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UNIVERSITY OF SOUTHAMPTON

FACULTY OF SOCIAL, HUMAN AND MATHEMATICAL SCIENCES

School of Psychology

Volume 1 of 1

The Role of Emotion Regulation in Psychosis: Understanding the Emotion Regulation Profile of Individuals Experiencing Psychosis and the Impact of Dialectical Behavioural Therapy Skills Training

By

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Thesis for the degree of Doctor of Clinical Psychology

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ABSTRACT

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The Role of Emotion Regulation Skills in Psychosis: Understanding the Emotion Regulation Profile of Individuals Experiencing Psychosis and the Impact of Dialectical Behavioural Therapy Skills Training

By Daniel M Silva

Psychosis is a mental health condition characterized by difficulties in interpreting reality. Current interventions for psychosis primarily focus on management of positive symptoms (i.e. delusions and hallucinations), with unsatisfactory recovery rates. Current research pursuing other aspects of this presentation has argued that emotions play a key role in the development and maintenance of psychosis. This highlights the importance of developing an understanding of the emotion regulation profile of individuals experiencing psychosis as a potential intervention focus. A systematic review evaluated 25 studies, published between 2007 and 2018, examining the relationship between emotion regulation and psychosis. A meta-analysis was not possible due to the methodological heterogeneity of the research, and therefore a narrative summary was completed. The review found evidence suggesting that psychosis is associated with difficulties in implementing emotion regulation strategies in a pattern akin to the one exhibited by individuals experiencing mood disorders. However, review of findings across studies is limited by the scarcity of published papers and inconsistent conceptualisation/measurement of emotion regulation within this literature. Suggestions for future research are discussed.

New trans-diagnostic approaches focusing on emotion regulation (i.e. Acceptance and Commitment Therapy, Compassion Focused Therapy) have limited but growing research to suggest they can be effective in decreasing paranoia and negative affect in psychosis. Dialectical Behavioural Therapy (DBT) has been developed with a core focus on developing emotion regulation skills and has an evidence base for a variety of mental health presentations (e.g. borderline personality disorder, addictions, anger, eating disorders). However, it has never been formally researched for the treatment of psychosis. An empirical study was developed to evaluate

the impact of DBT informed skills training on individuals experiencing psychosis using a single case series design. Seven participants were recruited from Early Intervention for Psychosis (EIP) and Community Mental Health teams (CMHT) in the south of England. Results indicate that there is an association between emotion regulation skills training and decrease in paranoia and negative affect in psychosis. The results also suggest that individuals in their first years of experiencing psychosis are more responsive to learning emotion regulation skills. Collectively, the findings from this study support the importance of understanding emotion regulation in individuals experiencing psychosis.

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Research Thesis: Declaration of Authorship

Print name:	Daniel M Silva
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Title of thesis:	The Role of Emotion Regulation Skills in Psychosis: Understanding the Emotion Regulation Profile of Individuals Experiencing Psychosis and the Impact of Dialectical Behavioural Therapy Skills Training
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I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;

None of this work has been published before submission

Signature:		Date:	
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Definitions and Abbreviations

ACT CBT CFT DBT	Acceptance and Commitment Therapy Cognitive Behavioural Therapy Compassion Focussed Therapy Dialectical Behavioural Therapy
EIP CMHT	Early Intervention in Psychosis team Community Mental Health Team
ER DT	Emotion Regulation Distress Tolerance
PANAS GPTS PC DERS DTS	Positive and Negative Affect Scale Green Paranoid Thoughts Scale Paranoia Checklist Difficulties in Emotion Regulation Scale Distress Tolerance Scale
STOP ACCEPTS PLEASE	Stop, Take a step back, Observe, Proceed mindfully Activities, Contributing, Comparisons, Emotions, Pushing away, Thoughts, Sensations Physical illness, balance Eating, avoid mood-Altering substances, balance Sleep, get Exercise.
DSM-V NICE BPS ICD-10	Diagnostic and Statistical Manual -IV National Institute for Clinical Excellence British Psychological Society International Classification of Diseases - 10

Chapter 1 Literature Review. What is the Emotion Regulation Profile of Adults Experiencing Psychosis?

“It can be said that the human goal is to be as [emotionally] undercontrolled as possible and as overcontrolled as necessary.” (Block & Kremen, 1996, p. 351)

1.1 Introduction

1.1.1 Defining psychosis

Psychosis is broadly described in the literature as a severe mental health symptom, or cluster of symptoms, that causes an ‘impaired relationship with reality’ (National Institute of Mental Health, 2018). Early conceptualisations of mental health have argued that the aetiology of psychosis should be attributed to organic factors in contrast with neurotic disorders, which were described as affect driven disorders (Goldberg, 1965; as cited in Bishop & Trout, 2005; Freeman & Garety, 2003). There are theoretical and ethical differences in how psychotic experiences have been described in the literature (British Psychological Society, 2017). From a medical perspective, psychosis has been conceptualised as a condition with two key features: hallucinations¹ and delusions² (American Psychiatric Association, 2013). These experiences are typically labeled within the medical classification of ‘schizophrenia’ and are also associated with other diagnostic categories (e.g. Bipolar Disorder, Dementia, Borderline Personality Disorder, Depression) (NICE, 2014).

One of the key methods of understanding psychosis, in the medical literature, is the vulnerability stress model (Nuechterlein & Dawson, 1984; Katschnig, 1991). This model incorporates environmental factors in the understanding of psychosis and posits that psychotic symptoms are a

¹ Hallucinations are described as the perception of stimuli that are not present. The most commonly experienced hallucination is hearing voices, but this can involve any of the senses (e.g. vision, touch).

² Delusions are conceptualised as beliefs that, when explored rationally, have no supportive evidence.

corollary of the interaction between three key factors: biological vulnerability³, stress⁴ and protective factors⁵. In this model, individuals are described as having an idiosyncratic stress vulnerability threshold, which if reached, would trigger or worsen psychotic symptoms. Protective factors act to reduce the impact of stress on the individual. The Stress Vulnerability Model is prominent in the field, as it explains the heterogeneity in clinical presentations of psychosis and offers a paradigm through which environmental factors can be understood (Myin-Germeys & van Os, 2007).

Psychological conceptualizations of psychosis also focus primarily on hallucinations and delusions, which are considered on a spectrum of frequency and severity (Bentall, 2004; Beavan, Read & Cartwright, 2011; Johns et al., 2014) ranging from people who report none or few experiences, with no distress; to individuals who report such occurrences frequently and experience high levels of distress (Van Os et al., 2000). This results in symptoms having a variable impact on functioning for different people, with some individuals having a positive relationship with their psychosis (Karen, 2012; Jackson, Hayward & Cook, 2011) whilst others suffer high levels of distress and require support from mental health services (Johns et al., 2014). This approach does not classify psychosis as a mental health disorder. Instead, it argues that the distress associated with these events depends on the individual's perception of them, in other words, the meaning that is attached to these unusual experiences (Bentall, 2004; Mehta & Farina, 1997).

³ It is argued that there is no single biological marker for psychosis but that various genetic characteristics make individuals more vulnerable (Gottesman & Gould, 2003). Biological markers associated with psychosis include: differences in the ventricular and superior temporal gyrus volume (McDonald et al., 2006; DeLisi and Hoff, 2005); prepulse inhibition and prefrontal cortex activation deficits (Hong et al., 2007; Thermenos et al., 2005); and neuromotor deviations (McNeil & Cantor-Graae, 2000; Allen et al., 2009).

⁴ Individuals with psychosis have been found to be more likely to report high levels of stress whilst facing daily challenges (Myin-Germeys et al., 2001) and during stress inducing tasks (Lincoln et al., 2015; Moritz et al., 2011).

⁵ Conceptualised as the absence of risk factors (Crush, Arseneault, Jaffee, Danese & Fisher, 2017) or adherence to prescribed treatment (Kane, 2013; Gray, 2016).

From this perspective, ‘hallucinations’ are described as difficulties in distinguishing what is external from what are internal processes, ranging from mundane events, such as not being sure whether you heard the car alarm, to seeing live insects crawling through your body when others cannot. ‘Delusions’ are also conceptualised as similar to other beliefs, and as such, they are biased towards confirmatory evidence and circumventing of new information that is contradictory (Waters et al., 2012).

Psychological understandings of psychosis typically ascribe a role to the individual’s biological make-up in regards to: a genetic vulnerability to mental health difficulties (Smoller, Craddock & Kendler, 2013; Joseph, 2006); differences in brain structure and functioning (Hoy, Barrett & Shannon, 2012; Keshavan et al., 2002); and neurochemistry (Howes & Kapur, 2009; Geyer & Vollenweider, 2008). They also recognise the impact of life events and trauma (Johnstone, 2011; Read & Bentall, 2012). However, instead of considering causal relationships between these factors and psychosis, it is argued that psychotic experiences, as any human experience, have different ‘levels of explanation’ that are idiosyncratically more, or less, relevant to the individuals experiencing them (BPS, 2017).

1.1.2 Impact of psychosis

It is estimated that the overall cost of psychotic disorders in the UK exceeds £13 billion per year (Kirkbride & Jones, 2011). Prevalence rates vary within the literature (Goldner et al., 2002; Simeone et al., 2015), with a pooled median global prevalence of psychotic disorders of 4.6 per 1000 people (Moreno-Kustner, Martin & Pastor, 2018). Despite its relatively low frequency, psychosis is considered one of the top 15 leading causes of disability worldwide (Charlson et al., 2018; Lopez-Morinigo et al., 2006). This is due to increased likelihood of recurrent admissions, unemployment, disrupted education, poverty and debt (Killaspy et al., 2014). Such difficulties are further complicated by the stigma and social isolation associated with psychosis (Thorncroft, 2006). Mortality rates for individuals experiencing psychosis are 50% higher than in the general population (Hor & Taylor, 2010).

1.1.3 Role of emotions in psychosis

In the early twentieth century, Bleuler (1911; cited by Lincoln 2015) argued that ‘problems of affect lie at the heart of psychosis’. However, research has only relatively recently started to

investigate the role of emotions in the development and maintenance of psychosis (Birchwood, 2003).

Emotional states can contribute to the development of psychotic experiences (Hafner et al., 2005; Drake et al., 2004; Barrowclough et al., 2003). In a cross-sectional study, van Os (2000) showed that individuals who met diagnostic criteria for a psychotic disorder, were more likely to have low self-esteem and show depressive symptoms. In an experimental study using data from 515 females, Kramer et al (2013) looked at moment-to-moment dynamics between negative affect and paranoia and found that the likelihood of experiencing paranoia was higher within 180 minutes of experiencing negative affect. Furthermore, Ellett, Freeman and Garety (2008) explored the impact of visiting a deprived urban environment on delusions and hallucinations. Participants experiencing persecutory delusions reported higher levels of anxiety, cognitive inflexibility and paranoia when visiting a deprived urban area compared to a non-clinical control group. This indicates that the emotional arousal elicited by the experience had an impact on psychotic experiences. Finally, individuals with diagnosis of schizophrenia report experiencing more negative emotions when presented with neutral or pleasant stimuli compared to non-clinical controls (Cohen & Minor, 2008; Llerena, Strauss & Cohen, 2012). Taken together, this evidence indicates that the experience of negative emotions is associated with psychotic experiences.

Another source of evidence is the high comorbidity between psychotic and mood disorders. Cosoff and Hafner (1998) explored the levels of comorbid anxiety in schizophrenia, schizoaffective disorder and bipolar disorder. The results showed that, consistently across the disorders, between 43-45% of individuals met criteria for an anxiety disorder. A more recent cross-sectional study looking specifically at the schizophrenia diagnosis also found increased frequency of anxiety disorders (e.g. obsessive compulsive disorder, panic disorder, posttraumatic stress disorder) within the clinical sample (45.16%) compared to non-clinical controls (16.12%) (Kiran & Chaudhury, 2016). Similar results are revealed in the depression literature, indicating that patients with a diagnosis of schizophrenia are at increased risk of developing depressive symptoms (Samson & Wong, 2015), with comorbidity rates as high as 61% (Godzik-Zelazny, Borecki & Pokorski, 2011).

