events, such as the onset of psychosis, can bring possible selves into question as the person is forced to view themselves from a different perspective (Bak, 2015). This includes a risk that the person moves from *having* psychosis to *being* psychotic, thus identifying as their illness (Estroff, 1989). Enmeshment, or the degree to which mental health is viewed as a key aspect of someone's self-concept, is hypothesised to impact on illness behaviours and functioning (Lobban et al., 2004). Research into enmeshment with pain experience has shown enmeshment is related to hopelessness, depression and a reduction in



engagement with meaningful activities (Morley et al, 2005). It is possible that enmeshed possible selves indicate a degree of hopelessness and thus may have an impact on ‘unhelpful’ behaviours such as avoidance, ultimately leading to poorer outcomes.

In summary, possible selves have the potential to impact upon functioning via many mechanisms, and therefore may be a beneficial target for interventions. Possible selves are theorised to be more susceptible to change than other forms of self-knowledge (Bak, 2015; Markus & Nurius, 1986; Stein & Markus, 1996; Henry et al., 2015). Possible selves represent ‘potential’, which is sensitive to external influences such as new or inconsistent information about the self (Markus & Nurius, 1986). In this way, possible selves are dynamic as each time they are activated, they are likely to undergo subtle changes (Henry et al., 2015). Equally, the power that possible selves exert (motivation/self-regulation) is dynamic, as determined by the situation the individual is in (Henry et al., 2015). With this in mind, the therapeutic environment is potentially well suited to facilitating exploration and change in possible selves.

### *1.2. Interventions to Improve Functional Recovery and Possible Selves*

Functional recovery in psychosis is markedly delayed compared to clinical remission (Lambert et al., 2010; Tohen et al., 2000), and there has been growing interest in functional recovery as a treatment goal (Alvarez-Jimenez et al., 2016; Iyer et al., 2011). Despite this, there are few interventions that purposely seek to promote functional recovery (Nowak et al., 2016).

One intervention which shows promise is Social Recovery CBT (SRCBT; Fowler et al., 2009; Fowler et al., 2013; Fowler, et al., 2017). In comparison to symptom-focussed formulations which often adopt a focus on negative beliefs, SRCBT utilises social recovery formulations. This includes observing multiple systemic and social factors, alongside patterns of activity, meaning-making of the psychotic experience, motivation to change, and hopes,

expectations and fears for the future. The main aim of SRCBT is to increase activity levels by instilling hope for change, developing a positive sense of self and improving motivation. Several behavioural techniques are employed to facilitate this, such as in-vivo behavioural experiments linked to valued activities and future goals, to improve the person's sense of mastery and achievement.

### *1.3. Research Questions*

The primary question for the current study was: does optimism, balance, enmeshment or specificity of possible selves differ between groups offered SRCBT or treatment as usual in a population with psychosis and particularly low functioning?

SRCBT has been shown to be effective at improving functional recovery in psychosis, measured by increased time spent in structured activity (Fowler et al., 2009). If possible selves were found to be significantly different between groups, then a secondary research question was: are possible selves mediators of functional recovery?

## **2. Methods**

### *2.1. Design*

This study is a secondary analysis of data collected for the Improving Social Recovery in Early Psychosis trial (ISREP; Fowler et al., 2009), which was a single-blind randomised controlled trial (RCT). The study compared the novel psychosocial intervention of Social Recovery Cognitive Behavioural Therapy (SRCBT) to Treatment as Usual (TAU). The primary outcome measure was weekly hours in structured activity assessed using the Time Use Survey.

### *2.2. Participants*

Seventy-seven participants with psychosis and persisting social disability were recruited from secondary mental health services from the East Anglia region of the United

Kingdom between 2004 and 2007. Of the study sample 49 participants completed the Possible Selves Interview, along with measures of symptoms, mood and functioning, in face-to-face interviews at both time points. Therefore, only the subset of 49 participants with possible selves data were selected for this study. Statistical analyses were conducted to explore any differences between participants based on missingness of possible selves data. No significant differences were found between those with either missing or complete baseline or follow-up possible selves data on all variables. Therefore, statistical analyses on a subset of the ISREP participants was not seen to be impacted by missing data, due to holding the assumption that data were missing at random (MAR).

Participants provided full written informed consent before baseline assessments, which took place prior to randomisation. Post-treatment follow-up measures were completed at the end of the treatment period. Full ethical approval was sought as part of the ISREP study.

### *2.3. Outcome Measures*

The Time Use Survey (TUS; adapted from UK 2000 Time Use Survey; Short, 2006; Hodgekins et al., 2015), was the primary outcome measure of the ISREP trial. The TUS is a semi-structured interview schedule which asks how participants spent their time over the last month. This allows the interviewer to assess time spent (hours per week) in structured activities (work, education, childcare, housework/chores, leisure and sport). Below 30 hours of activity per week indicates functional disability.

Possible selves were assessed using the Possible Selves Interview (PSI; Markus & Nurius, 1986). Nine verbal descriptions of possible selves could be generated, 3 in each domain of hoped-for, expected and feared. Each possible self was rated quantitatively on three areas: “how much does this describe you now?”, “how much will this describe you in

the future?” and “how much would you like this to describe you?”. These questions used 0-4 Likert ratings, where 0 represents “not at all” and 4 represents “very much”.

Depressive symptoms were assessed using the Beck Depression Inventory (BDI-II; Beck et al., 1996), which is a 21-item measure of depression, with each item producing a score between 0 and 3 depending on symptom severity over a time period of 2 weeks. This results in a range of scores from 0 to 63, with a cut off score of 29 or above indicating severe depression.

Hopelessness was measured using the Beck Hopelessness Scale (BHS; Beck et al., 1974), which is a 20-item true or false self-report measure of hopelessness, comprised of three domains: motivation, expectations and feelings about the future. Scores range from 0-20, with a score >8 indicating hopelessness and >9 indicating suicidality (Granö et al., 2017).

Clinical symptoms of psychosis were measured using the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1989), which is a 30-item measure of positive (7-item), negative (7-item) and general psychopathology symptoms (16-item) in schizophrenia.

#### *2.4. Analysis Plan – Coding*

Due to the PSI collecting largely qualitative descriptions of selves, a coding manual was developed by the study team to explore the selves quantitatively (supplemental document A). Possible selves were coded depending on their general content as well as balance, optimism, enmeshment and specificity. The PSI coding process is outlined in Figure 1. An independent second rater coded 25% of all possible selves data to ensure an acceptable level of interrater reliability. Krippendorff’s alpha (Krippendorff, 1970;  $\alpha$ ), suggested excellent interrater reliability for all coding areas at  $\alpha = >0.80$ .

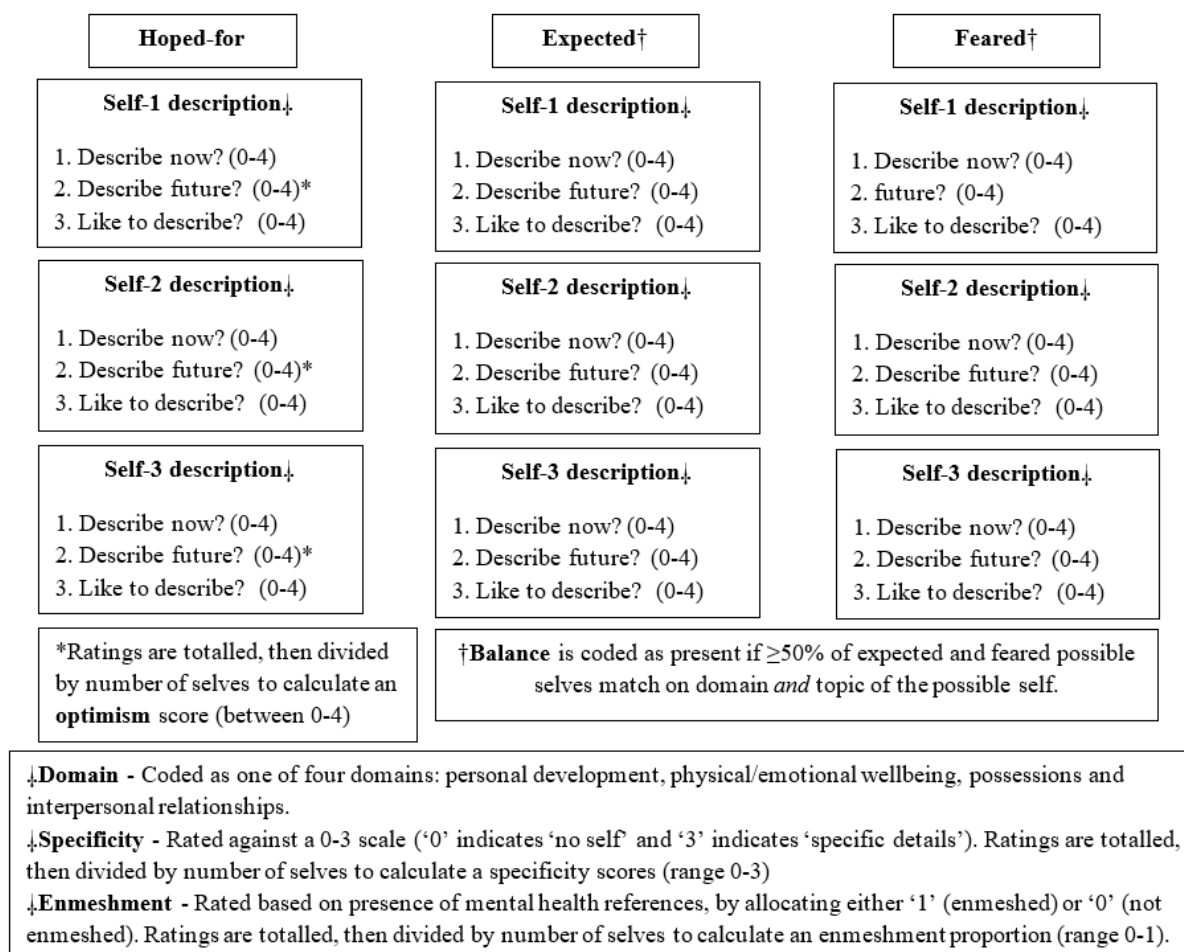


Figure 1. Diagram summarising the Possible Selves Interview data and details on the coding of general domain, optimism, balance, specificity and enmeshment.

### 2.5. Analysis Plan – Statistical Analysis

The Statistical Package for Social Sciences (SPSS) was used to extract and analyse all data (IBM Corp, 2016). Post-treatment descriptive statistics for primary and secondary outcomes were calculated. Post-hoc power calculations suggested that there was 80% power to detect a large effect size of 0.8 and 60% power to detect a medium effect size of 0.6.

Between-group significance tests were conducted following predetermined protocol. Mann-Whitney *U* tests were used to explore significance of differences between treatment and control groups on ordinal possible selves variables (Coolican, 2009). For each Mann-Whitney *U* test, optimism, enmeshment and specificity at the end of treatment were used as

the dependent variables. Allocation to treatment or control group was used as the independent/fixed variable. The Bonferroni correction ( $p < .002$ ) was applied to correct for multiple testing and reduce the likelihood of Type I errors (Coolican, 2009). A Pearson Chi-Square test was conducted to explore the distribution of balance across treatment and control groups (Coolican, 2009). Due to the modest 2x2 Chi-Square comparison, post-hoc pairwise comparisons and the Bonferroni correction were not adopted (Macdonald & Gardener, 2000).

Where possible selves were found to change, a mediation analysis was planned using analysis of covariance (ANCOVA) to explore whether improvements in time use in the SRCBT group were associated with change in possible selves.

### **3. Results**

There were no significant differences in specificity, optimism and enmeshment between treatment and control groups at follow-up ( $p > .05$ ). Equally, there were no significant differences in balance scores between treatment and control groups at follow-up. Descriptive statistics and statistical analyses comparing treatment and control groups at follow-up are displayed in Table 1.

Due to lack of significant changes in possible selves variables, a mediation analysis was not conducted

|                    | <b>SRCBT (n = 24)</b> | <b>TAU (n = 25)</b> | <b>Statistical outputs for between group differences at follow-up</b> |
|--------------------|-----------------------|---------------------|---|
|                    | <b>Median (SD)</b>    | <b>Median (SD)</b>  |   |
| <b>Optimism</b>    | 2.67 (0.85)           | 2.33 (0.93)         | $U = 283.50, p = .933$  |
| <b>Specificity</b> | 1.29 (0.32)           | 1.33 (0.27)         | $U = 277.50, p = .652$  |
| <b>Enmeshment</b>  | 0.18 (0.24)           | 0.13 (0.16)         | $U = 354.00, p = .276$  |
|                    | <b>SRCBT (n = 22)</b> | <b>TAU (n = 22)</b> | <b>Statistical outputs for between group differences at follow-up</b> |
| <b>Balance (%)</b> | 86.36                 | 73.91               | $X^2 (1, N = 45) = 1.089, p = .297$                                   |

Table 1. Descriptive statistics at 9-month follow-up, split by treatment. Between group analyses at follow-up are also presented.

Abbreviations: TAU, Treatment as usual; CBT, Cognitive Behavioural Therapy; PANSS, Positive and Negative Syndrome Scale; BDI-II, Beck Depression Inventory II; BHS, Beck Hopelessness Scale.

#### 4. Discussion

This study set out to explore whether there was a difference in possible selves between groups offered either SRCBT or TAU in a population with low functioning, and if so, whether these differences mediated functional outcomes. The results suggested that there were no significant differences in possible selves with regards to balance, specificity, enmeshment or optimism between treatment and control groups at follow-up. There are several possible factors that could explain these results.

##### 4.1. Possible Selves as an Outcome

Previous studies on possible selves have focussed on possible selves as a primary outcome, addressing their content in detail and gathering information on strategies for achieving these (e.g. Oyserman & Markus, 1990; Oyserman et al., 2002; Oyserman et al., 2006). The SRCBT intervention aimed to increase activity levels via instilling hope and identifying and overcoming barriers to social recovery, alongside active behavioural techniques to facilitate change (Fowler et al., 2013). Therefore, the intervention was not explicitly designed to change possible selves. Instead, possible selves were elicited as part of selecting personally meaningful long-term goals or values to direct the focus of behavioural work. It is possible that in order to change possible selves as cognitive constructs, they need

to be purposely elicited and directly challenged (Bak, 2015), as opposed to indirectly through behaviour change strategies. This would fit with the idea that changeability is dependent upon possible selves being cognitively active at the time (Markus & Nurius, 1986).

#### *4.2. Populations with Low Functioning*

Another explanation may be that possible selves are quite challenging to shift in this population. Research suggests that the optimal point of change for possible selves is with close temporal proximity to a significant change in role (Bak, 2015). However, the ISREP sample experienced psychosis on average for 4.8 years (Fowler et al, 2009), with the subset sample used in this study averaging 4.96 years, suggesting significant time had passed since initial diagnosis.

Considering baseline possible selves for the whole ISREP sample with possible selves data ( $n = 73$ ), specificity and balance were particularly low (see empirical paper 1; Lee et al., 2020), which indicated that the possible selves of people with psychosis and poor functioning provide little motivational power. With regards to changeability of possible selves, this may have been limited in this study by the potential floor effect of the possible selves and functioning measures.

#### *4.3. Change in Cognition*

The findings suggest that changes in possible selves were not necessary for changes in behaviour. While the SRCBT intervention does implement cognitive change elements, its focus is on behavioural interventions (e.g. behavioural activation), which could be sufficient to alter behaviour and improve functioning (Fowler et al, 2009). This is in line with literature on behavioural activation, whereby a focus on change in behaviour is implemented to directly change in affect. In that vein, the CBT model itself also postulates that changes in behaviour can have positive effects on mood and cognition. It may be the case that 9 months was not a sufficient time-frame to observe change in possible selves, as changes in cognition may occur



later in time once behavioural change is consolidated. This is in line with the general tenet of CBT, which suggests that behavioural change alone can be sufficient to have later effects on cognition.

While motivational theories (such as expectancy-value and self-determination theories; Medalia & Brekke, 2010) suggest that possible selves might be important motivators, change in this construct may not be necessary in order to affect behavioural change. Behavioural activation encourages individuals to perform behaviours (routine, pleasurable and necessary) despite the perceived task value, expectations for success or even internally felt motivations (intrinsic motivation).

Finally, encouraging the individual to consider what *could* be possible may not have been sufficient to influence a major revision of the self-concept, however as considered above, this may constitute as part of a longer process of progressive change as new conceptions of the self are incorporated over time (e.g. Markus & Kunda, 1986)

With the above in mind, it may be the case that the behaviour change observed in the ISREP study will result in possible selves becoming updated in the future. This is perhaps an area for future research.

#### *4.4. Changeability of Possible Selves*

Another way of interpreting the findings is that possible selves in their own right may not be as changeable as first thought. Possible selves are described as personalised roadmaps (Oyserman et al., 2004), and as such may be conceptualised as containing important ideals and personal wishes constructed based on who a person is as an individual. They are developed based on personal experiences of the environment, through social interactions and cultural experiences. Although possible selves reflect the capability of change through bringing to mind what is possible, perhaps the foundation by which possible selves are formed is much more resistant to change.

## **5. Strengths and Limitations**

The data explored in this study was rich and utilised a robust randomisation design, lending to the validity, reliability and generalisability of the conclusions that can be drawn. As outlined above, possible selves were not the primary outcome of the ISREP study, perhaps lending to some missingness of possible selves data for all of the ISREP 77 participants. However, this data was found to be missing at random, and therefore did not impact upon the conclusions drawn within this study.

One limitation was the challenges faced with incorporating baseline data in the statistical analysis model. Baseline data was not included in the analyses due to the non-parametric nature of the possible selves data, and the notable lack of availability of a non-parametric equivalent of the two-way ANOVA. The subsequent focus on only follow-up data resulted in a loss of main effects of time and group x time. Despite this, a strength of the study was in utilising appropriate statistical analyses methods to the type of data collected, meaning that appropriate conclusions could be drawn.

Finally, it should be considered whether the possible selves measure and associated coding strategy was a valid measure of the constructs being explored. Despite the rigorous processes behind the creation of the coding manual, measurements may have been capturing conceptually similar but separate constructs than those intended, which in turn could have affected the results.

## **6. Conclusions, Clinical Implications and Future Directions**

While this research provided some evidence that SRCBT did not impact possible selves, some key theoretical implications have been discussed. Possible selves may be inherently challenging to shift in a population with enduring psychosis and low functioning. However, functional outcomes can be improved, as seen through the primary ISREP trial. This suggests that change in cognition are not always necessary for change in behaviour, as

seen in both behavioural activation and CBT models. It may be that change in possible selves occurs later in the treatment process.

Clinical implications revolve around adding to the evidence base towards gleaning a better understanding the mechanisms of treatment in alleviating low functioning in psychosis.

Functional recovery is complex and unique to each individual (Lahera, 2018). Possible selves are equally heterogenous, and are likely to impact individuals in different ways. Future research is clearly warranted in this novel area to build a better picture of possible selves in psychosis across the disease course. Intervention studies may wish to implement a longer follow up to observe change in possible selves over time.

Finally, future research should focus on possible selves as the primary outcome, deliberately eliciting possible selves and addressing them within intervention. This would allow for further consideration regarding the changeability of possible selves within this population.

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## **Chapter 6. Extended Methodology**

This extended and more detailed methodology section relates to the empirical papers presented in Chapters Four and Five. This Chapter includes further information about the production of the possible selves coding manual, with a primary focus on the rationale for the coding methodology chosen. Additional information regarding methodology for data analysis across both empirical projects is also discussed. This chapter is formatted to APA guidelines. The word count for this chapter (including figures and tables) is 3204.

### **6.1. Coding Manual**

A coding manual for the Possible Selves Interview (PSI) was developed to define and quantify possible selves across five areas of interest: general domain, specificity, balance, enmeshment and optimism (see Appendix F for the complete manual). The possible selves coding manual underwent a rigorous process of testing and refinement, which has been recorded and summarised within a comprehensive version log (Appendix G). A diagram was also created to support understanding of the data that could be collected from the PSI (see Figure 1.)

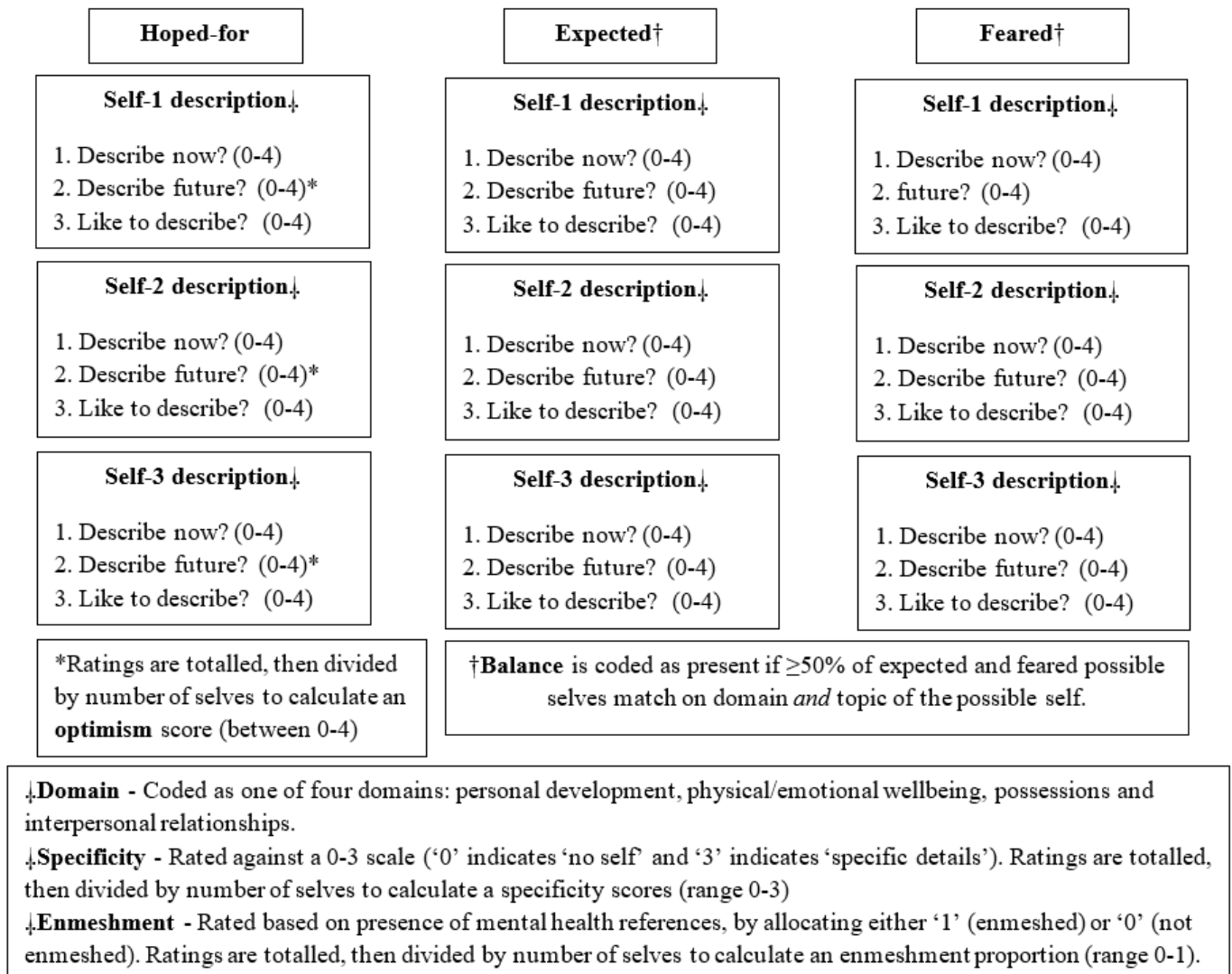


Figure 1. Diagram summarising the Possible Selves Interview data and details on the coding of general domain, optimism, balance, specificity and enmeshment.

The coding manual was initially developed using an unrelated dataset of possible selves data collected from a population with psychosis (from Clarke, 2016). This was to minimise bias with regards to coders having access to and/or becoming familiar with the experimental data before a coding and analysis plan was in place. Therefore, decision making around the coding strategy can be said to be independent to the experimental data. Each section of the coding manual will be discussed in turn. All references to datasets used to develop the initial coding manual are referencing data originating from unrelated data used by Clarke (2016).

*Domain*

Each possible self was coded against four domains; personal development, possessions, emotional/physical wellbeing and interpersonal relations. These domains broadly encapsulate the key areas in which a possible self can be generated, and have been used in various iterations across the possible selves research (Clarke, 2016; Markus & Nurius 1986; Molina, Schmidt & Raimundi, 2017; Oyserman & Burbidge, 2004.) Descriptions of each coding domain and examples of possible selves that would be coded for that domain are displayed in Table 1.

| Domain                       | Description  | Example possible selves  |
|------------------------------|--|--|
| Personal Development         | Any area in which learning or time spent planning or working is necessary, such as education, occupation or skills development.  | “I hope to work as a nurse”<br>“I won’t be able to learn how to drive”                       |
| Possessions                  | References to material possessions, such as ownership/lack of material object or financial references.   | “Owning my own home”<br>“Not having enough money to pay the rent”                            |
| Emotional/physical Wellbeing | References to any physical or mental wellbeing. This includes reference to feelings/emotions, physical illness/injury or mental health concerns such as symptoms, hospitalisation, drug/alcohol use etc. | “I will relapse again and become depressed”<br>“I want to be happy and get my old life back” |
| Interpersonal Relationships  | Reference to other people. As well as references to relationships with family, friends or spending time with others more generally, this also includes being alone.                                      | “To get married and have kids”<br>“To lose my family and get kicked out of the house”        |
| Not given/none               | When the participant is not able to generate a possible self, or the participant answers in the present tense.   | -  |

Table 1. Descriptions of possible selves domains, alongside examples of possible selves

*Enmeshment*

Enmeshment was defined as the degree to which mental health was viewed as a key aspect of a person’s possible self. This description was guided by research into pain enmeshment, which utilised a similar definition (Morley, Davies & Barton, 2005). The

enmeshment coding strategy included a binary rating for whether the possible self was enmeshed (“1”) or not enmeshed (“0”), as has been utilised in previous possible selves research (Clarke, 2016). With regards to what was considered a mental health reference in this population, research has suggested that more than half of people with schizophrenia have at least one comorbid psychiatric disorder (Buckley et al., 2009) and comorbidities have been found to worsen outcomes for the person (Misra & Ganzini, 2006). Therefore, the coding framework did not exclusively look at psychosis related references within the enmeshment score. Instead, reference to any mental health concern was coded as an enmeshed possible self (e.g. “not hear voices again” or “feel less anxious”). It was decided that vague comments (e.g. “worry less” or “be happy”) would not constitute as enmeshed, as these could not be reliably linked to experience of mental health specifically. The content of the possible self was taken precisely as written, with as little subjective decision making as possible.

### *Balance*

Balance was adapted from previous possible selves in psychosis research (Dunkel, 2000; Dunkel & Anthis, 2001; Clarke, 2016). Balance can be coded in many different ways, for example, observing congruence with domain ratings between hoped-for/expected and feared selves (Clarke, 2016). In this case, balance would be present if a hoped-for/expected possible self simply shared the same domain (e.g. possessions) as a feared possible self (e.g. “I hope to house” balanced with “I fear not having a car”). Due to difficulties with the broad and non-specific nature of this coding method, it was decided to instead code balance by observing both the domain of the possible self (e.g. personal development) and the topic (job). In this case, balance would be present if a hoped-for/expected possible self specifically shared the same domain and topic (e.g. possessions *and* housing) as a feared possible self (e.g. “I hope to have a house” balanced with “I fear never having a house”).

Balance can be coded for both expected vs. feared and hoped-for vs. feared selves. Previous research has suggested little difference between hoped-for and expected possible selves with regard to balance (Aloise-Young, Hennigan & Leong, 2001), therefore the coding manual advises calculating balance in both ways. However, more emphasis should be placed on expected vs. feared possible selves, based on the assumption that expected possible selves are more likely to be based on reality compared to hoped-for selves that may capture fantasies (Oyserman & Markus, 1990). Emphasis was placed on balance for expected vs. feared in this study by choosing it as the primary variable to analyse. This was because little difference was found between percentage of balance between hoped-feared and expected-feared possible selves. Where a greater percentage difference is observed, using both calculations in analyses may be warranted.

### *Optimism*

Optimism was coded using the quantitative ratings from the descriptive questions of the PSI. Of the three descriptive questions, two could potentially be used to address this construct: “how much would you like this to describe you?” and “how much will this describe you in the future?”. In order to provide a rationale for choosing one of these items over the other, a distinction between hope and optimism needed to be made. Optimism and hopefulness are semantically and conceptually linked, and observing the definition of each highlights this: optimism is “hopefulness and confidence about the future or the successful outcome of something; a tendency to take a favourable or hopeful view” and hope is the “expectation of something desired; desire combined with expectation” (Blackburn, 2016). A study attempted to delineate these concepts by exploring how people define hope and optimism, and the distinction was made in relation to perceived control (Bruininks & Malle, 2005). Hope was described as an emotional state representing desired but unlikely outcomes that people perceive to have little control over, whereas optimism was described as present



when people have a high degree of control and the outcome now feels attainable. Due to the role of control and belief about attainment in the future, it was decided that taking the average of the 0-4 ratings for the question “how much will this describe you in the future?” best captures this in an optimism score. This also remained in line with previous research on optimism in possible selves (Clarke, 2016).

### *Specificity*

Specificity of possible selves was a novel area explored by both empirical projects. Each possible self was coded in relation to specificity, defined as how particular, exact, clearly defined and not vague the self was (Stevenson, 2010). As part of defining this coding domain, it was considered that specificity may have equally been termed “richness”, which has been used in a similar way in autobiographical memory research (Katz, Klages & Hamama, 2018; Kounios, Green, Payne, Fleck, Grondin & McRae, 2009; Spachholz, Kuhbandner & Pekrun, 2017), however this was decided against due to definitions of richness largely suggesting the presence of something “positive” (e.g. Blackburn, 2017), therefore failing to add adequate weight to the presence of more ‘negative’ possible selves (Norman, Windell, Lynch and Manchanda, 2014).

Due to the short nature of the possible selves descriptions (often no more than 8-10 words), rather than using thematic or interpretative phenomenological analysis, the data was coded and categorised based on content, then analysed quantitatively. Retrospective coding of this type of data has frequently been utilised in studies looking at specificity of autobiographical memories (e.g. Raes, Hermans, Williams & Eelen, 2007; Abram, Picard, Navarro & Piolino, 2014), therefore support was sought by an expert in the field (Dr Louis Renault) throughout the coding development process.