The relationship between mood and psychotic disorders is under researched, however it has been argued that mood disorders predate the onset of psychosis. Participants experiencing panic disorder and obsessive compulsive disorder were found to be 2.28 and 3.77 times (respectively) more likely than non-clinical controls to develop schizophrenia (Tien & Eaton, 1992). In addition,

trauma is a vulnerability factor for a subsequent diagnosis of schizophrenia (Morgan & Fisher, 2007), with 22% of clients with a diagnosis of schizophrenia meeting criteria for PTSD prior to the onset of the psychosis (Grubaugh, Zinzow, Paul, Egede & Frueh, 2011). Furthermore, a meta-analysis has found an estimated population attributable risk of 33% between childhood adversity/trauma and psychosis (Varese et al., 2012). Collectively, these findings highlight the associations between psychotic disorders and mood disorders/ difficulties, and suggest that emotions may play an integral part in psychosis (Bermanzohn et al., 2000).

It is important to note that the cross-sectional nature of the majority of the studies means that causal relationships between emotion or mood disorders and psychosis cannot be demonstrated (Sedgwick, 2014). In addition, the small effect sizes reported limit the generalisability and clinical relevance of the findings (Durlak, 2009). More research in this area needs to be produced and findings replicated with larger sample sizes. However, there is a clear indication that emotions and psychosis are interlinked.

1.1.4 Definition and influential models of emotion regulation

There is no clear consensus in the literature on how emotion regulation should be defined (Thompson & Goodman, 2010). An influential model used clinically was proposed by Linehan (1993) in which emotion regulation is comprised of two somewhat paradoxical strategies: (a) the ability to experience and label distinct emotions; and (b) the ability to reduce emotionally relevant stimuli in order to behave in a manner that is goal congruent rather than emotionally dependent. This is based on the Gottman & Katz (1990) emotion modulation model, which highlights the importance of inhibiting inappropriate behaviour, down regulating (i.e. decreasing) physiological arousal, refocusing attention and acting towards 'non-mood-dependent' goals. Consistent with Linehan's (1993) description of emotion regulation, Gratz & Roemer (2004) conceptualise effective emotion regulation as the ability to be aware and understand emotions, accept the distress associated with negatively valenced emotions and control impulsive behaviours through the flexible use of strategies that allow the individual to behave in accordance with goals and situational demands.

Another commonly used definition was developed by Gross (1998, 2002) in which emotion regulation refers to one's ability to control the frequency, duration and intensity of emotional responses (Gross, 1998). Gross (1998, 2002) posits that the emotion regulation process starts with an internal or external event that is attended to, appraised, and elicits experiential, behavioural and

neurophysiological responses. Gross distinguishes two types of emotion regulation strategies: antecedent and response focused. Antecedent focused strategies aim at targeting negative emotions before they are fully generated. Examples of such strategies are cognitive reappraisal and distraction. Cognitive reappraisal is a strategy that helps individuals to reconsider the meaning of a given experience or your position in relation (i.e. as part of/ as an observer) to that experience and so decrease negative affect. Reappraisal in non-clinical controls is associated with more positive interpersonal functioning and wellbeing (Gross & John, 2003). Distraction is described as the ability to shift attention away from the distressing trigger through 'filling' one's working memory with innocuous information (Norman & Malla, 1993). Response focused strategies aim at regulating emotions once the emotional response has been produced. Expressive suppression is an example of such strategies and it is defined as the ability to inhibit emotionally congruent behaviour (Gross, 1998). Suppression of physiology (e.g. breathing exercises to calm the body down) has been considered an effective emotion regulation skill as it helps to calm the body down in the presence of negative stimuli in non-clinical controls (Arch & Craske, 2006; Dan-Glauser & Gross, 2013; Goldin & Gross, 2010).

1.1.5 Emotion regulation difficulties and psychopathology

Emotion regulation is a key component of both physical and mental health (Koole, 2009). Effective emotion regulation is associated with increased quality of life, positive relationships, good health and achievements at work (Brackett & Salovey, 2004; John & Gross, 2004). Conversely, emotional dysregulation is associated with negative psychosocial outcomes and psychopathology (Mennin & Farach, 2007, Linehan, 1993). Individuals unable to regulate their emotions effectively are more likely to develop depression and anxiety disorders (Mennin, Holoway, Fresco, Moore, & Heimberg, 2007). High levels of emotion dysregulation have also been demonstrated in people with borderline personality disorder (Linehan, 1993; Austin, Riniolo & Porges, 2007), bipolar disorder (Gruber, Harvey & Gross, 2012), alcohol and drug dependency (Fox, Hong & Sinha, 2008), generalized anxiety disorder (O'Toole, Renna, Mennin & Fresco, 2019), social anxiety disorder (Kashdan & Breen, 2008) and eating disorder (Harrison et al., 2010) compared to the general population.

1.1.6 Rationale for review

Emotion regulation difficulties have been consistently linked to psychopathologies and there is a growing body of research linking mood difficulties and psychosis. However, the characteristics of the relationship between emotional regulation and psychosis has been under researched.

In a recent review, O'Driscoll, Laing & Mason (2014) investigated the relationship between emotion regulation and schizophrenia and found that cognitive reappraisal difficulties are more closely associated with psychosis compared to non-clinical controls. However, they concluded that this finding is not 'highly reliable' due to the inconsistency in findings between studies and number of studies with non-significant results. The review reported a moderate level heterogeneity between studies with regards to their design, methodology, sources of bias and study quality (Higgins, Thompson, Deeks, & Altman, 2003). In addition, research focusing on dissociation and alexithymia were included in the review as experiences that might impact the relationship between psychosis and emotion regulation. Therefore, limiting the amount of detail presented specifically regarding the construct of emotion regulation. Furthermore, the studies included targeted the diagnosis of schizophrenia specifically, whilst there are other conditions associated with psychotic experiences (e.g. first episode psychosis, schizoaffective disorder). Finally, the publications considered in the review were published up to 2012

The current review aims to extend the findings of the previous review by only including studies in which the relationship between emotion regulation and psychosis is investigated. In addition, the search criteria will be broadened to include research in psychosis, not only schizophrenia. Furthermore, studies published up to 2018 will be included, as there has been increasingly more interest in this area, with more publications and the introduction of physiological methodologies to measure emotion regulation.

1.1.7 Aims

The aim of this review is to summarise and critically evaluate the existing literature on emotion regulation in individuals experiencing psychosis. The findings of this review will help understand how difficulties with emotions may underpin psychotic experiences. This will have implications for how techniques used for mood disorders could be incorporate to the treatment of psychosis.

1.2 Method

1.2.1 Search strategy

A literature search was completed by the author using six electronic databases relevant to psychological literature: PsycINFO, PsycARTICLES, MEDLINE and CINAHL on EBSCO platform. A systematic approach was adopted, following the PRISMA (Moher, Liberati, Tetzlaff & Altman, 2009) guidelines, based on two key constructs: emotion regulation and psychosis. Results were returned using the following search syntax: ((TX emot* N5 regulat* OR TX affect* N5 regulat* OR TX emot* N5 dysregulat* OR TX affect* N5 dysregulat*) AND ((AB psychosis* OR AB schizo* OR AB bi-polar OR AB psychot*) OR (AB hallucinat* OR AB persecutory OR AB delusion OR AR paranoi* OR AB positive N1 symptom* OR AB negative N1 symptom*). The search terms were broad as initial scoping searches indicated that the published studies in this area were limited. The search strategy was agreed between supervisors (TM, KNT and PM) with support from a University librarian. Cited references were also manually searched to identify additional literature.

At this stage of the search, only two limitations were imposed: the studies had to be written in English language and peer reviewed. A total of 1035 records were identified in the initial search. The manual search of previous related literature review articles (Khoury & Lecomte, 2012; O'Driscoll, Laing & Mason, 2014) and snowball citation searching identified three additional records.

1.2.2 Eligibility criteria

Inclusion Criteria

- Participants were aged 16 years old or over.
- Participants had a current or past primary diagnosis of a psychotic disorder (e.g. first episode psychosis; schizophrenia; schizo-affective disorder; bipolar disorder).
- A specific measure of paranoia was used as primary or secondary outcome.
- A specific measure of emotion regulation was used as primary or secondary outcome.
- Articles were written in English.

Chapter 1

Exclusion Criteria

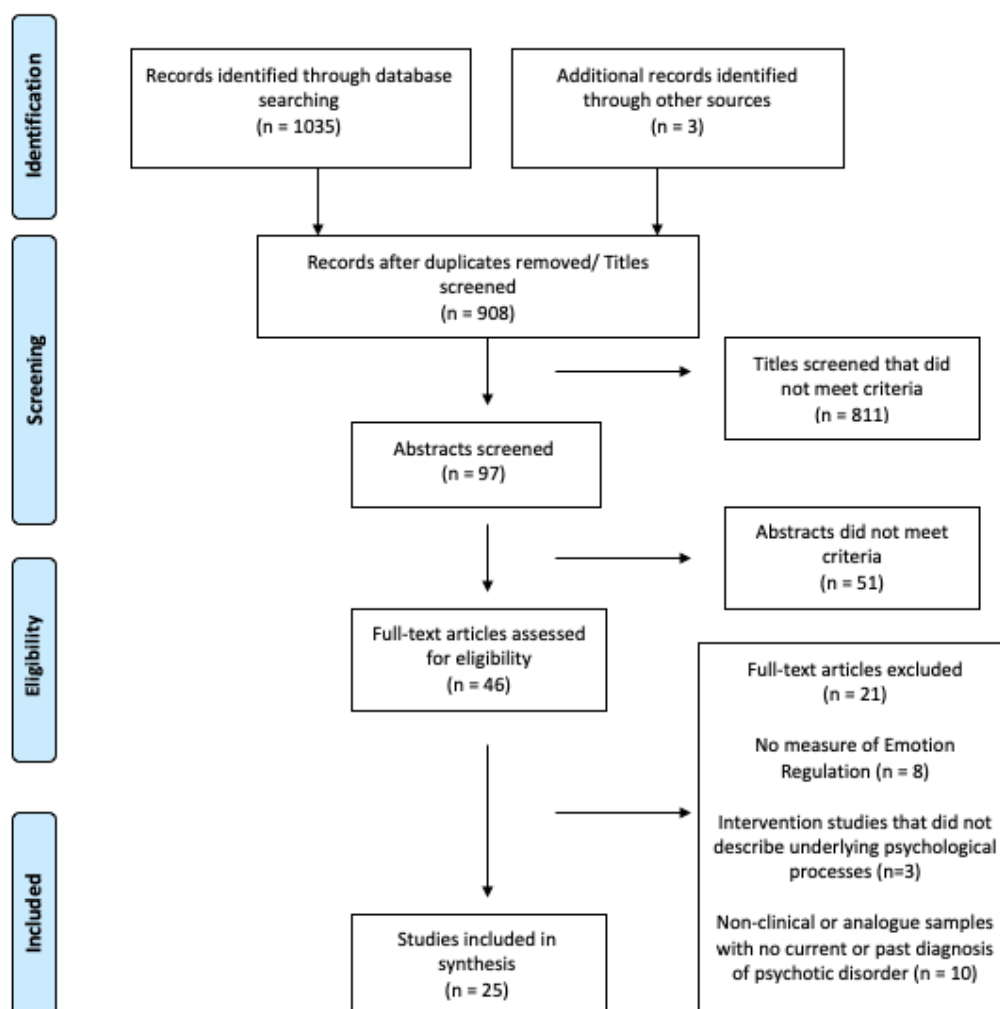
- Studies were based on non-clinical or analogue samples with no current or past diagnosis of psychotic disorder, or with a diagnosis of bipolar disorder without mention of psychotic features.
- Intervention studies. This decision was made because the review aimed to examine emotion regulation in individuals with psychosis, in the absence of any intervention.
- Unpublished (grey) literature was excluded due to concerns about the reliability of findings not subject to peer review.
- Studies that looked at specific emotion regulation strategies (i.e. acceptance, mindfulness, reappraisal) but did not have a general measure of emotion regulation.

1.3 Results

1.3.1 Study selection

Following study identification, duplicates were removed and all records were screened for eligibility by the author based on the title and abstract. Forty-seven full-text articles were examined with 25 included in the final review. Figure 1 outlines the process of literature selection.