The rating system for specificity underwent several iterations, developed over three coding attempts on unrelated possible selves data, coupled with interrater reliability testing

between the main researcher (JL) and an independent researcher (LR). Initially coding ranged from 0-2, however this was expanded due to large variations in quality of specificity observed within the highest point on the scale.

Rating specificity on the new 4-point scale (0-3) initially showed lower interrater reliability than the 3-point scale. As part of the refinement of the new 4-point scale between dataset 1 and 2, it was stipulated that only the words should be rated as they are stated in the possible self, with minimal subjective decision making around what the participant might have meant. Also the “benefit of the doubt” rule was also included to manage possible selves bordering between two ratings, resulting in the coder choosing the higher of the two scores. Following clarification of the coding manual, interrater reliability improved. The specificity coding process is summarised in Table 2. Interrater reliability percentage agreement data are displayed in Table 3.

| Specificity Code | Definition       | Description of content   | Example  |
|------------------|------------------|--|--|
| 0                | No self provided | No self, or self clearly generated in present tense  | -  |
| 1                | General comment  | Short, non-descript, lacks reference to people, places, time-frames or roles   | “A job”  |
| 2                | More details     | Meets all criteria of 1, with addition of:<br>- Qualifying characteristics (adjectives)<br>- <b>One</b> reference to person (“Dad”, “John”) <b>or</b> place (“UEA”) <b>or</b> time-frame (“next year” <b>or</b> role (“engineer”). | “Part-time job, something simple to start with”  |
| Added Code       | Definition       | Description of content   | Example  |
| 3                | Specific details | Meets all criteria of 2, with addition of:<br>- A second reference to person <b>or</b> place <b>or</b> time-frame <b>or</b> role.<br><b>OR</b><br>- Additional details that elaborate on the possible self further.                | “Job in engineering design with my Dad”<br>“I’d like a job which fulfils my potential something like graphic design” |

Table 2. Description of specificity coding framework with possible selves examples.

| Dataset 1                           | Hoped-for | Expected | Feared | Total across all selves |
|-------------------------------------|-----------|----------|--------|-------------------------|
| <i>Specificity Rating 0-2 scale</i> | 90.00     | 96.00    | 90.00  | 91.33                   |
| <i>Specificity Rating 0-3 scale</i> | 88.00     | 90.00    | 80.00  | 86.00                   |
| Dataset 2                           | Hoped-for | Expected | Feared | Total across all selves |
| <i>Specificity Rating 0-3 scale</i> | 94.00     | 96.00    | 9.000  | 93.00                   |

Table 3. Percentage interrater agreement for specificity coding shown for each rating scale across two possible selves datasets unrelated to the primary study data. Ratings on dataset 2 occurred after refinement of the coding manual.

## 6.2. Interrater Reliability of the Coding Domains for the Experimental Data

A second researcher (LB) familiar with the possible selves construct coded 25% of all experimental data used within empirical papers 1 and 2 before analysis. Krippendorff's alpha (Krippendorff, 1970;  $\alpha$ ) was chosen as the statistic to quantify interrater reliability.

Krippendorff's alpha was originally developed in the field of content analysis and has many advantages over other measures of reliability. For example, it is robust to missing data, able to operate with many levels of data (ordinal, interval, nominal etc.) and accounts for chance agreements to a higher accuracy than other measures (Hayes & Krippendorff, 2007;

Krippendorff, 2004). An alpha statistic of 1 indicates perfect agreement and 0 indicates no

agreement. According to Krippendorff (2004; 2013) an alpha over 0.8 indicates high

reliability and an alpha below 0.8 but above 0.67 indicates low reliability, with 0.67

representing the lowest acceptable limit. Alpha was calculated for each possible self coding

area involving any possibility of researcher subjectivity/bias. This included all areas except

optimism, which was calculated based solely on participant ratings. Interrater reliability was

excellent for all domains, each at  $\alpha = >0.80$  (Table 4.)

|          | Specificity | Domain | Enmeshment | Balance - Expected | Balance - Hoped |
|----------|-------------|--------|------------|--------------------|-----------------|
| $\alpha$ | 0.90        | 0.95   | 0.91       | 0.91               | 0.88            |

Table 4. Krippendorff's alpha ( $\alpha$ ) interrater reliability ratings for all coding domains.

While interrater reliability was acceptable across all domains ( $\alpha > 0.80$ ), further refinement was considered for future use of the manual. In a meeting with the second researcher, feedback was offered to the primary researcher on the use of the manual, and a comprehensive review was conducted of the few discrepancies found during interrater reliability testing. This meeting identified some confusion with the specificity coding between a code of 2 and 3 on borderline cases, resulting in a slight change of wording to clarify which code to give. This was to further increase robustness of the coding manual for future use in possible selves research.

### 6.3. Analysis Plans for Empirical Projects 1 and 2

#### 6.3.1. Assumption Testing

Normality of all interval variables was observed using the robust Shapiro-Wilk statistic (Razali et al., 2011) and visual inspection of histograms, box plots and Q-Q plots (Orr et al., 1991). Outliers (data points with z-scores  $\geq 3$  or  $\leq -3$  according to the empirical rule) were removed in an attempt to rectify the issue, however the variable remained non-normal indicating non-parametric testing. Non-parametric analyses were also indicated for the optimism, enmeshment and specificity variables, due to their ordinal measurement scale (Coolican, 2009).

#### 6.3.2. Likert Scales

The relatively narrow range of Likert scales for specificity and optimism (0-3 and 0-4 respectively) raised the concern that data may bunch up into one or two broad scales (e.g. 0-2

and 2-4). This can result in difficulties for non-parametric tests due to the possibility of several tied scores. The frequencies for Likert scale data were observed, to ascertain whether there were significant ties within the data. Optimism showed a good spread between 1 and 4, with no clear areas of ties. Specificity scores trended towards the lower end of the scale, however the frequencies remained reasonably spread across the lower scores (a range of 0.89 to 2.25, with a maximum possible score as 3). Therefore, non-parametric analyses using Mann-Whitney were seen as appropriate, as opposed to creating categories based on groupings and using Pearson Chi Square analyses.

### *6.3.3. Empirical Project 2 - Missing Data*

Of the 73 participants with baseline Possible Selves Inventory (PSI) data, just under 70% had PSI data available at follow-up. Therefore, for empirical project 2, 49 participants were included in the analyses. This sample consisted of participants from the ISREP trial who had possible selves data at both baseline and follow-up.

Handling missing data in a valid way is a complex yet important task (Jakobsen, Gluud, Wetterslev & Winkel, 2017). Missing data can present as a potential source of bias in studies, it can weaken the generalisability of results and reduce statistical power of studies (Jakobsen, Gluud, Wetterslev & Winkel, 2017; Rubin, 1987; Schafer, 1997). Listwise and pairwise deletion methods of managing missing data generally introduce further bias (Rubin, 1987; Schafer, 1997), therefore more robust methods such as multiple imputation are recommended (Dong & Peng, 2013). Missing data in randomised controlled trials in particular may have implications for the effect of randomisation, whereby validity of the baseline comparability may be lost due to participants who are lost to follow-up (Groenwold, Moons & Vandenbroucke, 2014). This would result in missing data potentially compromising inferences that can be made, particularly if missingness is found to be non-random (Little et al., 2012). In the case of empirical project 2, missing data was almost entirely unit level (no

information was collected from a participant). The unit nonresponse was not ‘nonignorable’, in that there was no pattern of missing data related to the variables of interest (Little & Rubin, 1987). The process of assessing this is outlined below.

Observation of descriptive statistics suggested no difference at baseline on all measures of functioning and symptomatology between those with follow-up PSI data and those without. This was reinforced by statistical testing using t-tests, Mann-Whitney U tests and Pearson’s Chi-Square, whereby no significant differences were found between those with missing or complete possible selves follow-up data on all variables ( $p < .05$ ). Possible selves variables (e.g. specificity, enmeshment, optimism and balance) were also compared at baseline, split between those missing follow-up possible selves data and those with completed follow-up possible selves data. Equally, no significant differences were found between groups ( $p < .05$ ). These data are displayed in Table 5. There were slightly more missing possible selves data from the control group at follow-up (36.1%) compared to the treatment group (24.2%), however there were no significant differences between these groups with regards to missing data at baseline ( $p < .05$ ). Therefore, statistical analyses on a subset of the ISREP participants was not seen to be impacted by missing data, due to holding the assumption that data were missing at random (MAR). These data are summarised in Table 5.

| Baseline measure                  | Completed follow-up | Missing at follow-up | Statistical Comparisons            |
|-----------------------------------|---------------------|----------------------|------------------------------------|
| PANSS Total Mean (SD)             | 49.27 (9.00)        | 53.83 (10.99)        | $t(59) = -1.508, p = .137$         |
| PANSS Positive Mean (SD)          | 11.08 (3.40)        | 12.07 (4.75)         | $t(62) = -.880, p = .382$          |
| PANSS Negative Mean (SD)          | 12.52 (3.52)        | 13.58 (4.29)         | $t(60) = -.796, p = .439$          |
| BDI Mean (SD)                     | 13.42 (11.68)       | 18.10 (12.08)        | $t(56) = -1.147, p = .256$         |
| BHS Mean (SD)                     | 6.76 (4.86)         | 10.00 (6.68)         | $t(54) = -1.839, p = .071$         |
| Structured Activity Mean (SD)     | 37.53 (21.84)       | 34.60 (22.60)        | $t(59) = .399, p = .691$           |
| RBANS Immediate Memory Mean (SD)  | 15.18 (4.35)        | 14.23 (4.63)         | $t(75) = .882, p = .380$           |
| RBANS Delayed Memory Mean (SD)    | 7.84 (2.76)         | 7.77 (3.39)          | $t(75) = .103, p = .918$           |
| RBANS Fluency Mean (SD)           | 16.16 (5.72)        | 15.15 (4.46)         | $t(75) = .780, p = .438$           |
| Optimism Score (Mean rank)        | 37.17               | 33.57                | $U = 496.00, p = .478$             |
| Specificity Score (Mean rank)     | 33.79               | 40.61                | $U = 658.00, p = .192$             |
| Enmeshment Proportion (Mean rank) | 37.19               | 35.02                | $U = 529.50, p = .571$             |
| Non-Balanced (%)                  | 79.55               | 61.90                | $X^2(1, N = 65) = 2.290, p = .145$ |

Table 5. Comparison of baseline symptoms, functioning, neuropsychological data and possible selves between those with missing and complete follow-up data.

Ideally, prevention of missing data is more ideal to its management (Jakobsen, Gluud, Wetterslev & Winkel, 2017), however in this case, the possible selves data were not the primary outcome of the trial, and therefore it was understandable that there would be some missing data compared to other outcomes. Where data are missing at random (MAR), statistical techniques such as multiple imputation can result in valid results (Sterne et al., 2009), however due to the extent of the missing data at follow-up across the ISREP 77 participants, multiple imputation was not seen as feasible.

Post hoc power calculations adjusted to account for the missing data suggested that, with approximately 26 participants in each group, there was 80% power to detect a large effect size of 0.8 at  $p \leq .05$ , however only 60% power to detect a medium effect size of 0.6.



### **Chapter 7. Extended Results**

This extended and more detailed results chapter includes further information regarding statistical analyses conducted for empirical paper 2. This chapter is formatted to APA guidelines. The word count for this chapter (including figures and tables) is 585.

### 7.1. Affective vs Non-Affective Psychosis

The findings of The Improving Social Recovery in Early Psychosis (ISREP) trial (Fowler et al., 2009) trial suggested SRCBT was primarily effective at improving functioning in the non-affective psychosis group. Non-affective psychosis refers to a broad range of psychotic disorders, including schizophrenia-spectrum disorders, but not including affective or drug induced psychoses (Nugent, Paksarian & Mojtabai, 2013). It may be that changes in functioning relate to the effectiveness of SRCBT on schizophrenia-spectrum disorders, of which negative symptoms are particularly relevant. Therefore, as a supplementary analysis, the non-affective psychosis group was analysed for change in possible selves separately to the affective psychosis group.

Due to stratification of participants in the ISREP trial to ensure equal affective and non-affective psychosis groups across treatment and control, and due to no significant differences observed at baseline for possible selves data between affective and non-affective groups (summarised in Table 1), comparison between groups at follow-up only was possible. Following statistical testing using Mann-Whitney *U* and Pearson's Chi Square (or Fischer's Exact Test for expected values  $< 5$ ), no significant differences were found at follow up for the non-affective psychosis group, indicating that possible selves did not change following SRCBT compared to TAU within this group. This would suggest that diagnosis did not play a role in the changeability of possible selves following SRCBT, and that possible selves remain independent to the functional improvements seen within the ISREP trial (as also concluded within empirical project 2). Of course, it should be taken into account that the power to detect differences between groups is limited due to the decreased sample size. Data are summarised in Table 2.

| Baseline measure                     | Non-affective<br>(n = 32) | Affective<br>(n = 17) | Statistical Comparisons    |
|--------------------------------------|---------------------------|-----------------------|----------------------------|
| PANSS Total Mean (SD)                | 57.63 (9.93)              | 53.69 (11.29)         | $t(73) = 1.559, p = .123$  |
| PANSS Positive Mean (SD)             | 12.90 (3.47)              | 10.69 (4.13)          | $t(73) = 2.451, p = .017$  |
| PANSS Negative Mean (SD)             | 14.00 (3.15)              | 12.35 (3.73)          | $t(73) = 2.029, p = .046$  |
| BDI Mean (SD)                        | 20.20 (12.86)             | 24.52 (13.16)         | $t(69) = -1.343, p = .184$ |
| BHS Mean (SD)                        | 8.12 (5.48)               | 10.33 (6.27)          | $t(70) = -1.538, p = .129$ |
| Structured Activity Mean (SD)        | 26.65 (16.46)             | 33.46 (24.22)         | $t(73) = 1.440, p = .154$  |
| RBANS Immediate Memory<br>Mean (SD)  | 14.35 (4.50)              | 16.42 (3.58)          | $t(73) = -2.034, p = .046$ |
| RBANS Delayed Memory<br>Mean (SD)    | 7.53 (3.16)               | 8.69 (2.24)           | $t(73) = -1.662, p = .101$ |
| RBANS Fluency Mean (SD)              | 15.49 (5.00)              | 17.00 (5.62)          | $t(73) = -1.192, p = .237$ |
| Optimism Score<br>(Mean rank)        | 31.79                     | 38.15                 | $U = 463.00, p = .215$     |
| Specificity Score<br>(Mean rank)     | 37.22                     | 35.42                 | $U = 580.00, p = .730$     |
| Enmeshment Proportion<br>(Mean rank) | 34.84                     | 38.12                 | $U = 546.00, p = .518$     |
| Non-Balanced (%)                     | 71.74                     | 78.95                 | $p = .516^*$               |

Table 1. Baseline differences between the affective and non-affective psychosis groups for symptoms, functioning, neuropsychological data and possible selves. Bonferroni correction applied at  $p < .004$ .

\* Fischer's Exact Test statistic utilised due to predicted cell count  $< 5$ .

| Follow-up measure                    | N  | SRCBT | Control | Statistical Comparisons |
|--------------------------------------|----|-------|---------|-------------------------|
| Optimism Score<br>(Mean rank)        | 32 | 16.65 | 16.65   | $U = 130.00, p = .941$  |
| Specificity Score<br>(Mean rank)     | 33 | 16.83 | 16.83   | $U = 132.00, p = .929$  |
| Enmeshment Proportion<br>(Mean rank) | 33 | 38.12 | 38.12   | $U = 143.00, p = .789$  |
| Non-Balanced (%)                     | 32 | 87.50 | 66.67   | $p = 1.000^*$           |

Table 2. Difference in possible selves variables for the non-affective psychosis group at follow-up, split between treatment and control. Bonferroni correction applied at  $p < .017$ .

\* Fischer's Exact Test statistic utilised due to predicted cell count  $< 5$ .

### **Chapter 8. Critical Review and Reflection**

This chapter provides discussion and critical evaluation of the thesis portfolio as a whole. It enables reflection on the research process, evaluation of strengths and limitations and consideration of contributions to research and practice. Suggestions for further research into psychological treatments for psychosis are also discussed. This chapter is formatted to APA guidelines. The word count for this chapter is 2618.

### **8.1. Thesis Portfolio Rationale**

The rationale for this thesis portfolio was broadly to explore the effectiveness of interventions for promoting recovery in psychosis. This included specifically exploring effectiveness of interventions for amotivation as a key negative symptom, as well as the potential role of possible selves in promoting functional recovery. Theories of negative symptoms, motivation and possible selves were discussed in relation to their role in recovery from psychosis.

### **8.2. Summary of Findings**

The systematic review highlighted that novel interventions can be efficacious in reducing amotivation in schizophrenia, however, conclusions regarding the overall efficacy of any one type of intervention could not be drawn due to the small number of studies, small sample sizes and mixed results. This is also in the context of very few studies using reliable measure amotivation, which is inherently a problem within the literature. In order to comment upon the effectiveness of interventions with more reliability, there needs to be a consensus within the literature as to outcome measure use.

Empirical paper 1 applied possible selves theory to psychosis and explored the nature of possible selves in a population with particularly low functioning. Possible selves were found to be non-specific and non-balanced, indicating potential motivational deficits in the population. Enmeshment was low overall, however feared possible selves had a notably high proportion of enmeshment, indicating that mental health was the topic of fears for the future. Optimism was generally high in the population, indicating that there was some confidence and self-efficacy in relation to achieving hoped-for selves. Possible selves were not associated with functioning, which was contrary to what the literature might currently suggest. This was discussed in the context of a sample of individuals with low functioning,

high hopelessness and high depression. This finding implicated future research into interventions that can foster a positive self-concept and sense of possibilities for the future.

Empirical paper 2 explored the changeability of possible selves in the same population with low functioning. The Social Recovery Cognitive Behavioural Therapy (SRCBT) intervention was not found to have an impact on possible selves, despite the effectiveness of SRCBT in improving functioning in this population. This suggested that change in possible selves was not necessary for behavioural change, which was discussed in relation to motivational theories, behavioural activation as well as the basic principles of CBT. It remains to be explored whether change at a behavioural level results in changes in possible selves much later, after behavioural change is consolidated outside of therapy.

### **8.3. Critical Evaluation (Strengths and Limitations)**

#### *8.3.1. Systematic Review*

The focus of the systematic review was on change in amotivation. Consideration was given as to whether amotivation as a negative symptom was on the same spectrum as motivation, or whether they were separate constructs. Reviewing the literature suggested that several research studies have viewed the two constructs as occupying the same spectrum (e.g. Najas-Garcia, Gomez-Benito & Huedo-Medina, 2018). This is congruent with motivational theories such as self-determination theory (discussed in the thesis introduction), which places amotivation, extrinsic motivation and intrinsic motivation along a continuum. Objective measures of motivation outside of clinical interview have shown promise in measuring amotivation within this continuum, such as effort-based decision making tasks (Green & Horan, 2015; Green, Horan, Barch & Gold, 2015). However inconsistent findings around the relationship between performance-based measures and negative symptoms (e.g. McCarthy,

Treadway, Bennett & Blanchard, 2016) resulted in the decision to only include direct measures of amotivation as a negative symptom, to provide a clear focus for the review.

A sample including only non-affective psychoses (i.e. schizophrenia spectrum disorders) was chosen, in order to accurately comment upon amotivation as a negative symptom, which is strongly associated with functioning in schizophrenia (Najas-Garcia et al., 2018). The study could have broadened inclusion criteria to include a wider population with psychosis, thus potentially increasing the number of studies included. However, this would then have limitations for inappropriately generalising conclusions across the broad range of psychotic disorders.

The systematic review was registered on PROSPERO (National Institute for Health Research & University of York, 2016) to ensure overall transparency of the review and limit duplication of work. The process as outlined in PROSPERO was carefully followed, with special care not to deviate from the submitted protocol. Due to the iterative nature of the review in its early stages, research aims and search criteria were subsequently refined before data collection. Therefore, the PROSPERO submission was updated on 14<sup>th</sup> November 2019 to include further methodology before data synthesis stage.

The search terms for the review were broad and highly inclusive, comprising both first- and second-generation measures of psychosis. The rationale for this was twofold. Firstly, many papers prioritised first-generation measures (e.g. PANSS, SANS, NSA-16) in their analyses, so minimal reference to second-generation measures were made within the text of the paper. Secondly, if very few papers were found to report the subscales of second-generation measures of interest (thus compromising feasibility of the review), then subscale data from first-generation measures could have been used. Considering the large amount of papers that this returned (over 20,000), in retrospect it may have been helpful to consider refining the search further. For example, second-generation measures were produced



more recently than first-generation measures, meaning that a date parameter could have been beneficial to implement in initial stages of the search.

Of the papers returned from the search, 10% of the titles were checked by an independent researcher against inclusion/exclusion criteria. Then, 100% of papers selected at abstract stage were checked against inclusion/exclusion criteria by an independent researcher. This added robustness to the systematic review, particularly given the large amount of papers returned as part of the search.

The small number of studies included in the review represents the novel area under study in the review. While it was challenging to balance the low number of papers with reliability and validity of the review in drawing conclusions, the topic was still feasible, relevant and appropriate to address as an important clinical question.

The studies included in the review were heterogenous, resulting in the decision to conduct a narrative synthesis as opposed to a meta-analysis. The meaningfulness of conducting a meta-analysis was considered within supervision, however it was decided that including all of the papers in a meta-analysis would not produce a meaningful result in terms of efficacy of interventions, as the interventions were so varied. Previous meta-analyses have been conducted for effectiveness of interventions on negative symptoms more generally (Lutgens, Garipey & Malla, 2017), however their review included a significantly larger number of studies, allowing them to group therapies meaningfully together in sufficient numbers.

The narrative synthesis included a discussion around a quantitative synthesis, by calculating post-treatment effect sizes between groups where data were available. This was seen as the least biased way of assessing effectiveness of an intervention, as opposed to calculating pre and post intervention effect sizes (Cuijpers, Weitz, Cristea, & Twisk, 2017).

However, this perhaps resulted in an underreporting the effectiveness of the intervention independent of a control group.

The systematic review included both Randomised Controlled Trials (RCTs) and Controlled Trials (CT), which had the benefit of control groups to compare the outcome data against. Quality checks were conducted on papers using a valid and reliable tool (Cochrane risk of bias tool; Sterne et al., 2019). This tool was designed to assess quality of RCTs. The same tool was implemented across all studies to promote fairness and uphold the systematic nature of the review. This may have resulted in harsher ratings for the CTs, however this meant that their results could be considered in the context of all of the papers included. If resources were available, it would have been beneficial to have the quality assessment of papers double-checked by an independent researcher, as with the inclusion and exclusion criteria of studies.

Many of the studies did not report the relevant subscale data for second-generation measures. Every effort was made to contact authors directly to gather information. Reasonable time was allocated to wait for replies, and a maximum of 3 emails were sent per paper where further information was needed. All but one author replied to emails, allowing for a more comprehensive review of the included papers.

### 8.3.2. *Empirical Papers*

A large sample size was recruited from a robust RCT utilising vigorous methodology, such as blinding and strict inclusion/exclusion criteria. This lends weight to the thesis, particularly with regards to conclusions that can be drawn. Analyses of secondary data has important ethical implications. Participants gave up their time to complete the possible selves interview within the initial ISREP trial, and ethical approval was sought for subsequent analyses. It would be unethical to leave the data and not use it for its intended purposes. Equally, collection of new data was not warranted, reducing the strain on participants who

may contribute in the future. However, analysis of secondary data has limitations. The ISREP trial was published in 2009, meaning that the data is over 10 years old, which may have implications for generalisability.

Both empirical papers included a combination of participants with affective and non-affective psychoses within the study sample. Amotivation (and related motivational difficulties impacting functioning) is a specific domain of negative symptoms, which is generally represented within schizophrenia spectrum disorders. Equally, the ISREP project identified effectiveness of SRCBT in improving functional outcomes primarily within non-affective psychoses. This may have limited the generalisability of the conclusions due to the mixed sample. More recent studies usually include affective psychosis within their exclusion criteria for this reason, due to their inherently differing disease course and different functional recovery profiles. Additional analyses were conducted with the non-affective study sample separately, revealing similar results to empirical paper 2, however this was underpowered due to the low number of participants.

Due to the wealth of data available and the methodology of its collection, there were many ways in which the data could have been coded. Participants were not explicitly asked to generate three possible selves per category of hoped-for, expected and feared, therefore it did not appear prudent to 'penalise' individuals by having this impact on specificity, enmeshment and optimism scores by coding the data as simply "missing". This resulted in the inclusion of a coding rule to provide a standardised average across selves generated, thus allowing equal footing for participants. It was also important not to make assumptions about the data, for example with enmeshment, it was considered whether magnitude of enmeshment could be coded using the Likert scale question "How much will this describe you in the future". However, this was decided against as it could not be certain that this indicated 'greater' enmeshment.

Coding of balance resulted in some difficulties. For example, the way that coding was designed resulted in people with more feared possible selves having more opportunities at having a balance score, especially in situations where one hoped-for or expected self was compared to three feared selves. This did not work the other way around, as someone with more hoped-for/expected selves than feared selves fundamentally had a lower balance score. Further to this, there were rare situations in which individuals did not generate enough feared selves to ever reach the 50% threshold to be considered balanced, limiting the coding methodology somewhat. There were also situations where one feared possible self mentioned more than one aspect covered in hoped-for/expected, however this still scored as low on balance due to the stipulation that one possible self can only be included in the coding at one time. Equally, lower specificity may also have resulted in a lower balance score, as there was less detail and information within the self to utilise in coding.

There were also many ways in which the data could have been analysed, which emphasised the importance of following the predefined analysis plan as outlined in the thesis proposal. This ensured that the analysis did not evolve into a ‘fishing for significance’ process, thus reducing the validity of the empirical projects. For empirical paper 1, initial analyses were iterative and somewhat explorative, due to the nature of the research question. However, the main analyses of both empirical papers remained as per the thesis proposal, which was chosen based on the broad research questions and the limitations of the measurement data.

## **8.4. Clinical Implications and Future Directions**

### *8.4.1. Systematic Review*

There are clinical implications for exploration of novel treatment methods targeting amotivation specifically in order to try and increase the efficacy of interventions. One

possible novel treatment involves guided autobiographical memory retrieval in the form of memory specificity training, which has been highlighted in recent research (Edwards, Garety & Hardy, 2020). This intervention involved viewing a psychoeducation video exploring the impact of memory on motivation, followed by a discussion with a researcher regarding activities the individual would like to engage in that they had a positive memory of doing in the past. This intervention was found to have positive effects on reducing amotivation as measured by the CAINS. Interestingly, this intervention of past memories overlaps with possible selves theory as discussed within both empirical papers, whereby specificity of possible future selves plays a role in motivating behaviour. This may implicate further research into the role of memory specificity training in relation to changing possible selves to motivate behaviour.

The systematic review also highlights issues that clinicians may face in relation to measuring amotivation in clinical practice. The PANSS is still commonly used, despite emerging evidence of difficulties around giving appropriate weight to amotivation as one of the more disabling negative symptoms. Some of the second-generation measures (such as the Brief Negative Symptom Scale) may be well suited to clinical situations, as they are shorter in duration and require similar efforts with regards to training. Plus, the addition of service-user rated measures may also be important going forward in clinical practice, such as the Motivation and Pleasure Self-Report (MAP-SR), which would be a positive step towards service user inclusivity.

Research implications revolve around continuing to explore interventions for amotivation in psychosis, alongside reaching an agreement with regards to symptom measurement.

#### *8.4.2. Empirical Papers*

The empirical projects highlighted the complexity of functional difficulties in psychosis. While possible selves were not found to be associated with functioning and did not appear to change as a result of SRCBT, there are still questions unanswered with regards to this novel area. Possible selves may require time to change, following observed behavioural change. Equally, change in possible selves may not be necessary to improve functioning in people with psychosis and particularly low functioning. However, they still provide a useful clinical tool for discussion of the individual's hopes and fears for the future. It could be considered that simply bringing into mind possible selves as part of the therapeutic process provides enough positive benefits in the form of goal-setting and personalisation of treatment.

### **8.5. Conclusions**

This thesis has explored some complex concepts and theories with regards to recovery from psychosis. Further research is warranted in order to continue development of psychological and psychosocial treatments for amotivation. Consensus on the use of the most valid tools for measuring amotivation is also required, in order to gain a better understanding of the impact of current treatments. This thesis also explored the role that possible selves may play in functional recovery. The profile of possible selves in people with psychosis and low functioning suggested that generating possible selves was challenging, balance and specificity was low, feared selves were particularly enmeshed and there was a moderate level of optimism for achieving hoped-for selves. Possible selves generally did not appear to relate to functioning, and appeared difficult to change in populations with particularly low functioning. There may be a role for eliciting possible selves in order to understand an individual's personal goals, which may then be used to tailor therapy targets.

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## **Appendices**

Appendix A – Fowler et al. (2009) Improving Social Recovery in Psychosis paper

Appendix B – Consent Email from Dr David Fowler to use ISREP Data

Appendix C – Possible Selves Inventory (PSI) measure

Appendix D – The Journal of Mental Health Author Guidelines

Appendix E – Schizophrenia Research Author Guidelines

Appendix F – Possible Selves Coding Manual

Appendix G – Coding Manual Version Log

## Appendix A - Fowler et al. (2009) Improving Social Recovery in Psychosis Paper

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ORIGINAL ARTICLE

## Cognitive behaviour therapy for improving social recovery in psychosis: a report from the ISREP MRC Trial Platform study (Improving Social Recovery in Early Psychosis)

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**Background.** This study reports on a preliminary evaluation of a cognitive behavioural intervention to improve social recovery among young people in the early stages of psychosis showing persistent signs of poor social functioning and unemployment. The study was a single-blind randomized controlled trial (RCT) with two arms, 35 participants receiving cognitive behaviour therapy (CBT) plus treatment as usual (TAU), and 42 participants receiving TAU alone. Participants were assessed at baseline and post-treatment.

**Method.** Seventy-seven participants were recruited from secondary mental health teams after presenting with a history of unemployment and poor social outcome. The cognitive behavioural intervention was delivered over a 9-month period with a mean of 12 sessions. The primary outcomes were weekly hours spent in constructive economic and structured activity. A range of secondary and tertiary outcomes were also assessed.

**Results.** Intention-to-treat analysis on the combined affective and non-affective psychosis sample showed no significant impact of treatment on primary or secondary outcomes. However, analysis of interactions by diagnostic subgroup was significant for secondary symptomatic outcomes on the Positive and Negative Syndrome Scale (PANSS) [ $F(1, 69) = 3.99, p = 0.05$ ]. Subsequent exploratory analyses within diagnostic subgroups revealed clinically important and significant improvements in weekly hours in constructive and structured activity and PANSS scores among people with non-affective psychosis.