Figure 1. Study selection process



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

1.3.2 Data extraction

Two data extraction tables were created (following Boland, Cherry & Dickson, 2017) in order to summarise the methodological characteristics of the literature (i.e. sample characteristics, study design, data collection approach, outcome measures, quality assessment and study results) (see Table 1 and Table 2, respectively).

1.3.3 Coding of quality

The QualSyst tool (Kmet, Lee, & Cook, 2004) was used to assess the methodological rigor of the studies published in this field. The measure was developed by the Effective Public Health Practice Project (EPHPP) to evaluate the relevance of findings of research studies in the health sector. The QualSyst tool was chosen as it allows for the appraisal of various aspects of the study from different fields (e.g. medicine, psychology and neuroscience). The measure contains a quantitative subscale that assesses methodological quality based on 14 domains across the different sections of the article (e.g. methods, analysis, results). The 14 domains are scored on a 3-point scale (0 = standard not met, 1 = standard partially met, 2 = standard met). The total score for each paper is calculated as a percentage of the total possible score, meaning scores are comparable across studies. Quality evaluation was performed by the author and results ranged from 77% to 95% (for full table, see Appendix A). The conservative inclusion cut-off score proposed by the measure developers is of 75%, therefore no studies were excluded based on quality assessment (Kmet et al., 2004). In order to evaluate reliability of scoring a fellow researcher independently scored all papers. Where differences were observed, the items were discussed and an agreement reached. Common limitations across the studies included: appropriateness of sample size, whether outcome measures were well defined and robust to measurement bias and whether studies controlled for confounding variables. It is important to note that despite this measure being considered the most appropriate to evaluate the quality of the studies, it also has its limitations. While the tool is able to assess a variety of methodologies, QualSyst assesses quality to a limited level of detail. The limited scale on which

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aspects of studies are assessed (i.e. 3-point scale) means it is likely that the measure inflates the quality ratings of some studies. Additionally, studies with conflicting results cannot necessarily be differentiated based on the quality of their methodology.

Table 1 *Summary of Study and Participant Characteristics*

Study reference	Aims	Sample	Design	Key outcome measures	QualSyst summary score
Zou et al. (2018)	To examine experiential pleasure, emotion regulation and emotional expression in individuals with a diagnosis of schizophrenia	Clinical: n=146, schizophrenia diagnosis; 82 males Non-clinical: n=73, 36 males Age: M=36 years (range =16-60) China	Cross-sectional	Temporal Experience of Pleasure Scale Toronto Alexithymia Scale Emotion regulation Questionnaire Beck Depression Inventory Revised Physical Anhedonia Scale Revised Social Anhedonia Scale	90%
Visser, Esfahlani, Sayama & Strauss (2018)	To determine if emotion regulation difficulties in individuals with a diagnosis of schizophrenia are associated with poor effort/effectiveness	Clinical: n=30, schizophrenia (n=20), schizoaffective disorder (n=10), 18 males Matched non-clinical: n=30, 18 males Age: (M=42) USA	Experimental	Differential Emotions Scale Emotion regulation Strategies based on Gruber et al. (2013) Description of Context	95%

Painter, Stellar, Moran & Kring (2018)	To investigate whether individuals with a diagnosis of schizophrenia can modify emotional responses similar to non-clinical controls	Clinical: n= 25; schizophrenia diagnosis, n=16 / schizoaffective disorder, n=9, 15 males and non-clinical n = 21, 12 males. Age: (M=49) USA	Experimental	Differential Emotions Scale (DES) Respiratory Sinus Arrhythmia Heart Rate	90%
Guimond et al. (2018)	To explore how emotional distractors would impact performance on working memory	Clinical: n= 20, schizophrenia diagnosis; 12 males and non-clinical n = 20, 15 males. Age: 18-45 (M=25.5) USA	Experimental	Scale for the Assessment of Negative Symptoms Scale for the Assessment of Positive Symptoms PENN Emotion regulation Task fMRI Imaging	90%
Nittel et al. (2018)	To explore the association between emotion regulation strategies and paranoia	Clinical: n= 32, schizophrenia diagnosis, n=23/ schizoaffective, n = 7, schizotypal, n=1, delusional disorder, n=1; 18 males. Age: 18-65 (M=36) Germany	Cross-sectional	Positive and Negative Syndrome Scale The Paranoia Checklist Emotion regulation Strategies	77%

Lincoln, Hartmann, Köther & Moritz (2015)	To investigate whether emotion regulation difficulties in psychosis are linked to the ability to modify, tolerate or accept emotions	Clinical: psychotic disorder n = 37, schizophrenia, n=31/ schizoaffective, n=6, 21 males and depressive disorder n = 30; 16 males; non-clinical sample n = 28; 16 males. Age: 18-65 (M=38) Germany	Cross-sectional	Positive and Negative Syndrome Scale for Schizophrenia Community Assessment for Psychic Experiences Emotion-Specific Emotion regulation Skills Questionnaire	90%
Lincoln, Hartmann, Köther & Moritz (2015 b)	To examine whether subjective, psychophysiological and symptomatic responses to stress can be predicted by specific emotion regulation difficulties	Clinical: n= 35, schizophrenia diagnosis, n=29/ schizoaffective diagnosis, n=6; 21 males; and non-clinical n = 28; 16 males. Age: 18-65 (M=37), Germany	Experimental	Positive and Negative Syndrome Scale for Schizophrenia Emotion-Specific Emotion regulation Skills Questionnaire Visual Analogue Stress Rating Psychophysiological Stress Response (Skin Conductance Levels) Paranoia Checklist	86%
Grezellschak, Lincoln & Westermann (2015)	To test the efficacy of reappraisal compared to distraction in patients with a diagnosis of Schizophrenia and non-clinical controls	Clinical: n= 17, schizophrenia diagnosis; 10 males; and non-clinical n = 27; 13 males. Age: 21-62 (M=39), Germany	Experimental	Community Assessment for Psychic Experiences Emotion regulation Questionnaire Beck Depression Inventory	90%

Strauss et al. (2015)	To examine the effectiveness of different forms of emotion regulation, directed attention in individuals with a diagnosis of schizophrenia	Clinical: n= 28, schizophrenia diagnosis; 19 males; and non-clinical n = 25; 16 males. Age: (M=44), Australia	Experimental	Late Positive Potential Brief Negative Symptom Scale Eye Movement Task Level of Function Scale Positive and Negative Affect Scale	86%
Clamor, et al. (2015)	To explore the possible mechanisms that explain the interplay between phenomenological and psychophysiological aspects of emotion regulation	Clinical: n= 19; schizophrenia diagnosis, n=16; schizoaffective disorder, n=3; 11 males. Age: (M=41), Germany	Experimental	Salivary Cortisol Levels Emotion regulation Skills Questionnaire Heart Rate Variability	81%
O'Driscoll, Laing & Mason. (2014)	To estimate effect sizes, potential heterogeneity and publication bias across a range of cognitive emotion regulation strategies in Schizophrenia.	47 quantitative, peer reviewed studies that discussed aspects of alexithymia, cognitive emotion regulation and dissociation UK	Meta-analysis	Ottawa Quality Assessment Scale Risk of Bias Publication Bias	86%

van der Meer, et al. (2014)	To explore whether individuals with a diagnosis of schizophrenia, relatives and non-clinical controls exhibit differences in brain activation during emotion regulation task	Clinical: n= 20; schizophrenia diagnosis, 14 males; non-psychotic siblings, n=20 / 11 males; and non-clinical n=20, 16 males. Age: (M=42), USA	Experimental	Emotion regulation Task Emotion regulation Questionnaire fMRI Imaging	77%
Strauss et al. (2013)	To investigate whether elevations in negative emotionality in schizophrenia reflect an underlying emotion regulation abnormality.	Clinical: n= 25, schizophrenia diagnosis; 18 males; and non-clinical n=21, 13 males. Age: (M=45), Australia	Experimental	Late Positive Potential Brief Negative Symptom Scale Level of Function Scale Positive and Negative Affect Scale Temporal Experience of Pleasure Scale Subjective Emotional Rating Scale	86%
Rowland et al. (2013)	To examine the relationship between social cognitive abilities and the use of cognitive strategies for regulating negative emotions in schizophrenia and bipolar disorder	Clinical: psychotic disorder n=56; 32 males; and bipolar disorder n=33; 18 males; non-clinical n=58; 29 males. Age: 18-65 (M=39) Australia	Experimental	Internal State Scale Positive and Negative Syndrome Scale Ekman Task Cognitive Emotion regulation Questionnaire The Awareness of Social Inference Test	81%

Rowland et al. (2013 b)	To investigate the use of particular cognitive strategies for regulating negative affect in schizophrenia and bipolar disorder.	Clinical: psychotic disorder n=126; 73 males; and bipolar disorder n=97; 36 males; non-clinical sample n=81; 37 males. Age:18-70 (M=47) Australia	Cross-sectional	Cognitive Emotion regulation Questionnaire Depression Anxiety Stress Scales Hypomanic Personality Scale Diagnostic Interview for Psychosis	90%
Horan, Hajcak, Wynn & Green (2013)	To examine whether schizophrenia is associated with impaired neural responses to negative stimuli.	Clinical: n=31, schizophrenia diagnosis; 23 males; and non-clinical n=27; 21 males. Age: (M=46) USA	Experimental	Emotion regulation Questionnaire EEG Recording and Processing Brief Psychiatric Rating Scale	86%
Kimhy et al. (2012)	To explore the differences between individuals with a diagnosis of schizophrenia and non-clinical controls with regards to emotion awareness, emotion regulation and social functioning.	Clinical: n= 44, schizophrenia diagnosis; 28 males; and non-clinical n = 20; 10 males. Age:18-50 (M=27) USA	Cross-sectional	Emotion regulation Questionnaire Toronto Alexithymia Scale Emotion Management Task Provision of Social Relations Scale MATRICS Consensus Cognitive Battery Self-Reflection Index of Beck Cognitive Insight Scale	95%

Perry, Henry, Nangle & Grisham (2012)	To explore the impact of suppression, reappraisal and acceptance strategies on the key components of emotion regulation.	Clinical: n=25, schizophrenia diagnosis n=16; schizoaffective disorder n=9; 10 males; and non-clinical n=24; 11 males. Age: (M=42) Australia	Experimental	Scale for the Assessment of Positive Symptoms Depression Anxiety Stress Scales Surface electromyography Subjective Experience of Emotions Subjective Measure of Willingness and Ability to Implement Emotion Regulation Skill	77%
Morris, Sparks, Mitchell, Weickert & Green (2012)	To examine differences in activation in cortico- limbic pathways during emotion regulation task between bipolar disorder and schizophrenia.	Clinical: bipolar disorder n=13; schizophrenia diagnosis n= 12; 16 males; and non-clinical n = 15; 6 males. Age: 18-60 (M=39) Australia	Experimental	Positive and Negative Syndrome Scale Emotion regulation Task fMRI Imaging	86%
Perry, Henry & Grisham (2011)	To investigate the habitual use of reappraisal, suppression and acceptance in people with a diagnosis of schizophrenia	Clinical: n=33; schizophrenia diagnosis n=20; schizoaffective disorder n=13; 15 males; and non-clinical n = 36; 13 males. Age: (M=49) Australia	Cross-sectional	Scale for Assessment of Negative Symptoms Scale for Assessment of Positive Symptoms Social Functioning Scale Emotion regulation Questionnaire The Acceptance and Action Questionnaire	77%