**Conclusions.** The primary study comparison provided no clear evidence for the benefit of CBT in a combined sample of patients. However, planned analyses with diagnostic subgroups showed important benefits for CBT among people with non-affective psychosis who have social recovery problems. These promising results need to be independently replicated in a larger, multi-centre RCT.

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**Key words:** Cognitive behaviour therapy, psychosis, social recovery.

### Introduction

Poor social outcome is often reported in psychosis. Long-term follow-up studies suggest that less than 50% of people with non-affective psychosis achieve a social recovery, and only 10–20% of people return to competitive employment (Johnstone *et al.* 1990; Jablensky *et al.* 1992; Harrison *et al.* 1996), despite the

majority suggesting that they want to work (Mueser *et al.* 2001). Around 50% of people with severe affective psychosis also fail to return to work and remain disabled (Tsai *et al.* 2001). Long-term follow-up studies indicate that poor social outcomes in psychosis tend to emerge early, often become stable, and are closely associated with long-term social course (Strauss & Carpenter, 1977; Carpenter & Strauss, 1991). The development of an effective intervention to improve social recovery in affective and non-affective psychosis could potentially have important long-term benefits, especially if applied to cases who have developed poor social functioning in the early course of the disorder.

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Effective interventions to improve psychosocial recovery in psychosis may need to consider factors associated with impairments in a sophisticated manner. These effects may include residual psychotic symptoms, sensitivity to stress, and underlying cognitive deficits. In particular, care needs to be taken not to overstimulate. Past clinical trials of interventions that have attempted to promote social activity without taking careful account of sensitivity to psychosis and anxiety have shown increased risk of relapse, especially among people who still show psychotic symptoms (Hogarty *et al.* 1974, 1997). Cognitive behaviour therapy (CBT) may provide a useful basis for developing such an intervention. Several studies have reported evidence for the efficacy of CBT on depression and negative symptoms, where these have been assessed as secondary outcomes (Sensky *et al.* 2000; Turkington *et al.* 2002; Durham *et al.* 2003; Gumley *et al.* 2003; Wykes *et al.* 2008). However, these trials used relatively insensitive measures of social functioning and no trial to date has directly targeted changes in social recovery as a primary outcome. An optimal intervention for people with psychosis who want to work but who have some degree of residual problems might be for therapists to combine techniques of CBT with those of vocational case management (Mueser *et al.* 2001).

We have developed a novel CBT intervention specifically focused on improving constructive social behaviour while managing sensitivity to stress, social anxiety and psychotic symptoms. Social recovery is a complex construct probably best assessed across several domains. Although engagement in competitive work will always represent a key marker of social recovery (Mueser *et al.* 2001), it is not the only marker of social improvement. Engagement in other domains of activity such as education, household chores, constructive voluntary work and structured social activities reflect realistic and meaningful recovery goals for many service users and carers, and also have wider economic benefits. In this study we therefore used time spent engaged in structured social and constructive economic activity as our primary measure of outcome. We were also interested in assessing the impact of the intervention on a range of tertiary outcomes including hopelessness, psychotic symptoms, depression and anxiety. These reflect common psychological responses to the experience of psychosis and associated social adversity that are important in their own right (Birchwood, 2003) but that also have important associations with symptomatic outcomes and withdrawn and amotivated social behaviour (Fowler *et al.* 2006).

This study was designed as a trial platform to investigate the feasibility and initial efficacy of a new

CBT intervention to improve social recovery in psychosis. We aimed to specifically target young people in the early stages of psychotic disorder who were showing persistent signs of poor social functioning and unemployment despite previous efforts by early intervention and mental health services to promote social recovery after the first episode. Our aim was also to clarify and define selection criteria and we therefore included people with both affective and non-affective psychosis. Previous studies have shown that people with affective psychosis tend to make better recoveries after the first episode (Macmillan *et al.* 2007) and have better social outcomes generally than people with non-affective psychosis (Werry *et al.* 1991; Cannon *et al.* 1997; Jarbin *et al.* 2003). We therefore aimed to explore the differential effect of the intervention on affective and non-affective psychosis.

## Method

### Design

The Improving Social Recovery in Early Psychosis (ISREP) study was a single-blind randomized controlled trial (RCT) comparing cases who received Social Recovery Cognitive Behaviour Therapy (SRCBT) in addition to treatment as usual (TAU) (treatment arm) with those receiving TAU alone (control arm). Participants were randomized to CBT or control following a baseline assessment and initial screening for suitability. Randomization was stratified for diagnosis (affective/non-affective psychosis was considered a prognostic factor) and administrative centre (Norfolk/Cambridgeshire). Post-treatment assessments were conducted at the end of the intervention phase (9 months following randomization). The primary outcome was weekly hours spent in constructive economic activity and structured activity. Secondary outcomes included psychotic symptoms, anxiety and depression, and hopelessness. Baseline and post-treatment assessments were conducted by research assistants who were blind to group allocation.

### Participants

We aimed to identify a group of young people with psychosis, early in the course of disorder, showing signs of persisting social disability problems despite previous attempts by mental health services to promote social recovery following the first episode. Therefore, our inclusion criteria were: (1) current diagnosis of affective or non-affective psychosis (including schizophrenia, schizo-affective disorder, bipolar disorder, and psychotic depression) but not first episode; (2) illness duration  $\leq 8$  years. Onset of illness

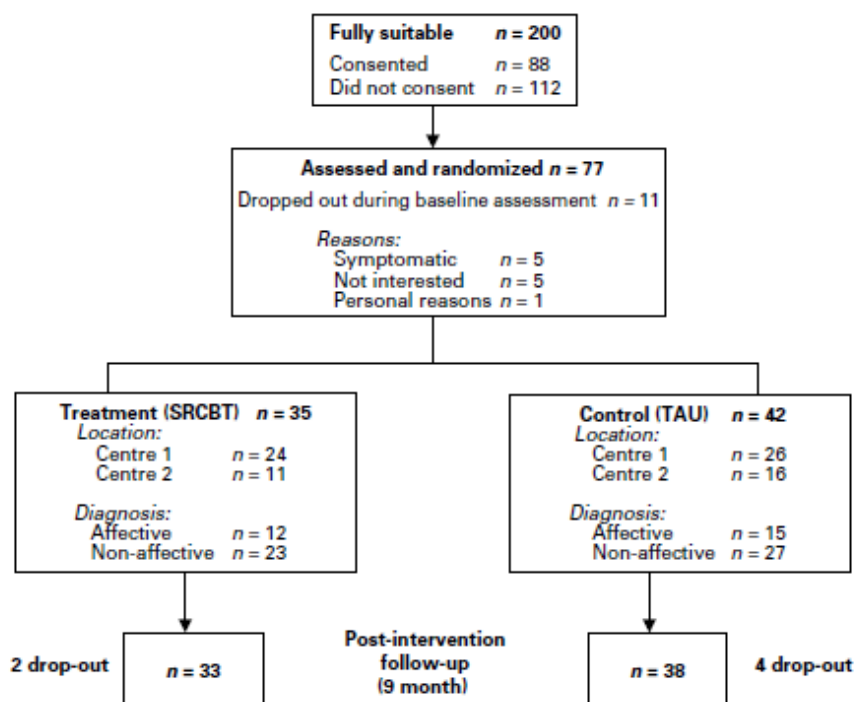


Fig. 1. CONSORT diagram of flow of participants through the trial. SRCBT, Social Recovery Cognitive Behaviour Therapy; TAU, treatment as usual.

was defined as the first contact with psychiatric services for psychotic symptoms. This was checked by research assistants from information in case-notes; (3) positive psychotic symptoms (hallucinations and delusions) in relative remission [less than moderate severity, scoring  $\leq 4$ , on individual symptoms on the Positive and Negative Syndrome Scale (PANSS)]; and (4) unemployed status or currently engaged in <16 h paid employment or education. Participants were excluded if: (1) the psychotic disorder was thought to have an organic basis; (2) acute psychosis was present; and (3) the primary diagnosis was drug dependency on opiates or cocaine.

The study protocol was approved by local ethics committees and all participants gave written consent to participate following a formal explanation of the study.

#### Participant flow and characteristics

Participants were recruited from secondary mental health services in the East Anglia region of the UK, localized around two sites. The site based in Norfolk (centre 1) recruited from cases in the Norfolk and Waveney Mental Health NHS Foundation Trust. A site based in Cambridgeshire (centre 2) recruited from cases in two mental health trusts: the Cambridgeshire

and Peterborough Mental Health Partnership and the West Suffolk Hospital National Health Service (NHS) Trust. Together the two centres recruited from a catchment area with a semi-rural population of around two million people, living in small cities, towns and rural areas.

The CONSORT flow diagram in Fig. 1 shows the initial referral rate, allocation by centre and diagnosis, and the level of drop-out from the main outcome assessment. A total of 200 suitable participants were identified, of whom 77 individuals who consented to participate were recruited into the study. The average age was 29 (range 18–52) years. Participants had been in contact with services for an average of 5 years, and the average duration of unemployment was 209 weeks. Fifty-five participants were male (71%). The majority of the sample had a diagnosis of non-affective psychosis (65%).

Thirty-five participants were randomized to the treatment condition and 42 to TAU, the control condition. Key clinical and social characteristics of the sample are summarized in Table 1. This shows that randomization resulted in balanced groups in terms of demographics, diagnosis, duration of illness, and social characteristics. Although not shown in Table 1, the affective and non-affective psychosis subgroups were also well balanced in terms of clinical and social

1630 D. Fowler *et al.***Table 1.** Baseline characteristics of participants

|  | SRCBT (n = 35) | TAU (n = 42)  | Total (n = 77) |
|--|----------------|---------------|----------------|
| <b>Demographic characteristics</b>   |                |               |                |
| Mean age in years (s.d.)   | 27.8 (6.1)     | 30.0 (7.2)    | 29.0 (6.8)     |
| Gender (% male)  | 71.4           | 71.4          | 71.4           |
| Ethnicity (% white)  | 85.7           | 95.2          | 90.9           |
| Diagnosis (% non-affective psychosis)  | 65.7           | 64.3          | 64.9           |
| Mean duration of illness in years (s.d.)   | 4.9 (2.2)      | 4.8 (2.4)     | 4.8 (2.3)      |
| Medication level in mg (s.d.)<br>(chlorpromazine equivalence)                    | 265.1 (200.8)  | 223.7 (167.0) | 242.2 (182.7)  |
| <b>Social and clinical characteristics</b>                                       |                |               |                |
| Mean duration of unemployment in weeks   | 202.4 (146.0)  | 214.8 (209.2) | 209.1 (182.2)  |
| Time use in hours per week   |                |               |                |
| Constructive economic activity   | 14.8 (20.2)    | 10.4 (13.9)   | 12.4 (17.1)    |
| Structured activity  | 30.4 (19.9)    | 27.8 (19.2)   | 29.0 (19.4)    |
| Current IQ   | 101.8 (11.3)   | 103.7 (11.3)  | 102.8 (11.3)   |
| Number of contacts with secondary mental<br>health services in the past 6 months | 32.1 (35.3)    | 25.9 (23.1)   | 32.1 (35.3)    |
| Number of contacts with voluntary services<br>in the past 6 months               | 11.0 (18.3)    | 7.4 (14.4)    | 9.0 (16.2)     |

SRCBT, Social recovery cognitive behaviour therapy; TAU, treatment as usual; s.d., standard deviation.

characteristics. There were no differences between the affective and non-affective groups in terms of duration of either illness or unemployment. However, the affective subgroup were slightly older.

### Treatments

#### SRCBT

Therapy consisted of three stages and combined techniques of CBT with vocational case management. Stage 1 involved developing a formulation of the person in social recovery. This consisted of assessment and history taking with respect to personal motivation, pre-morbid hopes/expectations and goals that had been changed, possibly with respect to the impact of illness. The focus was on identifying meaningful personal goals that could be linked with achievable day-to-day activity targets and thus address motivation and hopelessness. This often involved validation and acceptance of barriers, threats and difficulties, while focusing on promoting hope for social recovery.

Stage 2 involved identifying and working towards medium- to long-term goals. A particularly important aspect of this was identifying specific pathways to meaningful new activities. Where relevant, this included referral to relevant vocational agencies, or alternatively direct liaison with employers or education providers. Cognitive work at this stage involved promoting a sense of agency and addressing hopelessness, feelings of stigma and negative beliefs about self and others.

Stage 3 involved the active promotion of social activity, work, education and leisure linked to meaningful goals. This involved promotion of activity by behavioural experiments, while managing symptoms of anxiety and low-level psychotic symptoms. Mastery and pleasure in achieving goals was reviewed with respect to gains achieved in social opportunities in work, education and leisure.

Specific therapeutic procedures used in the study were drawn from existing CBT manuals. Prominent among these were procedures to focus on self-regulation of psychotic symptoms and improve social recovery from psychosis (e.g. chapters 11 and 15 of Fowler *et al.* 1995). Therapists were also encouraged to use techniques of activity scheduling and reviewing mastery and pleasure, as described in Beck *et al.* (1979); and behavioural experiment approaches to manage social anxiety, as described in Butler (1999). Therapists were also encouraged to combine therapist role with case management roles typical of individual placement and support working practices; for example by adopting an assertive outreach worker style of contact, most frequently visiting people at home or in the workplace. Therapists were also encouraged to adopt a pragmatic and problem-solving approach in assisting people to overcome work-related problems. This often involved setting up joint interviews with clients and employment and education providers to discuss potential problems.

Therapy in Norfolk was carried out by case managers who had no previous formal training in CBT, but

who had over 2 years' experience working in an early intervention in psychosis team, under the supervision of expert CBT therapists. Therapy in the Cambridge-based centre was carried out by CBT therapists who had attended approved courses prior to working on the trial. Therapy in both centres was supervised by experienced CBT specialists. Adherence and competence were monitored using tape recordings and individual and group supervision. Participants received a mean of 12 sessions (s.d. = 7).

#### TAU

Both sites provided active case management by multi-disciplinary secondary care mental health teams. The services provided by the Norfolk and Waveney Mental Health Partnership Trust (centre 1) had a pre-existing active policy of promoting social recovery in case management. This consisted of multi-disciplinary case management, and was backed by the availability of services to provide supported employment for people with severe and enduring mental health problems. Such an approach was consistently available for all cases. The Cambridgeshire site (centre 2) also had active multi-disciplinary case management, although supported employment agencies were less consistently available as part of generic services.

#### Measures

##### Primary outcome

*Time Use Survey* (adapted from the UK 2000 *Time Use Survey*; Short, 2006). This measure consists of a semi-structured interview in which the participant is asked about how they have spent their time over the past month. Activities enquired about include: work, education, voluntary work, leisure, sports, hobbies, socializing, resting, housework/chores, childcare, and sleep. Time spent on each of the activities is calculated in terms of the number of hours per week allocated to that activity over the past month. Two summary measures were derived from the Time Use Survey: hours in 'Constructive Economic Activity' and hours in 'Structured Activity'. Constructive economic activity is calculated as the sum of hours per week over the past month spent in work, education, voluntary work, housework and chores, and childcare. The constructive economic activity assessment could be undertaken by telephone contacts and triangulated with carer reports and also face-to-face interviews, thus maximizing available data at post-treatment. Structured activity is calculated as the sum of hours per week over the past month spent in constructive economic activity, but also includes voluntary and structured leisure activities, sports and hobbies. The

structured activity assessment required a face-to-face interview with the participant.

##### Secondary outcomes

*PANSS* (Kay *et al.* 1987). The PANSS is a 30-item rating scale developed to assess symptoms associated with psychosis. Symptoms occurring over the past week are rated. PANSS total scores were used.

*Beck Hopelessness Scale* (BHS; Beck & Steer, 1988). The BHS is a 20-item self-report scale designed to assess the way an individual perceives the future. Items are rated using a dichotomous true/false response format. Total scores from the BHS were used.

*Quality of Life Scale* (QLS; Heinrichs *et al.* 1984). The QLS is a 21-item semi-structured interview designed to assess the functional impairments associated with psychosis, including problems with interpersonal relationships and occupational role functioning. Two scores were used: the total QLS score and the score on the Instrumental Role Functioning subscale (e.g. employment, accomplishment, role satisfaction).

##### Tertiary assessments

Tertiary outcomes and other measures included the Beck Depression Inventory (BDI-II; Beck *et al.* 1996), the Beck Anxiety Inventory (BAI; Beck & Steer, 1987), the Social and Occupational Functioning Assessment Scale (SOFAS; Goldman *et al.* 1992), and the Camberwell Assessment of Needs (CAN; Slade *et al.* 1996). The Client Service Receipt Inventory (CSRI; Beecham & Knapp, 1992) was also administered to assess service use over the period of the trial. All self-reports were completed independently by participants. The GAS, CAN, CSRI and SOFAS were completed with case managers where appropriate.

##### Reliability of research assessments and blinding procedures

Baseline and post-treatment assessments were conducted by research assistants who were independent of treatment delivery and randomization. Every effort was made to ensure they were kept blind to allocation. Formal training in all measures was provided and interviews were audio-taped for reliability and quality control. Research assistants met regularly throughout the trial to maintain reliability of procedures and ratings. Where blindness was broken, another research assistant conducted the post-treatment assessment. Ninety-three per cent of the post-treatment assessments were completed blind. The research assistants made allocation guesses after post-treatment

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assessments. These were 58% correct for CBT and 64% correct for TAU. This is within the levels that would be expected by chance.

### Statistical analyses

#### Hypotheses

*Primary hypothesis.* It was predicted that the provision of SRCBT added to case management (TAU) would improve levels of constructive economic and structured activity in comparison to cases receiving TAU alone.

*Secondary hypothesis.* We predicted that SRCBT added to TAU would improve on secondary outcomes of symptoms of psychosis, emotional disorder and hopelessness.

We also aimed to explore the differential effect of therapy in affective and non-affective psychosis. Our trial platform legitimized limited investigation of research questions regarding interactions with diagnostic group and centre. However, we understood that these would be underpowered. These investigations were undertaken to inform the design of future research, for example selection criteria for a larger, multi-centre RCT for independent replication/extension.

#### Sample size and power of the study

The purpose of the study was to conduct exploratory efficacy research on a new intervention to improve social recovery in psychosis. The sample size was predicated on testing for an effect of SRCBT on activity with an effect size of around 0.6. Sample sizes with a minimum of 30 in each group would then be sufficient to detect such an effect with 90% power.

#### Analysis plan

We first report descriptive statistics for each primary and secondary outcome at baseline and post-treatment for the combined study sample, and then the sample split by diagnosis. These estimates provide the basis for a provisional estimate of effect size, albeit biased by drop-outs and potential non-random differences at baseline.

Primary analyses and significance testing were conducted on an intention-to-treat basis. Following the protocol, ANCOVA models were used to test the significance of differences between the treatment and control groups. For each ANCOVA, outcome at the end of treatment (e.g. hours in structured activity at post-treatment) was used as the dependent variable; allocation to treatment, centre, and diagnosis were used as fixed factors; and three key variables assumed

to be associated with outcome and predictive of drop-out were used as covariates. The covariates were: baseline outcome (e.g. hours in structured activity at baseline); baseline schizotypal symptoms score; and duration of unemployment. Non-significant interactions were removed before final testing for main effects. Where initial testing indicated the presence of an interaction between treatment and diagnosis, we planned to undertake a series of further ANCOVAs for each diagnostic group (affective/non-affective psychosis). These were similar to the whole-group ANCOVAs but used allocation to treatment and location as fixed factors, thus allowing assessment of treatment effect independently of the diagnosis by treatment interaction. These analyses allow for the presence of missing outcome data under the assumption that the data are missing at random (MAR), conditional on the covariates included in the regression model (i.e. allocation, schizotypal symptoms, duration of unemployment, and baseline values of the outcome variables).

### Results

Primary outcome data (constructive economic activity) were available for 92% of the recruited sample. Eighty per cent of the sample completed post-treatment face-to-face interviews, providing structured activity and secondary outcome assessments. Questionnaire assessments for secondary outcomes (e.g. BDI, BAI, BHS) were available for around 75% of the sample. Descriptive statistics for all outcome variables are given in Table 2. These are broken down by treatment and diagnostic group at baseline and post-treatment and derive from data available at post-treatment assessment (i.e. completers).

#### Contacts with secondary mental health services

There were no differences in the level of support given to treated cases and controls at baseline or the number of contacts available for participants between the two sites. However, the TAU group received more contacts with secondary mental health services than the treatment group over the course of the trial (mean = 11.9, s.d. = 11.3 versus mean = 9.7, s.d. = 18.8;  $t = 2.02$ ,  $p = 0.05$ ). The difference in the mean number of contacts with voluntary services was not significant.

#### Outcomes for the combined group (non-affective and affective psychosis)

Table 2 shows that all participants made large improvements in most domains, including activity and symptoms, as a result of both CBT and TAU conditions.

Table 2. Descriptive statistics for primary, secondary and mediator variables by treatment and diagnosis

|                                |    | Total sample |             | Non-affective |             | Affective   |             |
|--------------------------------|----|--------------|-------------|---------------|-------------|-------------|-------------|
|                                |    | TAU          | CBT         | TAU           | CBT         | TAU         | CBT         |
| <b>Primary outcomes</b>        |    |              |             |               |             |             |             |
| Structured Activity            | T1 | 27.9 (19.2)  | 30.4 (19.9) | 27.7 (20.0)   | 25.1 (10.9) | 28.2 (18.4) | 40.6 (28.5) |
|                                | T2 | 34.4 (20.6)  | 40.0 (22.8) | 31.8 (21.3)   | 37.1 (17.2) | 39.8 (18.9) | 45.4 (31.2) |
| Constructive Economic Activity | T1 | 10.4 (13.9)  | 14.8 (20.2) | 8.7 (13.3)    | 10.3 (7.3)  | 13.6 (14.7) | 23.6 (32.1) |
|                                | T2 | 15.6 (15.9)  | 19.2 (21.0) | 11.9 (13.6)   | 14.7 (12.9) | 22.4 (18.1) | 28.6 (30.6) |
| <b>Secondary outcomes</b>      |    |              |             |               |             |             |             |
| PANSS Total                    | T1 | 56.0 (10.3)  | 57.6 (11.6) | 58.1 (9.4)    | 57.5 (10.8) | 52.1 (11.0) | 58.0 (13.4) |
|                                | T2 | 50.4 (10.1)  | 50.5 (9.2)  | 53.2 (8.3)    | 50.3 (8.2)  | 44.5 (11.3) | 50.7 (11.3) |
| Beck Hopelessness              | T1 | 8.7 (5.8)    | 8.9 (5.8)   | 8.0 (5.5)     | 8.3 (5.5)   | 10.2 (6.4)  | 10.2 (6.3)  |
|                                | T2 | 7.9 (5.8)    | 6.4 (4.7)   | 8.2 (5.9)     | 4.9 (2.3)   | 7.3 (5.9)   | 9.3 (6.6)   |
| Quality of Life                | T1 | 62.7(14.8)   | 66.8 (14.8) | 58.2 (11.0)   | 64.1 (10.2) | 70.7 (17.5) | 71.7 (20.5) |
|                                | T2 | 72.5 (18.5)  | 76.1 (14.0) | 67.1 (15.0)   | 72.8 (12.3) | 83.8 (20.5) | 82.3 (15.5) |
| Role Functioning               | T1 | 5.6 (3.8)    | 6.6 (4.1)   | 4.6 (2.9)     | 5.8 (3.5)   | 7.4 (4.6)   | 8.2 (4.9)   |
|                                | T2 | 7.2 (5.7)    | 9.0 (5.6)   | 6.1 (5.3)     | 8.3 (5.6)   | 9.5 (5.9)   | 10.5 (5.4)  |
| <b>Tertiary outcomes</b>       |    |              |             |               |             |             |             |
| SOFAS                          | T1 | 48.9 (7.9)   | 51.5 (9.0)  | 47.3 (6.8)    | 50.1 (6.8)  | 51.8 (9.1)  | 54.2 (12.1) |
|                                | T2 | 53.8 (12.3)  | 54.8 (9.4)  | 51.5 (11.3)   | 53.7 (9.2)  | 58.3 (13.3) | 56.9 (10.1) |
| CAN Number of Needs            | T1 | 6.9 (3.4)    | 5.6 (2.3)   | 7.1 (3.5)     | 6.0 (2.4)   | 6.4 (3.2)   | 4.9 (2.2)   |
|                                | T2 | 5.5 (2.5)    | 5.3 (1.8)   | 6.2 (2.3)     | 5.5 (1.8)   | 4.1 (2.3)   | 5.0 (1.9)   |
| Beck Depression                | T1 | 22.6 (13.8)  | 21.1 (13.9) | 21.4 (14.4)   | 17.9 (11.3) | 24.7 (12.8) | 27.0 (16.5) |
|                                | T2 | 14.4 (12.7)  | 13.6 (10.6) | 14.3 (11.5)   | 11.3 (7.5)  | 14.7 (14.9) | 17.2 (14.0) |
| Beck Anxiety                   | T1 | 17.0 (11.8)  | 16.9 (13.5) | 16.6 (13.0)   | 14.8 (12.8) | 17.7 (9.8)  | 21.1 (14.5) |
|                                | T2 | 13.2 (10.5)  | 13.0 (12.8) | 12.3 (9.7)    | 11.6 (11.9) | 14.7 (12.0) | 15.3 (14.6) |

TAU, Treatment as usual; CBT, cognitive behaviour therapy; PANSS, Positive and Negative Syndrome Scale; SOFAS, Social and Occupational Functioning Assessment Scale; CAN, Camberwell Assessment of Needs; T1, baseline assessment; T2, post-treatment (9 months).

Values given as mean (standard deviation).

There were no main effects of CBT treatment for any of the outcome variables. There were, however, strong trends suggesting treatment by diagnosis interactions for PANSS [ $F(1,69)=3.99, p=0.05$ ] and CAN [ $F(1,69)=3.27, p=0.08$ ]. There were no main effects of centre, or centre by diagnosis interactions for any of the outcome variables in the combined group.

#### Non-affective psychosis group

The non-affective group consisted of 50 cases (23 treatment, 27 controls) for whom 43 post-treatment assessments were available. Descriptive results are reported in Table 2. Table 3 shows the results of significance testing for the main outcome variables in the non-affective subgroup. The ANCOVAs for the non-affective psychosis group showed significant benefits for treatment (CBT) on constructive economic activity, structured activity, and PANSS; and trends for improvements in hopelessness, instrumental role functioning, and number of unmet needs (CAN). There

was also a significant main effect of centre for BHS scores favouring centre 1 [ $F(1,44)=6.08, p=0.02$ ]; and significant treatment by centre interactions for structured activity and depression. The treatment by centre interactions were consistent with a relatively large treatment effect on activity favouring the expert therapist centre (centre 2). However, effects on depression tended to favour the non-expert therapist centre (centre 1).

#### Affective psychosis group

There were 27 cases in the affective psychosis group who were predominantly people with bipolar disorder. The results for nine cases in the treatment group and 12 in the control group were available post-treatment. The descriptive statistics in Table 2 show suggestions of effects favouring CBT on anxiety and beliefs about self but few indications of effects on activity or other outcomes. However, there were no significant effects for treatment or centre on any of the

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**Table 3.** Results of model estimates of treatment effects within the non-affective psychosis group (using expectation-maximization estimates for missing data)

|                                     | Main effect (of CBT)                | Interaction (CBT × centre)         |
|-------------------------------------|-------------------------------------|------------------------------------|
| <b>Primary outcome variables</b>    |                                     |                                    |
| Structured Activity                 | $F(1, 43) = 11.73, p = 0.001^{***}$ | $F(1, 43) = 5.44, p = 0.02^*$      |
| Constructive Economic Activity      | $F(1, 44) = 6.19, p = 0.02^*$       | $F(1, 43) = 0.79, p = 0.38$        |
| <b>Secondary outcome variables</b>  |                                     |                                    |
| PANSS Total                         | $F(1, 44) = 4.56, p = 0.04^*$       | $F(1, 43) = 0.05, p = 0.82$        |
| Quality of Life                     | $F(1, 44) = 1.54, p = 0.22$         | $F(1, 43) = 0.16, p = 0.69$        |
| Instrumental Role Functioning       | $F(1, 44) = 3.32, p = 0.08^{***}$   | $F(1, 43) = 0.59, p = 0.45$        |
| Beck Hopelessness Scale             | $F(1, 44) = 3.79, p = 0.06^{***}$   | $F(1, 43) = 3.60, p = 0.07^{****}$ |
| <b>Tertiary outcome variables</b>   |                                     |                                    |
| Beck Depression Inventory           | $F(1, 43) = 0.03, p = 0.87$         | $F(1, 43) = 9.95, p = 0.003^{**}$  |
| Beck Anxiety Inventory              | $F(1, 44) = 0.001, p = 0.97$        | $F(1, 43) = 0.08, p = 0.78$        |
| Social and Occupational Functioning | $F(1, 44) = 2.43, p = 0.13$         | $F(1, 43) = 0.75, p = 0.39$        |
| CAN Number of Needs                 | $F(1, 44) = 2.96, p = 0.09^*$       | $F(1, 43) = 0.30, p = 0.58$        |

CBT, Cognitive behaviour therapy; PANSS, Positive and Negative Syndrome Scale; CAN, Camberwell Assessment of Needs.  
\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , \*\*\*\*  $p < 0.10$ .

outcome variables. The main observation is of striking improvements in activity levels for the affective psychosis group in both the treatment and control conditions.

#### Admissions to hospital

Ten participants had admissions into hospital during the trial. Six of these were in the treatment group and four were in the control group. The average number of days spent in hospital for the whole sample over the course of the trial was 3.8 (s.d. = 17.2). In the 6 months prior to participating in the trial there had been 15 admissions in the sample. Seven of these were in the group allocated to TAU, and eight were in the group allocated to receive treatment. The average number of days spent in hospital for the whole sample in the 6 months preceding the trial was 5.8 (s.d. = 14.4). Thus, participating in the trial did not seem to have an adverse effect on relapse rates.

#### Discussion

This trial was designed to refine methods and estimate the effect size of the use of SRCBT on the primary outcome of hours in constructive social activity; and secondary outcomes of psychotic symptoms, emotional disorder, and hopelessness. The primary study comparison provided no clear evidence for the benefit of CBT on a combined sample of patients with affective and non-affective psychosis. However, a planned secondary analysis revealed some evidence for the potential of CBT to improving constructive and structured activity among a more homogeneous

sample of patients with non-affective psychosis with poor social outcomes relatively early in the course of disorder.