Badcock, Paulik & Maybery (2011)	To examine the self-reported use of a range of emotion regulation strategies in individuals with a diagnosis of schizophrenia and non-clinical controls.	Clinical: n= 34, schizophrenia diagnosis; 24 males; and non-clinical n=34; 28 males. Age:18-60, (M=39) Australia	Cross-sectional	Psychotic Symptoms Rating Scale The Hospital Anxiety and Depression Scale Emotion regulation Questionnaire Penn State Worry Questionnaire Ruminative Response Scale	90%
Van der Meer, Wout & Aleman (2009)	To explore the relationship among emotion regulation strategies, alexithymia and the role of pre-morbid IQ in individuals with a diagnosis of schizophrenia.	Clinical: n= 31, schizophrenia diagnosis; 24 males; and non-clinical n = 44; 22 males. Age: (M=31) Netherlands	Cross-sectional	Emotion regulation Questionnaire Bermond-Vorst Alexithymia Scale National Adult Reading Test Beck Depression Inventory Positive and Negative Syndrome Scale	95%
Livingstone, Harper & Gillanders (2009)	To examine the emotional experience and regulation in individuals who experience psychosis, individuals experiencing mood disorder and non-clinical controls.	Clinical: psychotic disorder n=21; 12 males; and mood disorders n=21; 5 males; non-clinical n=21; 12 males. Age: (M=40) UK	Cross-sectional	Emotion regulation Questionnaire Regulation of Emotions Questionnaire Basic Emotions Scale	90%

Henry, Rendell, Green, McDonald & O'Donnell (2008)	To assess whether individuals with a diagnosis of schizophrenia differ compared to non-clinical controls in the use of emotion regulation strategies, (i.e. reappraisal and emotion suppression)	Clinical: n= 41; schizophrenia diagnosis n=32; schizoaffective disorder, n=9; 23 males and non-clinical n=38. Age: (M=37) Australia	Cross-sectional	Emotion regulation Questionnaire Social Functioning Scale	77%
Henry, Green, Lucia, Rendell, McDonald & O'Donnell (2007)	To examine the capacity to engage in particular emotion regulatory strategies and specifically, the ability to amplify or suppress emotion expression during watching clips selected to elicit amusement.	Clinical: n= 29; schizophrenia diagnosis n=20; schizoaffective disorder n=6; 14 males; and non-clinical n=30; 16 males. Age: (M=36), Australia	Experimental	Subjective Emotional Response Subjective Emotion Regulation Strategy	77%

Table 2 *Summary of Study Results*

Study reference	Key Findings
Zou et al. (2018)	Individuals with a diagnosis of schizophrenia can be separated in three different clusters of presentation based on experiential pleasure, emotion regulation and emotion expression. Cluster analysis results produced three clusters as the best solution, Schwarz Bayesian Criterion (BIC=631.146). Cluster 1, characterised by deficit in experiential pleasure and emotion regulation; Cluster 2, characterised by a general deficit in experiential pleasure, emotion regulation and emotion expression; and Cluster 3, characterised by a deficit in emotion expression.
Visser, Esfahlani, Sayama & Strauss (2018)	Individuals with a diagnosis of schizophrenia compared to non-clinical controls experienced higher emotional intensity ($p < .05$), reported more effort in using emotion regulation skills ($p < .01$), had a lower threshold for using the emotion regulation skills ($p < .001$) and used significantly more strategies to regulate their distress ($p < .01$).
Painter, Stellar, Moran & Kring (2018)	No between group differences in positive expressivity following amplification and no between group differences in decreased negative emotion following reappraisal. However, individuals with a diagnosis of schizophrenia experienced less positive emotions ($p < .01$) and more negative emotions ($p < .01$) than controls. Indicating that individuals with schizophrenia can use amplification and reappraisal in similar way to non-clinical controls.
Guimond et al. (2018)	Individuals with a diagnosis of schizophrenia had a lower accuracy than non-clinical controls when exposed to both happy and fearful distractors ($p < .02$). fMRI results showed significantly higher brain activation for individuals with a diagnosis of schizophrenia ($p < .001$). The results indicate that emotion regulation during working memory task is impaired in individuals with a diagnosis of schizophrenia when compared to non-clinical controls.

Nittel et al. (2018) State paranoia was positively correlated with negative emotions ($r=.62, p<.001$) and maladaptive emotion regulation strategy, expressive suppression ($r=.32, p<.01$). The results indicate that emotional instability and the use of expressive suppression are likely to increase state paranoia.

Lincoln, Hartmann, Köther & Moritz (2015) Individuals experiencing psychosis showed reduced skills related to emotional awareness ($p<.05$), understanding and accepting of distressing emotions ($p<.001$) when compared to non-clinical controls. No significant differences were found in their ability to modify emotions compared to non-clinical controls ($p>.05$).

Lincoln, Hartmann, Köther & Moritz (2015 b) Individuals with psychosis showed a stronger increase in self-reported stress and psychophysiological stress compared to non-clinical controls ($p<.001$). Reduced ability to tolerate distressing emotions was predictive of self-reported stress ($p<.01$). The study results indicate that individuals with psychosis have a higher stress reactivity to non-clinical controls.

Grellschak, Lincoln & Westermann (2015) Reappraisal and distraction were effective emotion regulation strategies for anxiety compared to no regulation ($p<.001$). There was no difference between individuals with a diagnosis of schizophrenia and healthy control groups in their ability to regulate emotions ($p=.12$). The results indicate that individuals with a diagnosis of schizophrenia are able to use emotion regulation strategies alike non-clinical controls.

- Strauss et al. (2015) Participants with a diagnosis of schizophrenia were more likely to attend to arousing portions of unpleasant scenes than controls even when instructed to focus on less arousing aspects of scene ($p < .05$). Late positive potential (LPP) data showed that for the schizophrenia sample there was no significant difference in arousal between less or more distressing aspects of images ($p > .05$). The results indicate that emotional regulation difficulties experienced by individuals with a diagnosis of schizophrenia might be associated with difficulties in directed attention strategies.
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- Clamor, et al. (2015) Partial correlations between emotion regulation and heart rate variability ($r = .52, p < .01$) and subjective stress measure ($r = -.39, p < .05$). It also showed partial correlations between emotion regulation and heart rate variability ($r = .54, p < .01$) and cortisol levels ($r = -.47, p < .05$). The results indicate that emotion regulation can be conceptualised as link between phenomenological and physiological experiences in psychosis.
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- O'Driscoll, Laing & Mason. (2014) Meta-analysis showed the following effect sizes for emotion management: $g = 0.96$ (95% CI; 0.77, 1.14) and cognitive reappraisal: $g = 0.49$ (95% CI; 0.32, 0.66) which negatively correlated with schizophrenia symptoms. Indicating that these areas impaired in individuals with a diagnosis of schizophrenia.
-
- van der Meer, et al. (2014) Negative affect was higher within the schizophrenia sample and non-affected siblings compared to non-clinical controls ($p < .01$). Demonstrating a higher stress vulnerability in both groups. All groups reported decreased negative affect following suppression and reappraisal ($p < .05$). Indicating that individuals with a diagnosis of schizophrenia can use emotion regulation strategies effectively. However, neuroimaging results showed overall differences in brain activation of cortical areas.
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Strauss et al. (2013)

Individuals with a diagnosis of schizophrenia showed an inability to downregulate emotional response based on the preceding descriptor (i.e. the results showed no significant difference between neutral and negatively valenced preceding auditory descriptors, $p=.32$). Findings show neurophysiological data indicating emotion regulation difficulties within schizophrenia.

Rowland et al. (2013)

Individuals with a diagnosis of schizophrenia demonstrated poor theory of mind and maladaptive use of emotion regulation strategies when compared with non-clinical controls ($p<.01$) and individuals with bipolar disorder ($p<.001$). They also demonstrated significant difficulties with basic emotion recognition ($p<.01$) compared to both non-clinical controls and individuals with bipolar disorder.

Rowland et al. (2013 b)

Individuals with a diagnosis of schizophrenia reported more frequent rumination ($p<.01$), catastrophizing ($p<.001$) and self-blame ($p<.01$) as well as adaptive emotion regulation strategies (i.e. putting into perspective) less often compared to controls ($p<.01$). Individuals with a diagnosis of schizophrenia also used more other blame ($p<.05$) than non-clinical controls.

Horan, Hajcak, Wynn & Green (2013)

Individuals with a diagnosis of schizophrenia showed higher LPP in preappraisal neutral and preappraisal negative versus neutral conditions ($p<.05$) and an atypical pattern of larger LPP to preappraisal neutral versus preappraisal negative and neutral ($p<.05$) compared to non-clinical controls. The results indicate that individuals with a diagnosis of schizophrenia have impaired cognitive emotion regulation skills compared to non-clinical controls.

Kimhy et al. (2012)	Individuals with a diagnosis of schizophrenia are more likely to use suppression rather than reappraisal as an emotion regulation strategy ($p<.001$) and have significantly lower awareness of emotions ($p<.01$) compared to non-clinical controls. In addition, difficulties with emotional awareness were strongly predictive of poorer social functioning ($r = .50, p<.01$). The results suggest individuals with a diagnosis of schizophrenia have specific difficulties with emotion regulation.
Perry, Henry, Nangle & Grisham (2012)	Individuals with a diagnosis of schizophrenia reported higher negative affect following sad stimuli compared to non-clinical controls ($p<.001$). Indicating higher stress reactivity to negative events. Individuals with a diagnosis of schizophrenia did not report a greater willingness to re-experience negative emotion after engaging in acceptance compared to non-clinical controls ($p<.01$). The results indicate that they are unable to use acceptance effectively as an emotion regulation strategy.
Morris, Sparks, Mitchell, Weickert & Gree (2012)	Prefrontal hypoactivation of the right prefrontal cortex occurred during emotional downregulation in individuals with a diagnosis of schizophrenia (opposite to bipolar disorder), amygdala activity was inversely correlated with the activity in the left prefrontal cortex during downregulation in non-clinical controls ($r = -0.76, p<.05$), while such coupling did not occur in the clinical samples.
Perry, Henry & Grisham (2011)	Individuals with a diagnosis of schizophrenia use less acceptance than controls ($p<.001$). Lower use of acceptance was associated with depression ($r=.36, p < .05$), anxiety ($r = .41, p < .05$) and stress ($r = .40, p < .05$). However, individuals with a diagnosis of schizophrenia do not differ in their use of suppression and reappraisal strategies compared to non-clinical controls ($p>.05$).

Badcock, Paulik & Maybery (2011)	Greater use of expressive suppression was related to increase in severity of hallucinations and greater disruption of daily life ($r=.405, p<.05$). Rumination was positively correlated with the distress associated with hallucinations ($r =.378, p<.05$). the results indicate that negative emotion regulation strategies are associated with increased symptoms of psychosis and impaired social functioning.
van der Meer, Wout & Aleman (2009)	Individuals with a diagnosis of schizophrenia used more suppression and less cognitive reappraisal ($p<.05$) compared to non-clinical controls. Indicating that they are more likely to use maladaptive emotion regulation strategies than the general population. Participants with a diagnosis of schizophrenia also differed significantly from controls on the emotional-cognitive component of alexithymia ($p < .05$). Indicating that individuals with a diagnosis of schizophrenia have specific difficulties recognising their emotions.
Livingstone, Harper & Gillanders (2009)	Individuals experiencing psychosis and mood disorders experienced lower levels of happiness and higher levels of negative emotions ($p<.05$) compared to non-clinical controls. The clinical groups also used more dysfunctional emotion regulation strategies ($p<.05$). There were no significant differences between the clinical samples in both emotional experience and use of emotion regulation strategies.
Henry, Rendell, Green, McDonald & O'Donnell (2008)	There were no significant differences between individuals with a diagnosis of schizophrenia and non-clinical controls in the self-reported use of suppression and cognitive reappraisal ($p>.05$).
Henry, Green, Lucia, Rendell, McDonald & O'Donnell (2007)	Compared to non-clinical controls individuals with a diagnosis of schizophrenia have difficulties amplifying ($p<.05$) positive affect but no difficulties in suppressing it. These difficulties are significantly correlated with total negative symptoms experience ($r= .50, p<.05$).

1.3.4 Study characteristics

Twenty-five studies were identified which examine the relationship between emotion regulation in individuals with a diagnosis of psychotic disorder. Of the twenty-five studies, ten were cross-sectional, fourteen were experimental and one was a meta-analysis. The cross-sectional studies focused primarily on exploring differences in emotion regulation between participants experiencing psychosis, using both clinical (e.g. depression, bipolar disorder) and non-clinical comparison samples. Data from these studies was based on self-report measures. Of the experimental studies, five used self-report measures, and nine relied on physiological and/or brain imaging data to assess emotion regulation following a laboratory task.