The indications of benefits for the cognitive behavioural intervention in non-affective psychosis are promising but require replication in a large multi-centre trial. These gains were large and clinically meaningful. There was an average gain of 12 h per week in structured activity for CBT in comparison to 4 h for TAU in the non-affective psychosis group. This was achieved in association with clinically meaningful and significant improvements in symptoms and hopelessness. The affective psychosis cases (mainly bipolar disorder) also showed large gains in both symptoms and activity but as this occurred in both treatment and control groups, it is likely to be the result of a response to TAU conditions and possibly the placebo effect of being involved in a trial.

The study provided a relatively strict evaluation of efficacy as large improvements also occurred in the control group on most of the target variables of outcome, including activity, symptoms and depression. These gains were unexpected as we had deliberately recruited a group of patients who had stable poor social outcome at recruitment and may be the result of a good response to the TAU provided. The affective psychosis group made particularly large gains in activity and depression in both control and treatment conditions. As cases in the affective and non-affective psychosis groups were well matched on clinical and social factors, the differences observed between these two groups are unlikely to be due to variables such as duration of either illness or unemployment. The findings may be more consistent with our recent

observations, and those of others, that bipolar disorder cases respond rapidly and with good social recovery outcomes to early intervention services compared with non-affective psychosis (Macmillan *et al.* 2007).

It was certainly the case that there was an active treatment factor in the TAU condition. All cases were in receipt of active treatment from secondary mental health teams. In both centres the control group received more than 20 contacts from these teams over the course of the trial, with some interventions aiming to improve social recovery and also providing generic case management. Informal observations also suggested that involvement in the therapy trial may have acted as a catalyst for those providing TAU to focus attention on the social recovery needs of cases in both the therapy and control groups. Furthermore, involvement in the trial assessment procedures for all cases provided several sessions of discussing, reviewing and monitoring social and symptomatic outcomes that may have had a beneficial effect. It is therefore important to interpret the impact of the study in terms of the effect size of providing an additional focused cognitive behavioural intervention over and above a good existing community mental health service.

Improvements in emotional disorder could be taken as support for the cognitive model underpinning the intervention, which focused on deliberately fostering positive self-esteem and hope while working towards adopting new social activities. The aim of the study was also to develop an intervention that deliberately linked improvements in meaningful activities with improvements in psychological well-being and self-esteem, while also managing risk of sensitivity to stress. In this regard it is important to note that there was no indication of any worsening of psychotic symptoms, as has been observed in other studies (Hogarty *et al.* 1974, 1997). Indeed, the findings suggest that symptoms improved. Clinical observations by therapists suggested the need to take particular care regarding initial increases in social anxiety symptoms associated with involvement in new activities. However, there was no significant increase in anxiety symptoms over the course of the intervention. We intend to explore the association between changes in emotional and psychological variables and changes in activity in future mediational analyses.

This study has highlighted that it was possible for case managers to provide hope and to manage many aspects of cognitive therapy work associated with SRCBT, within their existing case management style of work and skill base. However, there were suggestions that those therapists in the trial who had received more formal prior training (mainly in centre 1) achieved stronger effects, especially on activity. Supervision discussions and analysis of case-notes suggest

that these differences may have arisen from those therapists who had less formal training in CBT feeling less confident about using more structured active behavioural interventions, particularly in cases where assisting people to engage in new activities may lead to short-term increases in anxiety. At the present time, trained CBT therapists may be best placed to deliver the behavioural experiment aspects of this intervention, with rigorous levels of adherence and competence. However, this study clearly shows that case managers can deliver an intervention that accrues many significant benefits (particularly in terms of increasing hope); and that it may be possible to develop specific programmes of training focusing on improving their skills to apply the intervention in day-to-day practice at some stage in the future.

The results of this study need to be regarded with caution and as indicative of an effect size useful for researchers undertaking further research. The study was designed to be exploratory rather than confirmatory and lacks power. The results for the non-affective group are therefore suggestive, and those for the affective group are too small to warrant any formal conclusion. The study has been useful in indicating that the key outcome assessments are sensitive to change and, in the case of activity assessment, are relatively independent of other dimensions of outcome. The results also indicate the possible promise of undertaking further research on what seems to be a highly feasible intervention to improve activity in non-affective psychosis. A further large-scale trial of this type of intervention is warranted.

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#### Declaration of Interest

None.

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**Appendix B - Consent Email from Dr David Fowler to use ISREP Data**

**From:** Joanne Hodgekins (MED - Staff) [[J.Hodgekins@uea.ac.uk](mailto:J.Hodgekins@uea.ac.uk)]

**Sent:** 05 June 2018 12:02

**To:** David Fowler

**Cc:** Clio Berry

**Subject:** ISREP Possible Selves data

Hi David

Hope you are well

As per our previous discussions, I am supervising a Trainee who is planning to look at the ISREP possible selves data for her ClinPsyD thesis. The planned research questions are:

Does SRT have an impact on possible selves? This can be broken down into 4 elements:

1. Do possible selves become more balanced after SRT compared to control?
2. Does optimism about achieving hoped for possible selves increase after SRT compared to control?
3. Does enmeshment with mental illness in feared possible selves decrease after SRT compared to control?
4. Does the descriptive richness of possible selves increase after SRT compared to control?

If a change in possible selves is found after SRT compared to control, a secondary research question would be:  
Does change in possible selves mediate (explain) the relationship between SRT and positive functional outcomes?

As formal custodian of the ISREP data, would you be happy for her to go ahead with this? I've also copied Clio into this email as I thought she might be interested in being involved in some capacity too.

Many thanks

Jo

---

**From:** David Fowler <[D.Fowler@sussex.ac.uk](mailto:D.Fowler@sussex.ac.uk)>

**Sent:** 05 June 2018 13:20

**To:** c b <[C.Berry@sussex.ac.uk](mailto:C.Berry@sussex.ac.uk)>

**Cc:** Joanne Hodgekins (MED - Staff) <[J.Hodgekins@uea.ac.uk](mailto:J.Hodgekins@uea.ac.uk)>

**Subject:** Re: ISREP Possible Selves data

Hi

Of course looks a great idea.

Thanks

David

**Appendix C - Possible Selves Inventory (PSI) Measure**

## Possible Selves Questionnaire

Who will you be in the future? Each of us has some image or picture of what we will be like and what we want to avoid being like in the future.

**Hoped-for Possible Selves**

Think about what you would **ideally like** to be doing in the future.

- In the lines below, write what you **hope** you will be like and what you **hope** to be doing in the future.
- In the space next to each **hoped-for self**, mark NO (X) if you are not currently working on that goal or doing something about that **hoped-for self** and mark YES (X) if you are currently doing something to get to that **hoped-for self**.
- For each **hoped-for self** that you marked YES, use the space to the right to write what you are doing to attain that goal.

| I hope to be... | Am I am doing something to be that way |     | If yes, What I am doing now to be that way in the future? |
|-----------------|--|-----|---|
|                 | NO                                     | YES |   |
|                 |  |     |   |
|                 |  |     |   |
|                 |  |     |   |
|                 |  |     |   |

For each **hoped-for self** rate the following:

- How much does this describe you now?
  
- How much will this describe you in the future
  
- How much would you like this to describe you?

**Expected Possible Selves**

Think about what you expect to be doing in the future.

- In the lines below, write what you **expect** you will be like and what you **expect** to be doing in the future.
- In the space next to each **expected self**, mark NO (X) if you are not currently working on that goal or doing something about that **expectation** and mark YES (X) if you are currently doing something to get to that **expected self**.
- For each **expected self** that you marked YES, use the space to the right to write what you are doing to attain that goal.

| I expect to be... | Am I am doing something to be that way |     | If yes, What I am doing now to be that way in the future? |
|-------------------|--|-----|---|
|                   | NO                                     | YES |   |
|                   |  |     |   |
|                   |  |     |   |
|                   |  |     |   |
|                   |  |     |   |

For each **expected self** rate the following:

- How much does this describe you now?
- How much will this describe you in the future
- How much would you like this to describe you?

0 = not at all, 1 = a little, 2 = somewhat, 3 = quite a bit, 4 = very much

**Feared Possible Selves**

In addition to expectations and expected goals, we all have images or pictures of what we don't want to be like; what we don't want to do or want to avoid being. First, think a minute about ways you would not like to be in the future -- *things you are concerned about or want to avoid being like*.

- Write those concerns or **feared possible selves** in the lines below.
- In the space next to each concern or **feared self**, mark NO (X) if you are not currently working on avoiding that concern or to-be-avoided self and mark YES (X) if you are currently doing something so this will not happen in the future.
- For each concern or **feared self** that you marked YES, use the space at the end of each line to write what you are doing to reduce the chances that this will describe you in the future. Use the first space for the first concern, the second space for the second concern and so on.

| I fear... | Am I am doing something to avoid this? |     | If yes, What I am doing now to NOT be that way in the future? |
|-----------|--|-----|---|
|           | NO                                     | YES |   |
|           |  |     |   |
|           |  |     |   |
|           |  |     |   |
|           |  |     |   |

For each **feared self** rate the following:

- How much does this describe you now?
- How much will this describe you in the future
- How much would you like this to describe you?

0 = not at all, 1 = a little, 2 = somewhat, 3 = quite a bit, 4 = very much'

## Appendix D – The Journal of Mental Health Author Guidelines

### Instructions for authors

Thank you for choosing to submit your paper to us. These instructions will ensure we have everything required so your paper can move through peer review, production and publication smoothly. Please take the time to read and follow them as closely as possible, as doing so will ensure your paper matches the journal's requirements.

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### Contents

- About the Journal
- Peer Review
- Preparing Your Paper
  - Structure
  - Word Limits
  - Style Guidelines
  - Formatting and Templates
  - References
  - Checklist
- Using Third-Party Material
- Submitting Your Paper
- Data Sharing Policy
- Publication Charges
- Copyright Options
- Complying with Funding Agencies
- Open Access
- My Authored Works
- Reprints

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## Appendix E - Schizophrenia Research Author Guidelines

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- All tables (including titles, description, footnotes)
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##### Subdivision - numbered sections

Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

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State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

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Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

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A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

##### Results

Results should be clear and concise.

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This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

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The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

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If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a



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Reference to a journal publication with an article number:

Van der Geer, J., Hanraads, J.A.J., Lupton, R.A., 2018. The art of writing a scientific article. *Heliyon.* 19, e00205. <https://doi.org/10.1016/j.heliyon.2018.e00205>.

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Strunk Jr., W., White, E.B., 2000. *The Elements of Style*, fourth ed. Longman, New York.

Reference to a chapter in an edited book:

Mettam, G.R., Adams, L.B., 2009. How to prepare an electronic version of your article, in: Jones, B.S., Smith, R.Z. (Eds.), *Introduction to the Electronic Age*. E-Publishing Inc., New York, pp. 281–304.

Reference to a website:

Cancer Research UK, 1975. Cancer statistics reports for the UK.  
<http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/> (accessed 13 March 2003).

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[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T., 2015. Mortality data for Japanese oak wilt disease and surrounding forest compositions. Mendeley Data, v1.  
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## Appendix F - Possible selves Coding Manual

### Possible Selves Coding and Scoring Manual

#### Overview

The possible selves interview is a clinical interview that collects quantitative and qualitative data on possible selves, a concept introduced by Markus and Nurius (1986), defined as “representations of the self in the past and ... the self in the future. They are different and separable from the current now selves, yet are intimately connected to them”. In the standard administration of the possible selves interview, it is possible for a total of 9 verbatim descriptions of possible selves to be generated, 3 in each domain of hoped for, expected and feared. There is no direct request for the informant to be as specific as possible with their recall of possible selves; instead the selves are extemporaneously described. Each of the possible selves generated are then rated quantitatively on three questions: “how much does this describe you now?”, “how much will this describe you in the future?” and “how much would you like this to describe you?”. These questions use a 0-4 Likert style rating system, where 0 represents “not at all” and 4 represents “very much”.

This manual provides a step-by-step overview of the coding process of the data collected from the possible selves interview<sup>1</sup>, and is presented in the following order:

- 1) Coding general domains for each possible self, including personal development, possessions, emotional/physical wellbeing and interpersonal relations.
- 2) Coding specificity of possible selves.
- 3) Coding enmeshment of possible selves with mental health.
- 4) Coding balance of hoped and feared possible selves.
- 5) Coding optimism about achieving hoped for possible selves.

See Figure 1 for a diagrammatic overview.

<sup>1</sup>All examples of possible selves provided in this manual are fictitious and have been made for demonstration purposes only.

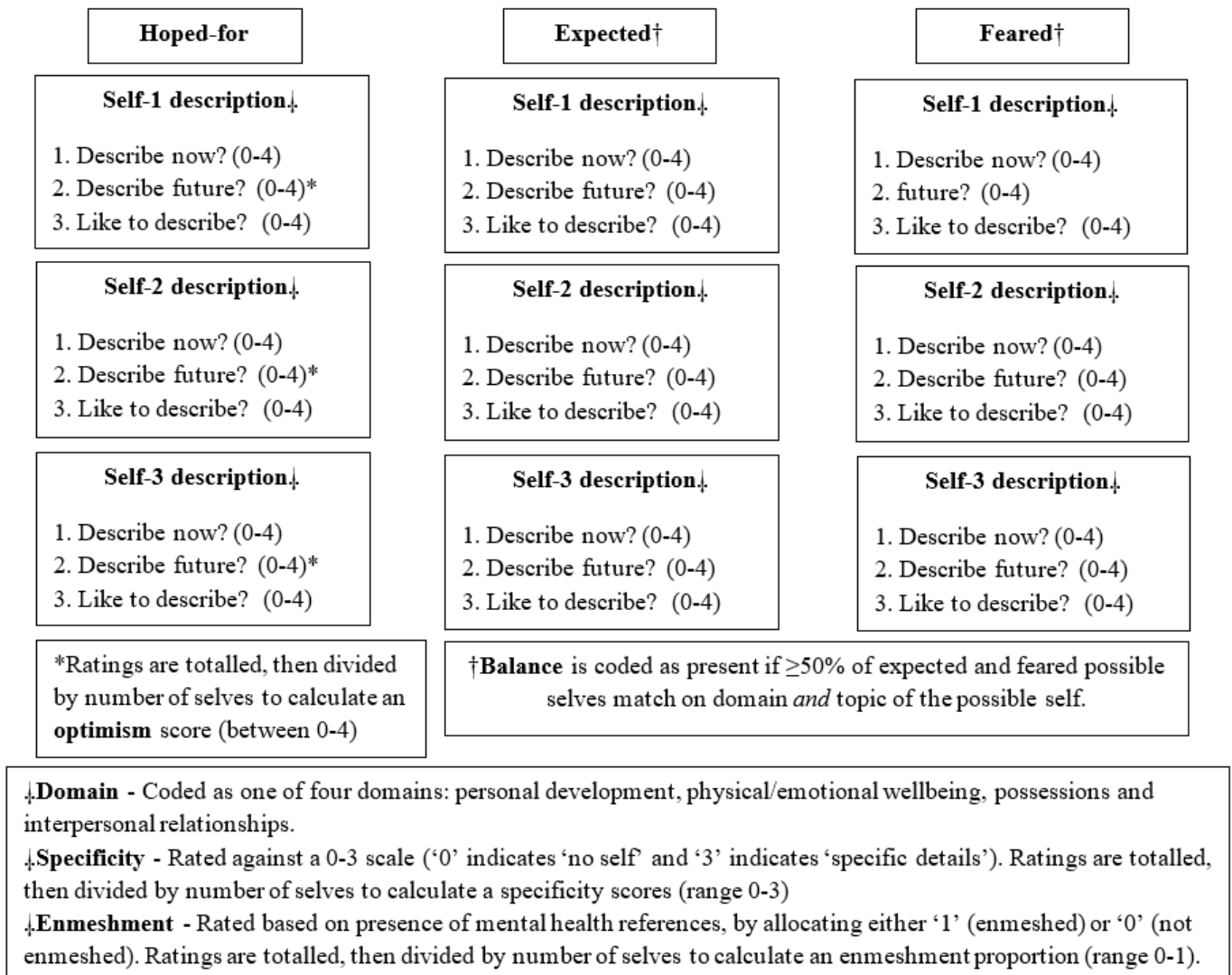


Figure 1. Diagram summarising the Possible Selves Interview data and details on the coding of general domain, optimism, balance, specificity and enmeshment.