Studies were published between 2007 and 2018, demonstrating a recent interest in emotion regulation in individuals with psychosis. Twenty-four were produced in developed western countries (i.e. Australia, n = 10; USA, n = 6; Germany, n = 5; UK, n = 2 and; Netherlands n = 1), with one in China (Zou et al., 2018; see table 1 for details) (Figure 2). Therefore, limiting the generalisability of the findings to western society.

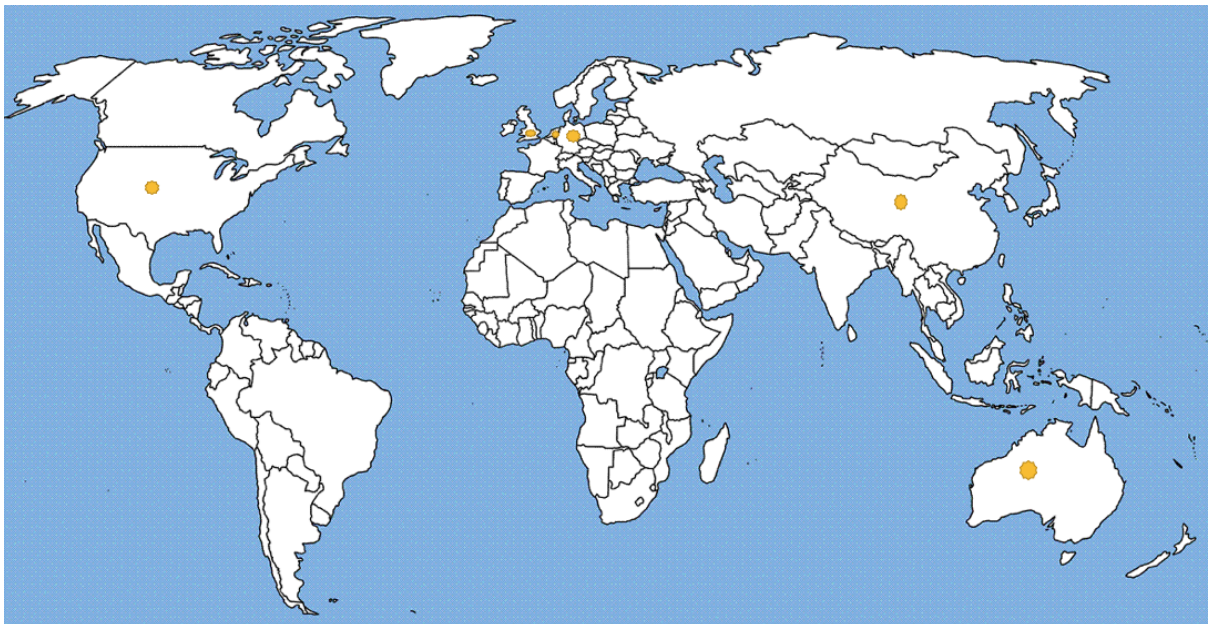


Figure 2. Map of study locations

1.3.5. Participant characteristics

Sample sizes varied significantly between studies (range = 19-304). Twenty-one studies recruited small sample sizes averaging fifty-five participants across conditions. Only three studies recruited over one hundred participants (Zou et al., 2018; Rowland et al., 2013a; Rowland et al., 2013b). Collectively, the studies included data from 1828 participants. Gender was fairly evenly split with 56% of participants being males. With regards to age, the studies included participants from late adolescence to older adults (range = 16-75), with an average age of 40 years old.

Diagnostic data was reported by the majority of papers, with schizophrenia and schizoaffective disorders being the most common, representing 68% and 10% of the overall psychotic sample, respectively. Three papers did not differentiate between psychotic disorders (Rowland et al., 2013a; Rowland et al., 2013b; Livingstone et al., 2009). Most papers did not report ethnicity data (i.e. 20 studies), the five studies that reported ethnicity had a high prevalence of Caucasian participants (M= 66%) (Visser et al., 2018; Guimond et al., 2018; Strauss et al., 2013; Horan et al., 2013; Kimhy et al., 2012). The under reporting of ethnicity limits the generalisability of the data, and may represent an overly medicalised model of psychosis as a 'human condition' and corresponding disregard of cultural and environmental contributory factors (Johannessen & McGorry, 2010).

1.3.6 Definition and assessment of emotion regulation within psychosis literature

There is no broad agreement on how to define emotion regulation (Thompson & Goodman, 2010; Koole, 2009). Key conceptual differences include: the role of intrinsic (e.g. temperament and cognitive ability) and extrinsic (e.g. parental style in childhood) processes (Thompson, 1994); the difference between emotion experience (i.e. arousal associated with an event) and emotion regulation (i.e. modulation of response following arousal) (Cole et al., 1994); whether emotional regulation strategies can be classified as intrinsically adaptive or maladaptive (i.e. always helpful/ unhelpful or whether they are helpful/unhelpful based on the setting) (Aldao et al., 2010); and the difference between emotion control (i.e. not showing emotionally congruent response) and emotion regulation (i.e. choosing whether to show emotionally congruent response) (Gratz & Roemer, 2004). This lack of agreement in the field poses a challenge to the development of measures that can be used to assess emotion regulation across the studies (Berking & Wupperman, 2012). The current review found that this variability in defining emotion regulation is mirrored in the studies assessed. Therefore, there were significant differences in how emotion regulation was measured across the studies.

1.3.6.1 Psychometric measures of emotion regulation

Three self-report questionnaires with robust psychometric properties were used in the studies reviewed. The most widely used self-report measure was the Emotion Regulation Questionnaire (Gross & John, 2003), which was adopted in ten studies. The ERQ is based on the process model of emotion regulation developed by Gross (1993), and comprises of ten items that focus on establishing the frequency of use of two emotion regulation strategies (i.e. reappraisal and suppression) for both positive and negative valenced emotions. The results are scored on a 7-point Likert scale, ranging from strongly disagree to strongly agree. Although other research (Eftekhari, Zoellner & Vigil, 2009; Aldao & Nolen-Hoeksema, 2010) has argued that reappraisal is a more adaptive strategy than suppression, the ERQ does not aim to assess adaptiveness.

The Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2001) is also based on the Gross model (1993) and was used by two studies. The questionnaire assesses nine hypothetically independent emotion regulation strategies that, unlike the ERQ, are assumed to be adaptive (i.e. putting into perspective, positive refocusing, positive reappraisal, acceptance and refocus on planning) or maladaptive (i.e. self-blame, other-blame, rumination and catastrophizing) (Garnefski et al., 2001; Garnefski, van den Kommer et al., 2002). Another conceptual difference between the measures is that the CERQ was devised to assess the use of cognitive strategies employed to regulate emotional arousal only following the experience of threatening or stressful life events. Therefore, it does not encompass strategies related to positive affect (e.g. amplification). Cognitive emotion regulation strategies are measured on a 5-point Likert scale ranging from almost never to almost always. Effective emotion regulation is associated with higher scores on the adaptive strategies and lower scores on maladaptive strategies.

Finally, the emotion-specific Emotion Regulation Skills Questionnaire (ERSQ-ES; Ebert, Christ & Berking, 2013) was used by two studies. The ERSQ-ES was designed to recognize difficulties in nine facets of the emotion regulation process for specific emotions as described by the Adaptive Coping with Emotions Model (Berking, 2010; Berking & Schwarz, 2014). Unlike the ERQ and CERQ, this measure requires the participant to consider adaptive responses to each emotion separately, using a 4-point Likert scale to indicate the effectiveness of different strategies used. This measure does not focus on adaptive vs. maladaptive strategies, instead it identifies strategies assumed to be adaptive, over a timeline (i.e. from the triggering event to the end of the emotion regulation process). For instance, if participants report experiencing sadness in the past week, they are asked to rate their level of: awareness, clarity, understanding, acceptance, tolerance, self-support, willingness to confront situations cuing undesired emotion when

necessary and modification, for sadness specifically. Effective emotion regulation is associated with higher scores summed across the different facets of emotion regulation.

The measures mentioned above are robust in terms of their psychometric properties. In addition, the ERQ and CERQ have been consistently used in the literature to assess emotion regulation across different presentations, have been translated to different languages and adapted to different populations (Abdi, Taban, & Ghaemian, 2012; Balzarotti, John & Gross, 2010; Gullone & Taffe, 2012; Zhu et al., 2010). Collectively, all three measures aim to assess the individual's self-reported use of specific emotion regulation strategies. This is problematic as, even though all measures are intended to assess emotion regulation, different measures focus on different strategies, and so are probably not measuring the same construct. The other limitation of these measures is that effective emotion regulation is based on the use of the strategies rather than on diminished arousal/ distress or goal orientated behaviour. Thus, effective emotion regulation is limited to the use of specific strategies more often than others (e.g. distraction, imagery), so individuals could be effective in regulating emotions (i.e. decreasing negative arousal) and yet score low on this measures because their specific strategy is not assessed by the measure.

1.3.6.2 Experimental measures of emotion regulation

The 14 experimental studies reviewed used novel emotion regulation measures. These included: adapted self-report measures, observations of emotion expression, physiological measures, brain imaging and cognitive functioning tasks.

Nittel et al. (2018) developed their own measure of emotion regulation based on a protocol previously used by Brans et al. (2013). This measure used a 7-point likert scale to report the frequency of use of different emotion regulation strategies, which were split between: adaptive (i.e. reappraisal, acceptance, social sharing, and reflection) and maladaptive (rumination and expressive suppression). Like the CERQ, effective emotion regulation was associated with frequent use of adaptive skills and low use of maladaptive skills. Self-report measures were also used within an experimental design devised to manipulate the participants' emotion regulation experience. Henry et al (2007) used an emotion regulation task in which participants were asked to either suppress or amplify emotions following short videos clips aimed at eliciting amusement/pleasantness. Participants used a self-report measure comprised of different emotions and were asked to rate their emotional experience in a 9-point likert scale, adapted from Rottenberg et al. (2007).

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Another source of emotion regulation data was participants' facial expressions. Henry et al (2007) and Perry et al. (2012) followed a similar protocol in which participants were asked to suppress or amplify emotions based on the instructions given. Participants facial expressions were conceptualised as indicative of emotion expression and were coded by trained observers, based on the Emotional Behaviour Coding System (Gross and Levenson, 1993), or facial electromyography apparatus respectively. Similar to Henry et al (2007), effective emotion regulation was described as the ability to suppress or amplify emotions on command.

Physiological arousal (i.e. respiratory sinus arrhythmia, RSA; and heart rate, HR) was used by Painter et al. (2018) as a biological marker of emotional arousal. In this study, self-report, facial expression and physiological response were used as indicators of effective emotion regulation skills. Akin to the previous experimental designs mentioned, participants were asked to either amplify, reappraise or suppress emotional experience whilst watching film clips. Reduced RSA and increased HR were interpreted as increase in emotional arousal. Similar to the previous studies, physiological change congruent with emotion regulation strategy (e.g. increase arousal during amplification condition) was coded as demonstrative of effective emotion regulation skills.

Brain imaging data has been used to investigate differences in neural activation of individuals with psychosis whilst performing emotion regulation tasks. Morris et al (2012) used an emotion regulation task based on Ochsner et al. (2004) protocol, in which participants were asked to up regulate, maintain or down regulate emotional arousal whilst looking at negatively valenced images. This task was performed under laboratory conditions and participants underwent functional magnetic resonance imaging (fMRI) to investigate whether emotion regulation changes were associated with different neural pathways in individuals with psychosis compared to non-clinical controls (Green & Phillips, 2004).

Finally, studies also used performance in cognitive functioning tasks (i.e. attention control, response time and accuracy data) as indicative of effective emotion regulation. Strauss et al. (2015) and Guimond et al. (2018) used eye movement tasks, whilst presenting participants with unpleasant and neutral images. Participants were instructed to shift eye gaze on cue from 'more distressing' to 'neutral' focus points within a presented image. Effective emotion regulation was assumed to be related to the ability to fixate gaze at a requested area within the picture. The assumption was that if participants were able to regulate the arousal of the unpleasant images they would be able to shift attention to different parts of the picture as requested by the researcher. Another way in which cognitive functioning tasks were used in this literature was developed by Guimond et al. (2018) who a protocol that used emotional distractors to evaluate working memory performance (Eack et al., 2016). Each participant took part in a computer based

task in which they were asked to press a button whenever the presented letter was identical to a target letter, whilst concomitantly being presented with emotionally valenced facial expressions (i.e. neutral, fearful and happy). The task measures accuracy and response time for participants. Effective emotion regulation is associated with the ability to disregard emotional distractors and maintain accuracy and speed during the task.