**Coding possible selves into domains (adapted from Clarke, 2016)**

Each possible self will be coded in relation to 4 domains; personal development, possessions, emotional/physical wellbeing and interpersonal relations.

**0 Not Given/None**

When the participant is not able to respond with any possible self then it is included in this group.

If the participant answers in the past or present tense, score 0 (if there is a clear indication that they are not talking about the future tense).

**1 Personal Development**

When the content of the possible self is related to any personal development it is included in this category. Development can be in any area in which learning or time spent planning or working is necessary. Personal development is defined as:

- Educational references either occupationally or for personal interests. (E.g. Hobbies, college/university courses, travel.)
- Occupational references. (E.g. Work, jobs, earning)
- Reference to the development of skills (e.g. learning to drive)

**2 Possessions**

When the content of the possible self relates to material possessions it is included in this category. Possessions are defined as the following:

- Ownership/lack of any material object (E.g. Home, car)
- Financial references (E.g. Money, debt)

**3 Emotional/Physical Well Being**

When the content of the possible self relates to any physical or mental wellbeing it is included in this category. This includes emotionally related experiences and specific mental health concerns. This category includes the following:

- Feelings/emotions. (E.g. Being sad, happy, bad, lonely)
- Physical health. (E.g. Physical illness, injuries, severe accidents)
- Mental health references\* (Incl. Psychotic symptoms, stress, hospitalisation, suicide excl. alcohol and drugs selves)

**\*An additional note should be made when a specific mental health reference is made. Place a '1' in the designated column if present or '0' for not present. Score a maximum of one mental health reference per possible self, even if mental health is referenced more than once per possible self. See mental health references section below for further detail on coding.**

#### 4 Interpersonal Relations

When the content of the possible self relates to other people it is included in this category. As well as references to relationships with family and friends this also includes being alone. This includes the following:

- Family
- Friends
- Spending time with others

#### Additional information on coding domains:

- Each possible self should only be coded as having one domain. Where two domains are indicated, choose the first one mentioned.
- When rating the possible selves there should be minimal subjective decision making on the content of the possible self. Only rate the words, as they are in the possible self.
- If the participants refers to the past or present tense, score 0. There should be a clear lack of future thought to score 0.

#### Mental Health References

- An additional note should be made when a specific mental health reference is made within the possible self, using a '1' for present and '0' for not present.
- Possible selves that are scored as 0 (e.g. because they are clearly not future-focused) cannot be scored as having a mental health reference.
- Score a maximum of one mental health references per possible self, even if mental health is referenced more than once per possible self. The total mental health references can therefore not be more than 9 per informant (if 3 hoped, expected and feared possible selves are reported).
- Mental health references may include the specific words 'psychosis' or 'depression' or any other specific type of mental health problem, but may also include less specific

references such as ‘hearing voices’, ‘low mood’, ‘relapse’, ‘Sectioned’ and ‘worried’ where these refer to the consequence of mental ill health.

- References to changes to life or identity could also be considered a mental health reference e.g. ‘Wanting life to be like *before*’. When unsure, the context of the possible self can support in making this decision.
- The number of mental health references must be divided by the total number of possible selves to provide an average score.

### **Specificity**

This section looks at coding the specificity, or how specific, the possible selves are. ‘Specific’ is defined as being particular, exact, clearly defined or identified, and not vague (Stevenson, 2010).

#### **0 Not Given**

When the participant has not given a response and the possible self is left blank then it is scored in this domain.

#### **1 General Comment**

When the content of the possible self is short, non-descript (does not describe what the possible self would look like) and lacks any reference to specific people, places, time-frames or roles.

This includes short comments such as: “at college”, “a relationship”, “good/part/time/wellpaid job”, “feel better”, “relapse”, “a family/have kids”, “married with children”, “taking drugs or alcohol”, “stay the same” and “own place”.

#### **2 More Detailed**

When the content of the possible self describes what the possible self would look like in a little bit of detail. Generally more than one or two words would be used and qualifying characteristics (adjectives) will start to be used, which add detail to the possible self. This may include details such as colour, number, size and origin etc. General examples include: “In a loving relationship of mutual respect”, “seeing or hearing things again”, “a three-bedroomed house”, “full time job at £30,000-£40,000”, “part-time job, something simple to start with”.

The possible self will usually have **no more than one** reference to:

- a) Specific people - using names or positions in the family, such as 'John', 'parent(s)' or 'Aunt'. Words such as 'family' or 'friend(s)' do not count as specific people.
- b) Specific places or names - using names of cities, institutions or businesses.
- c) Explicit use of time-frames - such as 'in 2 weeks' or 'next year'. Ambiguous or implied time-frame by using terms such as "still" or "again" are not sufficient.
- d) Specific roles - such job roles (e.g. 'nurse', 'electrician') or other roles such as 'Christian', 'DJ' or 'footballer' or 'mother'.

Examples would be "a nurse or carer", which names the job role(s) but no time frame, name of company, place of work or any other detail.

Other examples include: "be an art teacher", "live in London", "6 children", "finish a PhD in maths" and "a job next year".

**Overall, the possible self is detailed enough that it does not meet the criteria for a score of 1 but does not have enough detail to obtain a score of 3.**

### 3 Specific Details

When the content of the possible self contains some detail and describes what the possible self would look like. The statement **must have one or more** references to specific people, places, time-frames or roles (as explained above) **OR** one reference to specific people, places and time-frames or roles *and* other additional details which elaborate further. Examples include: "job in engineering design with my dad" (reference to role and person) and "I'd like a job which fulfils my potential something like graphic design" (reference to role with elaboration on details).

It is **not sufficient** to have a short 2-3 word possible self with mention one reference to specific people, time-frames or roles with one qualifying characteristic (adjective), such as "be a successful DJ".

Other possible selves that would meet criteria of having specific details include: "working as a retail assistant at 'Johnny's' place", "at UEA studying Maths", "like to help mum/'Jane' financially", "More time to do something for myself, for example art or aerobics class" or "I would like to have my home decorated by interior designers".

### Additional information on coding for specificity

- Specificity scores are to be summed for each participant's hoped, expected and feared possible selves, resulting in a minimum score of 0 and a maximum score of 27. The

specificity score must then be divided by the total number of possible selves given to provide an average score.

- When rating the possible selves there should be minimal subjective decision making on the content of the possible self. Only rate the words, as they are in the possible self (using the guidance above).
- In situations where it is ambiguous or unclear which score is indicated for a possible self, the “benefit of the doubt” rule should be used. If a possible self is on the borderline between a score of 2 or 3, a score of 3 should be given if it could be reasonably considered to meet this specificity score. This decision can be further indicated where there is sufficient elaboration on a possible self or where the possible self is lengthier than what is normally seen in the lower coding score.

### **Enmeshment**

Enmeshment scores will be calculated by looking at possible selves conditional on mental health, as identified by coding with a ‘1’ if present and ‘0’ if not present. Up to 3 possible selves can be generated for each hoped-for, expected and feared selves. A summed enmeshment score ranging from 0-3 will be given for each hoped-for, expected and feared selves. This score can be divided by the number of selves given to account for variation in number of selves given per participant and provide an average score.

Examples that would **code ‘1’ (present)** for enmeshment: “Not hear voices again”, “come off tablets”, “end it all/end my life”, “go to mental hospital”, “feel less anxious/depressed”, “get well/unwell” and “relapse”.

Examples that would **code ‘0’ (not present)** for enmeshment: “be happy”, “drug and alcohol free”, “healthy” or “worry less”, as these cannot be reliably linked to experience of mental health specifically. Also, comments that appear to stem from the participants psychotic illness, such as “random acts of violence towards self by unknown persons or organisations” will not be coded as enmeshed, as they do not meet the definition of enmeshment described here. Comments clearly linked to physical health will also not be rated as enmeshed.

### **Balance (adapted from Clarke, 2016)**

Once the possible selves are coded into domains, participants will be allocated as having either ‘balanced’ or ‘non-balanced’ possible selves. Participants will be considered to

have balanced possible selves if 50% or more of their expected possible selves match the general domain and topic as the feared possible selves. For example, an expected possible self might be “I want to be employed” and a feared possible self might be “I will always be unemployed”.

This coding process is adapted from the procedure detailed by Clarke (2016), using a percentage rather than a number of possible selves to avoid bias of number of possible selves reported.

Additional information for coding balance:

- If a participant has only given two hoped-for or expected possible selves, then only one possible self would need to be balanced, as this would count as 50%.
- If the person only has one hoped-for or expected possible self listed, then this would need to be balanced with one of the feared possible selves in order to meet the 50% cut-off.
- A possible self can only be included once in the balance calculation. For example if a person had two hoped for selves related to swimming, and only one feared self related to swimming, then the feared self can only be counted against one of the hoped-for selves.
- Hoped-for possible selves will also be coded for balance against feared selves using the same methodology. This should be explored with caution however, as some hoped-for selves can have content such as “I hope to win the lottery” which you might not expect someone to fear if it does not come to pass. Therefore more emphasis may want to be placed on expected-feared possible selves balance.
- In situations where it is ambiguous or unclear whether a possible self is balanced or unbalanced, the “benefit of the doubt” rule should be implemented. An example of when this rule may be triggered is where the expected possible self mentions “have a girlfriend” and the feared possible self mentions “being alone”. While the feared possible self does not explicitly state “not have a girlfriend”, it is in the same domain (interpersonal relations) and could be reasonably considered to meet a score of “balanced”. In contrast, if the feared self mentioned “lose my family”, this would be in the same domain (interpersonal relations) but could not be reasonably considered to be related to “have a girlfriend”. Therefore this would be scored as “unbalanced”.

**Optimism**

The possible selves interview includes quantitative ratings (on a 0-4 Likert scale) on the question “How much would you like this to describe you” for each hoped-for self. Optimism in achieving hoped-for selves will be calculated by looking at these quantitative ratings. There can be up to three hoped for selves per participant, which will require calculation of a ‘total optimism score’ between 0 and 12. Total optimism scores will be divided by the number of hoped for selves given to account for variation in number of selves given per participant and provide an average score.

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**Appendix G - Coding Manual Version Log****Coding Manual Version Log**

| <b>Version</b> | <b>Date</b> | <b>Author</b>                      | <b>Changes</b>  |
|----------------|-------------|------------------------------------|---|
| 1              | 19/06/18    | J. Lee<br>J. Hodgekins             | Original coding plan for richness written with support from supervisors.  |
| 2              | 30/07/2018  | J. Lee<br>L. Remzi<br>J. Hodgekins | Addition of 4 <sup>th</sup> coding category (now score of 0, 1, 2 AND 3). More specific details added to facilitate accurate coding of richness, following consultation with L. Remzi using unrelated data set.   |
| 3              | 03/08/2018  | J. Lee<br>L. Remzi<br>J. Hodgekins | Addition of adjectives to coding of richness following consultation with L. Remzi using unrelated data set.   |
| 4              | 21/09/2018  | J. Lee                             | More detail on the use of adjectives, including examples.   |
| 5              | 23/11/2018  | J. Lee                             | Move to integrate coding of richness into a full coding manual for all data. This included adding coding methods for: <ul style="list-style-type: none"> <li>1) General categories of possible selves</li> <li>2) Balance</li> <li>3) Optimism</li> <li>4) Enmeshment.</li> </ul> A move from using the term ‘richness’ to ‘specificity’ to emphasise the nature of the self not needing to be ‘positive’ (as suggested by definitions of the word ‘richness’ in dictionaries and research). Removal of adjectives from coding specificity as this overcomplicated the coding process. Addition of using word count as a control measure for specificity. |
| 6              | 25/11/2018  | J. Lee<br>L. Renoult               | Addition of corrections recommended by L. Renoult (as seen in the document from his comments).<br><br>Benefit of the doubt rule added for specificity coding, where there is a very fine line between a score of 1 and 2 or 2 and 3, to err on the side of a score of the higher score. For example, “go to college and learn languages” and “find a job I am comfortable with, maybe a care role” are considered borderline between 2 and 3, so 3 was chosen. Added coding only one domain (first mentioned)   |
| 7              | 08/02/2019  | J. Lee                             | ISREP data received and coding started, which has resulted in changes to specificity coding to clarify  |

|   |            |        |  |
|---|------------|--------|--|
|   |            |        | <p>decision making process (where previously this was more unclear).</p> <ul style="list-style-type: none"> <li>- Added more examples of possible selves that would fit into each category.</li> <li>- Added a stipulation about using word count in specificity as a control, whereby If possible selves have been written in an abbreviated manner, word count should not be used.</li> <li>- Re-added and clarified role of adjectives in distinguishing between score of 1, 2 and 3. Appeared valuable in helping to decide between 2 and 3 specifically. Benefits in improving inter-rater reliability outweighed potential complexity.</li> <li>- Also clarified what is meant by time-frames, roles and names of people and places in distinguishing between score of 1, 2 and 3.</li> <li>- Generally clarified the wording of the coding.</li> </ul> <p>Changed coding of specificity to be collapsed into one rating overall rather than a rating for each domain. This is due to practicality, as the possible selves in the ISREP data are so short, hardly any fit into more than one domain.</p> |
| 8 | 18/04/2019 | J. Lee | <p>Added final examples clarifying domains of specificity.</p> <p>Listed examples of inclusion and exclusion criteria for coding enmeshment, for added clarity of coding. Decided to have “mother” as a specific role, due to its similarities to a job role or role of ‘value’ already included under this category, such as “musician” or “Christian”.</p> <p>Final decision NOT to include that specified time-frames (such as ‘in 2 weeks’ or ‘next year’) also include terms such as “still”, which is assumed to indicate an ongoing time frame. This made the coding far too complex and felt like it removed the ability of the coder to be appropriately objective.</p> <p>Added the “benefit of the doubt” rule for balance coding, along with examples of when this might be triggered.</p>   |
| 9 | 09/05/2019 | J. Lee | <p>Clarity for L. B coding – Removed ‘alternative’ ways of coding and kept the coding specific to my data quality.</p> <ul style="list-style-type: none"> <li>- Removed other measures for specificity (word count)</li> </ul>   |

|             |              |                        |   |
|-------------|--------------|------------------------|---|
|             |              |                        | - Removed Additional information on coding (coding specificity for each domain)   |
| 10          | 16/05/2019   | J. Lee                 | Added a diagram to aid understanding for how possible selves will be coded.   |
| 11          | 03/06/2019   | J. Lee<br>L. Barnes    | Following inter-rater reliability testing of coding manual against data with L. Barnes. Final amendments of specificity to tackle common discrepancies between coding of 2 and 3 – added as sentence about ‘elaboration’. |
| 12<br>FINAL | October 2019 | J. Lee<br>J. Hodgekins | Removed the use of the Likert scale scores on the Enmeshment coding. Added the use of the “How much would you like this to describe you” question to the Optimism coding.   |