Collectively, the results indicate that different research groups have also conceptualised and measured emotion regulation differently. Consequently, it is likely that different studies were measuring overlapping but slightly different constructs. However, a strength of the experimental studies is that they tended to use multiple sources of data to assess emotion regulation. For instance, Painter et al (2018) used facial expression, self-report and physiological data as indicators of effective emotion regulation skills. In this way, their hypotheses were tested using multiple sources of data, plausibly increasing their validity. A limitation of these experimental designs is their ecological validity; regulating emotional arousal of life events, with real consequences and personal meaning is different to regulating emotions in a laboratory (Cook, Campbell, & Shadish, 2002).

Given the conceptual differences between studies with regards to participants, measurement of emotion regulation, outcomes and effects included in this review it is proposed that the homogeneity assumption, as defined by Bowland, Cherry & Dickson (2017), between studies was not met. In addition, O'Driscoll et al. (2014) already highlighted heterogeneity as one of the confounding variables for their meta-analysis. Considering that the studies published after 2012 were more methodologically different, rather than more similar, a meta-analysis was not performed; instead a narrative summary of the findings is presented.

1.3.7 The role of emotion regulation in psychosis

1.3.7.1 The implementation of emotion regulation strategies in psychosis

Studies examining the use of emotion regulation strategies in psychosis focused on comparisons with non-clinical controls and individuals with mood disorders. This branch of research conceptualises emotion regulation strategies as either adaptive or maladaptive (Aldao, Nolen-Hoeksema & Schweizer, 2010).

Two widely researched emotion regulation strategies within the psychosis literature are expressive suppression (the individual's ability to not demonstrate emotionally congruent behaviours) and cognitive reappraisal (the individual's ability to change the meaning attached to a given event). Expressive suppression is considered as a maladaptive emotion regulation strategy

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because it has been associated, in the wider literature, with decrease in positive emotion experience, increase of physiological distress and ineffectiveness for negatively valenced emotions (Mauss et al., 2005; Hayes et al., 2010; Brans et al., 2013). On the other hand, cognitive reappraisal is conceptualised as an adaptive emotion regulation strategy as it has been linked to experiences of positive emotions and decreased distress (Denny et al. 2009; Silvers et al. 2013).

Studies focusing on the use of these two strategies within psychotic samples have found that individuals with psychosis are over reliant on expressive suppression and have difficulties implementing cognitive reappraisal. Van der Meer et al. (2009) found that individuals with a diagnosis of schizophrenia are significantly more likely to use emotion suppression than cognitive reappraisal as a way of regulating emotions, compared to non-clinical controls. They argued that the overreliance on this maladaptive emotion regulation strategy is associated with lower emotional awareness and depressive symptoms. Kimhy et al. (2012) replicated these findings and found that the overreliance on emotion suppression was associated with poorer social functioning and difficulties identifying and describing emotions. In this study, ineffective emotion regulation predicted 35% of the variance in social functioning, after controlling for age and cognitive ability. Similarly, Nittel et al (2018) investigated the impact of the use of adaptive and maladaptive emotion regulation strategies, found that expressive suppression was related to higher frequency and intensity of state paranoia. The implementation of emotion regulation strategies in psychosis was demonstrated to be similar to the pattern observed in mood disorders (Livingstone et al., 2009).

However, there is also evidence suggesting that there is no difference in the use of expressive suppression and cognitive reappraisal between individuals with psychosis and non-clinical controls. Henry et al. (2007) found that individuals with a diagnosis of schizophrenia did not have any difficulties suppressing emotional expression of positive affect, instead, they had difficulties amplifying positive affect. In a follow up study (Henry et al. 2008), they found that participants with a diagnosis of schizophrenia were not significantly different from matched non-clinical controls in the use of reappraisal or suppression, based on self-report measures. This finding was corroborated by Perry et al. (2011) and their results also found that individuals with a diagnosis of schizophrenia reported using significantly less acceptance than non-clinical controls. Badcock et al (2011) also showed a similar pattern of relationship between emotion suppression and cognitive reappraisal. Their results were based on self-report measures of emotion regulation and they were specifically looking at the impact of poor emotion regulation skills on the experience of hallucinations. The results indicated that the schizophrenia sample did not differ significantly in the use of emotion suppression and cognitive reappraisal compared to non-clinical controls. However, higher use of expressive suppression was related to higher levels of anxiety,

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higher severity of hallucinations (i.e. frequency, intensity, loudness of voices) and lower levels of happiness in the clinical sample.

Acceptance has also been researched within the psychosis literature. Perry et al. (2012) defined acceptance as the ability to not attempt to change an emotion, they found significant differences between non-clinical controls and individuals with a diagnosis of schizophrenia. The results showed that, following an acceptance exercise, individuals with a diagnosis of schizophrenia were less willing than controls to be exposed to potentially distressing stimuli, indicating that the task had not been effective in downregulating arousal in this group. The ineffective use of acceptance as an emotion regulation strategy observed in a sample of participants with psychosis is similar to that found in individuals with mood disorders. Lincoln et al. (2015) reported lower levels of awareness, understanding and acceptance of distressing emotions in samples of participants experiencing depression and psychosis compared to non-clinical controls. Other similarities in the implementation of emotion regulation strategies between mood and psychotic disorders have also been described. Rowland et al (2012a), compared a sample of participants experiencing psychosis with non-clinical controls and individuals experiencing bipolar disorder using a cognitive measure of emotion regulation (CERQ; Garnefski et al., 2001). Their findings indicated that similar to individuals with bipolar disorder, the sample experiencing schizophrenia used maladaptive emotion regulation strategies (i.e. rumination, catastrophizing and self-blame) more often than non-clinical controls. Such results were replicated in a second paper (Rowland et al., 2012b) in which they looked at relationship between social cognitive abilities (i.e. the ability to understand social context) and cognitive emotion regulation. Individuals with a diagnosis of schizophrenia were more likely to engage in rumination and catastrophizing than non-clinical controls.

As indicated before, the lack of consistency in how emotion regulation is defined and measured limits the direct comparisons that can be made across studies. Whilst there is a broad agreement that there are significant differences in the use of emotion regulation strategies between non-clinical controls and individuals with psychosis, there are contradictory findings in terms of the specific strategies/ skills deficits involved (Khoury & Lecomte, 2012; O'Driscoll, Laing & Mason, 2014). Such inconsistencies are likely to be associated with the variance in how emotion regulation is defined and measured across studies as well as the lack of research in this area. Direct comparisons between the findings are further complicated by the lack of quality differentiation between the studies. As indicated before, the quality assessment tool used

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(Qualsyst) was relevant to all fields in which there was research in this topic (i.e. medicine, psychology and neuroscience), however it lacks a detailed assessment of the study methodologies, making it difficult to infer significance from findings based on quality ratings. Another finding is that there are similarities in how emotion regulation strategies are implemented between people with psychosis and mood disorders. This is important as interventions for psychotic conditions have consistently focused on positive symptoms (i.e. hallucinations and delusions) instead of focusing on developing emotion regulation skills (Gumley, Braehler, Laithwaite, MacBeth & Gilbert, 2010; Birchwood, 2003).

1.3.7.2 Biological and cognitive differences in individuals with psychosis

Brain imaging data has offered an opportunity to understand whether some of the differences in implementation of emotion regulation strategies are associated with biological variation (Foti & Hajcak, 2008). One of the differences reported is in brain activation. Morris et al. (2012) set up an experiment in which participants were required to undergo a well-known emotion regulation task (Ochsner et al., 2004; Urry et al., 2006) whilst being monitored through an fMRI scanner. Patterns of brain activation in three groups (i.e. individuals with a diagnosis of schizophrenia, individuals with a diagnosis of bipolar disorder and non-clinical controls) were studied. The task consisted of being exposed to neutral or negatively valenced images, whilst receiving instructions likely to increase (i.e. imagine this scene happened to a loved one), maintain (i.e. maintain your emotional experience to the image) or decrease (i.e. imagine this scene is not real) emotional arousal. Individuals with a diagnosis of schizophrenia showed hypoactivation of the prefrontal cortex during downregulation and an unusual non activation of the amygdala during periods of reported negative arousal compared with non-clinical controls and individuals with bipolar disorder. The authors propose that the brain imagery patterns of individuals with a diagnosis of schizophrenia are characterised by hypoactivation of both cortical and limbic regions during downregulation.

This theory of a biological vulnerability was further explored by van der Meer et al. (2014) who looked at brain activation in people with psychosis and non-affected siblings. The rationale for introducing this comparison group is that if there is a genetic vulnerability to psychotic experiences, non-affected siblings would be more likely to share some of the activation profile of the psychotic group. Participants were asked to down-regulate emotions using different strategies (i.e. reappraisal or suppression) following being exposed to negatively valenced images. The results showed hypoactivation of prefrontal cortex in the clinical and the non-affected siblings

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samples compared to non-clinical controls. Self-report data also demonstrated that compared to non-clinical controls, both clinical and non-affected samples reported higher levels of negative emotion following the presentation of the negatively valenced images. The authors proposed that the results indicate that non-affected siblings share a neurophysiological vulnerability to emotion regulation difficulties.

A key limitation of this type of experimental design regards the ecological validity of the findings. It could be argued that the pattern of brain activation caused within the confinement of a laboratory differs from real-life situations (Bernard & Bernard, 2012). It can also be argued that although causality is better measured in experimental studies, it is difficult to understand 'why' this difference is present (Punch, 2013).

A second limitation of brain imaging studies is their relative small sample size compared to other experimental or cross-sectional designs. This directly affects the generalisability of the findings (Lenkov, Volnova, Pope & Tsyt sare, 2013).

Another biological vulnerability argued to be associated with emotion regulation difficulties in psychosis is stress sensitivity. A number of studies have investigated the claim that individuals with psychosis are more sensitive to negative emotions and likely to experience negative emotionality in response to a variety of stimuli, not only to negatively valenced stimuli (Taylor, Kang, Brege, Tso, Hosanagar & Johnson, 2012; Strauss & Gold, 2012). Strauss et al. (2013) explored this theory by assessing whether differences in appraisal (i.e. neutral or negative) prior to the presentation of an image would have an impact on the arousal caused by that image. Findings indicate that individuals experiencing psychosis did not show a significant difference in arousal between neutral and negative appraised images. Horan et al. (2013) also attempted to investigate impairments in sensitivity to preappraisal manipulations of emotional stimuli in psychosis. The results indicated that individuals with a diagnosis of schizophrenia failed to regulate their arousal based on the appraisal cued by the researcher. Consistent with prior literature they also reported lower use of cognitive reappraisal and higher use of emotional suppression.

In a follow up study, Strass et al (2015) considered the role of attention in maintaining arousal caused by negatively valenced images in individuals with a diagnosis of schizophrenia. In this study, participants with a diagnosis of schizophrenia were instructed to focus attention on different focus points within a given image. The content of different areas of the picture were more/ less distressing in nature. Therefore, the task required the participants to exert cognitive control over their gaze and focus on different areas based on the instructions of the researcher. Findings from this study indicated that there was no difference in arousal based on where

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participants with a diagnosis of schizophrenia were instructed to direct their gaze. Eye tracking data from the task highlighted that this lack of variance within conditions was potentially because participants were unable to shift their attention from more distressing to less distressing fixation points in the picture. The findings regarding difficulties in attention were replicated by Guimond et al. (2018), who found that individuals with psychosis could not shift attention from emotionally valenced distractors. In this study, participants were asked to take part in a working memory task, whilst being presented with irrelevant emotional distractors. The results indicate that individuals with a diagnosis of schizophrenia were less accurate and took more time compared to when they were not exposed to distractors. They were also slower than controls, indicating that their ability to shift attention from the distractors and focus on the task was impaired.

Similarly, to the previous section, key limitations of this type of experimental design regard: the ecological validity of the findings (Bernard & Bernard, 2012) and difficulties in understanding 'why' there is a difference in arousal between groups (Punch, 2013).

In summary, research focusing on the biological and cognitive aspects of psychosis have found that individuals with psychosis demonstrate a different pattern of neuro-activation and higher stress sensitivity, characteristics that can be partially explained by their biased attention towards negative stimuli. These findings are important as they highlight the central role of environmental factors in maintaining psychosis. Key limitations of this literature are the small sample sizes and the ecological validity of the experimental designs used.

1.4 Discussion

This paper used a systematic review methodology to study the relationship between emotion regulation and psychosis. The two main findings of this review are that: (a) emotion regulation is inconsistently conceptualised and measured within the psychosis literature and as a consequence, the findings are difficult to compare across studies; (b) emotion regulation difficulties are associated with psychotic experiences, in a similar pattern to that observed in mood disorders, however it is unclear which specific emotion regulation strategies are involved.

1.4.1 Definition and Assessment of Emotion regulation within psychosis

Literature

The links between emotion regulation and Psychotic symptoms have only recently started to be investigated. Consequently, the evidence base is quite limited (Wright et al., 2014). Importantly, there is considerable variation in how emotion regulation has been defined and measured. The most widely used measures for emotion regulation were self-report questionnaires, which primarily focused on the individual's use of different emotion regulation strategies. This approach to emotion regulation research is embedded in the affective science-based framework which focuses on the operation of particular processes (i.e. the use of specific strategies) rather than looking at trait like abilities (Gross, 2015; Aldao, 2013) or the function or outcome emotion regulation strategies (Gratz & Roemer, 2004).

The experimental designs focused on a variety of observable measures of emotion regulation (e.g. facial expressions, physiological changes and neurological differences, response time, event related potentials and accuracy). These protocols were devised to overcome some of the shortcomings of self-report based data (Paulhus, & Vazire, 2007) (e.g. self-report biases, lack of psychometric scores reported). Another beneficial aspect of these protocols is that they did not rely on one source of data for emotion regulation. All experimental studies used a combination of measures. For instance, Painter et al (2018) converged the data from self-report, facial expression and physiological data to inform their conclusions. The combination of outcome measures was important as the methodologies used were typically novel and had not been validated within the psychosis literature.

In conclusion, due to differences in conceptualisation and measurement, replication of findings in this area are insufficient (Berking & Wupperman, 2012), and it is likely that different research groups are assessing slightly different constructs. There is a clear need for an agreed definition of emotion regulation to be consistently used in the study of psychotic experiences. A comprehensive definition of emotion regulation should include cognitive, behavioural and

experiential aspects of the emotional experience. As well as the skills necessary for effective emotion regulation both before (e.g. emotion awareness, understanding) and after (e.g. impulse control, acceptance, reappraisal) the emotion is elicited.

1.4.2 Differences in the use of emotion regulation strategies and cognitive-biological characteristics of individuals with psychosis

The literature at this point is inconclusive with regards to differences in the use of emotion regulation strategies between individuals with psychosis and the general population. Collectively, the findings suggest that individuals with psychosis use different emotion regulation strategies to non-clinical controls or use the same strategies less effectively (e.g. van der Meer et al., 2009; Kimhy et al., 2012). However, it is less clear which specific strategies underpin such differences (O'Driscoll, Laing & Mason, 2014). Whilst some of the data suggests an overreliance on emotion suppression and difficulties with reappraisal in people with psychosis, other studies find no significant difference between this group and non-clinical controls. Acceptance, on the other hand, has consistently been linked to emotion regulation difficulties in psychosis (e.g. Perry et al., 2011), though is considerably less researched to date.

Brain imaging data indicates that difficulties in emotion regulation are associated with the individual's cognitive functioning. One of the markers for this difference is heightened levels of arousal even after instructions to use specific emotion regulation strategies. The argument that psychotic experiences are associated with disorderly thoughts and impaired cognitive functioning is not novel (Keefe & Harvey, 2012; Bora, Yücel & Pantelis, 2009). However, this data suggests a link between such difficulties and emotion regulation. From this perspective, the individual's inability to effectively regulate emotion means that the arousal elicited by negative stimuli impacts the individual's ability focus on the cognitive demands of a given task. This is a significant finding as difficulties in cognitive functioning in this client group had been attributed to other factors such as lower IQ and working memory problems (Meier et al., 2015; Rossi et al., 2016).

A consistent finding between self-report and brain imaging studies is that individuals who experience psychosis have a lower threshold for negative affect compared to non-clinical controls. This is a significant finding as it highlights the impact of environmental factors on the development and maintenance of difficulties (Myin-Germeys & van Os, 2007) and the sensitivity to stress from this client group (Lardinois, Lataster, Mengelers, Van Os & Myin-Germeys, 2011).

Collectively these findings would be consistent with research that claims a relationship between psychosis and alexithymia (van 't Wout, Aleman, Bermond & Kahn R, 2007). It has been argued that individuals experiencing psychosis show a type-II alexithymia profile in which they

find it difficult to identify, analyse and verbalise emotions but their emotional arousal is unaffected (Moormann et al., 2008; Fogley, Warman & Lysaker, 2014). In this way, unprocessed emotions might be suppressed while the arousal elicited would still be present. Therefore, causing and/or maintaining psychotic experiences through the frequent exposure to high levels of distress (Picardi, Caroppo, Porcelli, Di Maria, Munitola & Martinotti, 2012).

A second suggestion from the studies reviewed is that the emotion regulation profile in individuals experiencing psychosis is similar to the profile of those with mood disorders (e.g. Lincoln et al., 2015; Livingstone et al., 2009). There is evidence that deficits in awareness, understanding and acceptance of emotions are shared features of 'psychotic' and 'mood disorders'. This finding would be consistent with theoretical models that understand psychotic experiences as a general vulnerability to difficult/ stressful events rather than a specific/ idiosyncratic diagnosis.

1.4.3 Critical review of the literature.

A key methodological limitation acknowledged by most studies was the use of small samples. Apart from three studies (Zou et al., 2018; Rowland et al., 2013a; Rowland et al., 2013b), the articles reviewed had a small sample size which directly affected the power of the relationship between the variables and the generalizability of the findings (Etz & Arroyo, 2015). In addition, most studies reviewed were cross-sectional. The lack of longitudinal data limits the causal inferences that can be drawn between the variables (Sedgwick, 2014).

Another limitation of the assessments used is the lack of testing /reporting of psychometric properties of the measures. The exceptions are the ERQ (Gross & John, 2003), the CERQ (Garnefski et al., 2001) and the ERSQ-ES (Ebert, Christ & Berking, 2013). Additionally, the experimental studies used various methodologies which had not been validated with individuals with psychosis. Even though the measures and protocols used had face validity, this lack of psychometric data raises questions about the validity of findings (Germain, 2006).

1.4.4 Implications

In addition to the need to agree a definition and set of valid means of measuring emotion regulation, there is a need for controlled studies of the cognitive, behavioural, physiological and experiential processes linked to emotion regulation and distress associated with psychotic experiences. These investigations should include longitudinal methodologies and a broader selection of participants to overcome potential cultural bias in recruitment to studies to date.

From a clinical perspective, this review indicates that individuals distressed by psychotic experiences would benefit from learning emotion regulation skills. This would offer a new focus for psychological therapy. Instead of challenging delusions or beliefs about hallucinations, this approach would offer a way to change the individual's relationship with these experiences by managing associated distress (Wright et al., 2014).

1.4.5 Strengths and limitations of the current review

A strength of this review is the incorporation of brain imaging/ physiological as well as self-report data to the understanding of emotion regulation in psychosis. The review also collated and appraised findings from studies based on different models of emotion regulation. Finally, it reflected on the obstacles to a unified review of the literature and suggested ways to overcome such difficulties.

A key methodological limitation of this review is that only studies that actively aimed at measuring emotion regulation were included. This choice results in two key drawbacks. Firstly, it excluded other concepts that are theoretically similar to emotion regulation. For instance, Block (2002) described the constructs of: ego-control, the active inhibition or expression of impulse; and ego-resiliency, the ability to modify ego-control based on environmental demands. Qualter et al. (2015) developed a measure for emotional self-efficacy, which is described as the ability to identify, understand and express emotions adaptively. This resulted in the potential exclusion of studies which may have further informed the review objectives. The second drawback is that sub-factors that are assumed to constitute emotion regulation in different models were not individually searched. In this way, research specifically focusing on aspects of emotion regulation (e.g. mindfulness, acceptance, emotional awareness) were not included. This choice was made because, due to the lack of clarity in what constitutes emotion regulation, independently searching individual aspects of different models would broaden excessively the search criteria and consequently, the evidence would be too wide-ranging to be compared and summarised (Calkins, 2010; Lewis et al., 2010).

A second limitation of this review is that even though the psychological model presented conceptualised psychotic experiences on a spectrum, this review did not include sub-clinical or at risk samples. This means that the data only represents emotion regulation characteristics for the population that met diagnostic criteria for a psychotic condition. In this way, potentially relevant papers were excluded. This somewhat contradictory decision was made in order to ensure construct validity for psychosis (Gumley, Taylor, Schwannauer & MacBeth, 2014). As only

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individuals that were suffering from psychotic experiences with a level of distress that required them to seek support from mental health services (i.e. seek a diagnosis) were included.

Finally, the current review only included studies published in English, consequently the majority of publications were from western developed countries. This is likely to have introduced a cultural bias to the findings described, limiting the generalisability of the results. In addition, articles that were not published in peer reviewed journals (e.g. grey literature) were excluded due to concerns about their quality and the time demand associated with searching and evaluating this type of publication. However, this may have skewed the findings and introduced a publication bias as only papers with significant results were reviewed, it may also have overlooked more detailed/niche findings (Paez, 2017). Furthermore, the use of a narrative approach to synthesise the data poses notable limitations as it intrinsically introduces an element of bias to the summary of data (Higgins et al., 2011).

1.4.6 Conclusion

There is some evidence that individuals with psychosis also have difficulties in emotion regulation. The specific processes involved in this relationship are not clear, as the research to date yields inconsistent results. There is evidence suggesting that emotion regulation difficulties experienced in psychosis are similar to those associated with mood disorders suggesting that rather than a specific feature of a discrete condition psychotic experiences are associated with a general vulnerability. The lack of a broad consensus regarding the definition of emotion regulation results in the use of different measures across studies, which in turn limits comparisons that can be drawn across studies. A definition of emotion regulation has been proposed, that encompasses trait like aspects of emotion regulation as described by Gratz & Roemer (2004). This will allow for findings of studies to be directly compared and replicated. The development of a robust evidence base on the role of emotion regulation difficulties in people experiencing psychosis would be informative for the development of new interventions and care path

Chapter 2 Empirical Paper. The Impact of Dialectical Behavioural Therapy Skills Training on Psychosis

'...after a careful analysis, we had to pose the question whether we are not merely dealing with the effect of a particularly powerful psychological trauma on a very sensitive person rather than with a disease in the narrow sense of the word' (Bleuler, 1911/1950, p. 300, as cited by Gumley et al., 2013)

2.1 Introduction

Psychosis is a pervasive and enduring mental health presentation characterised by difficulties in interpreting reality (National Institute of Mental Health, 2018). The primary experiences associated with psychosis are: delusions⁶, hallucinations⁷, difficulties with thinking/concentration⁸ and apathy⁹ (British Psychological Society, 2017). It is estimated that the median lifetime prevalence rate of psychosis is 7.49 per 1000 people (Moreno-Küstner & Martin, 2018). Despite the relatively low prevalence rate, the total cost in the UK for psychotic disorders exceeds £13 billion (Kirkbride & Jones, 2010). Unsurprisingly, psychosis is ranked as the most expensive chronic condition to be managed (Garis & Farmer, 2002).

2.1.1 Current intervention for psychosis

Medication and Cognitive Behavioural Therapy (CBTp) are currently recommended by NICE guidelines for the management of psychosis (NICE 2013, NICE 2014). However, such interventions have mixed success rates (Pilling et al., 2002; Wykes, Reeder, Corner, Williams & Everitt, 1999).

Pharmacological treatments are often offered as the first line intervention for reducing psychotic experiences and relapse rates (Bola, Kao, Soydan & Adams, 2011). However, they can produce undesirable side effects. For example, they can impact on cognitive ability (e.g. slowing

⁶ Strong beliefs not shared by others, which do not have pragmatic evidence to support them

⁷ Sensory experiences that that cannot be observed by others (i.e. hearing voices, feeling/ seeing things that are not present)

⁸ Often described as thought disorder, it is an inability to focus on a specific task and act based on the information given from others or make sense to others

⁹ Often described as negative symptoms, it is when individuals become withdrawn and inexpressive

processing speed and impairing learning), increase depressive symptoms, and increase weight, aggression, and suicidality (Awad & Voruganti, 2004; Weickert & Goldberg, 2005). Recovery rates are also limited, with as many as 50% of individuals taking medication, still presenting with distress associated with psychotic symptoms (Robinson, Woerner, McMeniman, Mendelowitz & Bilder, 2004). In addition, medication does not target cognitive symptoms, which are recognised as a core experience in psychosis (Saykin et al., 1994). Consequently, as many as 74% of people prescribed 'anti-psychotics' discontinue their medication within 18 months (Lieberman et al., 2005).

Cognitive Behavioural Therapy (CBTp) is a well evidenced psychological intervention for psychosis. CBTp aims to prevent the development of psychosis in individuals at risk (Stafford et al., 2013), as well as decrease the frequency/severity of positive (e.g. delusion, hallucination) and negative (e.g. apathy) symptoms and improve functioning (van der Gaag, Valmaggia & Smit, 2014) for individuals experiencing psychosis. However, recent meta-analyses of the evidence base have found that the effectiveness of CBTp is limited. The results suggest a symptomatic improvement within the small range, akin to the results for supportive therapy (Newton-Howes & Wood, 2013; Jauhar, McKenna, Radua, Fung, Salvador & Laws, 2014), and a small reduction in distress, which becomes non-significant when adjusted to publication bias, with no evidence for improvement in quality of life (Laws, Darlington, Kondel, McKenna & Jauhr, 2018). These findings suggest that there are some elements of psychosis that are not currently being targeted by the mainstream interventions.

2.1.2 Emotions in psychosis

Emotional distress has been proposed as a key aspect of psychosis that is consistently missed in mainstream interventions (Gumley et al., 2013). Research in the relationship between emotions and psychosis have found that individuals experiencing psychosis are more sensitive to stress than the general population (Khoury & Lecomte, 2012; Llerena, Strauss & Cohen, 2012), and report high levels of threat (Reininghaus et al., 2016). Despite stress sensitivity, psychosis has been consistently linked to alexithymia (Henry, Bailey, von Hippel, Rendell & Lane, 2010; O'Driscoll, Laing & Mason, 2014), suggesting that individuals experiencing psychosis express less emotions than the general population. In addition, psychotic disorders have a high comorbidity rate with mood disorders (Kiran & Chaudhury, 2016; Samsom & Wong, 2015), which suggests they have some shared features. Furthermore, social stigma is a key experience for people experiencing psychosis, which is associated with experiences of shame, increased self-criticism and paranoia (Birchwood et al., 2007; Michail & Birchwood, 2013).

2.1.3 Emotion regulation in psychosis

There is also evidence to propose that the pattern of emotion regulation in psychosis is different from the general population. Individuals experiencing psychosis are over-reliant on maladaptive emotion regulation strategies (e.g. emotional suppression, rumination, rumination) and have difficulties in implementing adaptive ER strategies (e.g. acceptance, cognitive reappraisal) (Kimhy et al., 2012; Nittel et al., 2018; Perry et al., 2011). In addition, evidence indicates that individuals experiencing psychosis may have difficulties in awareness and understanding of different emotions (Lincoln et al., 2015). Brain imaging studies have found different patterns of activation in individuals experiencing psychosis compared to non-clinical controls whilst engaging in ER tasks (Morris et al., 2012; van der Meer et al., 2014). Furthermore, individuals experiencing psychosis have difficulties in shifting attention away from emotionally negative valenced distractors (Guimond et al., 2018; Strauss et al., 2015). Collectively, these findings suggest ER difficulties are a significant part of the psychosis presentation, which could be targeted in interventions (Kimhy et al., 2012; Lincoln et al., 2015; O'Driscoll et al., 2014).

2.1.4 Emotion regulation interventions for psychosis

Third wave approaches, such as acceptance and commitment therapy (ACT), compassion focused therapy (CFT) and dialectical behavioural therapy (DBT), identify emotion regulation as a key intervention for supporting individuals experiencing psychosis (Wright et al., 2014). Emotion regulation strategies have been an essential part of interventions for many mental health conditions (Picó-Pérez, Radua, Steward, Menchón & Soriano-Mas, 2017). However, most of the research in psychosis has neglected the importance of emotions due to its historical classification as a 'non-affective disorder' (Livingstone, Harper & Gillanders, 2009).

ACT has been researched with individuals experiencing psychosis with favourable results. The primary goal of ACT is to help weaken the relationship between psychotic experiences and distress and help increase behaviours that are based on the individuals' values (Pankey & Hayes, 2003). Research in this area is limited but suggests that ACT can be helpful in decreasing the frequency of crisis episodes and depressive symptoms (White et al., 2011); increasing symptom awareness and lowering symptom believability resulting in lower frequency of hospitalization (Bach & Hayes, 2002); and improving affective symptoms, social impairment, and distress associated with hallucinations (Gaudio & Herbert, 2006).

CFT for psychosis has two primary goals: to develop the experience of positive affect and to decrease the shame associated with social stigma (Gumley et al., 2013; Ellerby, 2016). From a CFT perspective, interventions focused on decreasing negative affect serve only one side of the

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problem; individuals need to learn how to increase their experience of positive affect and a physical sense of safeness. CFT also encourages the development of empathy towards the self and others. The evidence base for CFT for psychosis is limited but promising. Results show that CFT has low attrition and high acceptability as well as having a significant impact in decreasing depressive symptoms (Braehler, et al., 2013; Laithwaite et al., 2009).

DBT has been developed with a core focus on developing emotion regulation skills in the treatment of borderline personality disorder (BPD) (Linehan, 1993; Verheul et al., 2003). There are four components to DBT: emotion regulation, distress tolerance, interpersonal effectiveness and mindfulness (Linehan, 1993). Although this therapeutic approach was developed for BPD, its principles have been adapted with positive outcomes for a variety of presentations: addictions (Linehan et al., 1999), anger (Evershed et al., 2003), eating disorders (Chen et al., 2008), depression (Lynch et al., 2007), and attention-deficit hyperactivity disorder (Fleming et al., 2015; Hirvikoski et al., 2011). In a recent literature review, it has been argued that these components could form an effective intervention for psychosis (Kemp, 2018). However, DBT has never been formally researched as an intervention for psychosis.

2.1.5 Current study

There is a growing evidence base suggesting that emotion regulation difficulties may play a causal role in the maintenance of distress associated with psychosis (O'Driscoll et al., 2014). In addition, third wave approaches to psychological interventions have limited but promising results targeting emotion regulation difficulties in individuals experiencing psychosis (Wright et al., 2014). DBT informed interventions in particular may be effective in addressing emotion regulation difficulties, with successful adaptations for a variety of clinical presentations (Dimeff & Koerner, 2007). However, there is no published research using DBT informed skills with individuals experiencing psychosis (Kemp, 2018). The purpose of the current study is to determine whether teaching DBT informed skills to people experiencing current psychosis will have a positive impact on their experience of affect, paranoia and ability to regulate emotions and tolerate distress.

The specific hypotheses are that following a brief four week (eight session) individual DBT skills training package, tailored for people experiencing psychosis:

1. Participants will report improved emotion regulation, as measured by the Difficulties in emotion regulation scale (DERS; Gratz & Roemer, 2004)
2. Participants will report greater ability to tolerate distress, as measured by The Distress Tolerance Scale (DTS; Simons & Gaher, 2005)

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3. Participants will report a lower level of state paranoia, as measured by The Paranoia Checklist (Freeman et al., 2005).

4. Participants will report less negative affect and more positive affect, as measured by The Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988).

2.2 Methods

2.2.1 Design

The current study followed a multiple baseline single case series design. Single case methodologies are intrinsically within participant designs in which the person acts as their own control. This involves the frequent measurement of outcome variables over time that (when compared to other methodologies) minimises the impact of extraneous variables on the data and therefore increases the validity of inferential findings (Morley, 2018). This methodology has been used in the clinical psychology literature for over 50 years, and has recently increased due to the development of best practice guidelines (Kratochwill et al., 2013), reporting guidelines (Tate et al., 2013) and specific statistical analyses (Shadish, 2014). Single case experimental designs are appropriate as a way of bridging the gap between randomised control trials (RCTs) and clinical practice (Schork, 2015), especially, in the development and evaluation phases of a new treatment (Morley, 2018).

2.2.2 Participants

Seven participants (three females, three males, one gender non-binary) were recruited from Early Intervention for Psychosis (EIP) and Community Adult Mental Health Teams (CMHT) across the south of England. Participants met criteria for schizophrenia or schizoaffective disorder either through diagnosis or confirmation from a psychiatrist¹⁰ as defined by the International Classification of Diseases-10 (ICD-10, 2010). Participants had experienced at least one episode of psychosis. Demographic information per participant was collated on table 3 below:

¹⁰ EIP teams tend to delay diagnosis, to avoid stigma, even if individuals are being supported by the team

Table 3 Demographic information per participant

Participant Number	Age	Gender	Service	Diagnosis	Medication	Presenting Difficulties
1	37	Female	EIP	No formal diagnosis	Risperidone (anti-psychotic)	Paranoid ideation Anxiety about mental health problems Past hospital admission Frequent worries about admission to hospital
2	24	Gender non-binary	EIP	No formal diagnosis	Risperidone (anti-psychotic) Diazepam (anxiolytic, as needed)	Visual and auditory hallucinations Paranoid ideation Social anxiety Difficulties understanding emotions Referred for autism assessment Past hospital admission
3	48	Male	CMHT	Schizophrenia	Unwilling to take prescribed antipsychotic	Paranoid ideation PTSD symptoms (i.e. flashbacks, avoidance) Lacked insight Somatization of symptoms Long term (>1 year) hospital admission
4	54	Male	CMHT	Schizophrenia Recurrent Depression	Quetiapine (anti-psychotic) Venlafexine (anti-depressant) Zopiclone (sleep difficulties) Diazepam (anxiolytic, as needed).	Sleep difficulties Depression Paranoid ideation Generalised anxiety Recurrent hospital admissions Periods of catatonia
5	47	Female	CMHT	Schizoaffective Disorder Complex Trauma	Amitriptyline (anti-depressant) Zopiclone (sleep difficulties)	Sleep difficulties Paranoid ideation PTSD symptoms (i.e. flashbacks, avoidance)

				Depression Social Anxiety	Pregabalin (anxiolytic) Diazepam (anxiolytic, as needed) and Olanzapine (Anti- psychotic)	Visual and auditory hallucinations Suicidal ideation with intent Recurrent hospital admissions
6	43	Male	CMHT	Schizoaffective Disorder Complex Trauma Depression Social Anxiety	Lithium (mood- stabiliser) Zopiclone (sleep difficulties)	Sleep difficulties Paranoid ideation PTSD symptoms (i.e. flashbacks, avoidance)
7	41	Female	CMHT	Schizoaffective Disorder Depression Generalised Anxiety Disorder	Quetiapine (anti- psychotic) Venlafexine (anti- depressant) Pregabalin (anxiolytic) Diazepam (anxiolytic, as needed)	Recurrent hospital admissions, seen in rehabilitation ward Paranoid ideation Depression Anxiety

2.2.2.1 Inclusion Criteria

Participants were invited to take part in the study if they were currently experiencing paranoia, assessed using a measure of trait paranoia (GPTS, Green et al., 2008). Participants were included in the study if scoring within the clinical range during the screening assessment. Participants also had to be over the age of 18 and have the capacity to consent to take part in the study. Participants who were not fluent in English language were excluded from the study as the intervention was a talking therapy. Finally, participants had to be assigned to a care-coordinator to ensure any change in presentation and increase in risk during the study were supported appropriately.

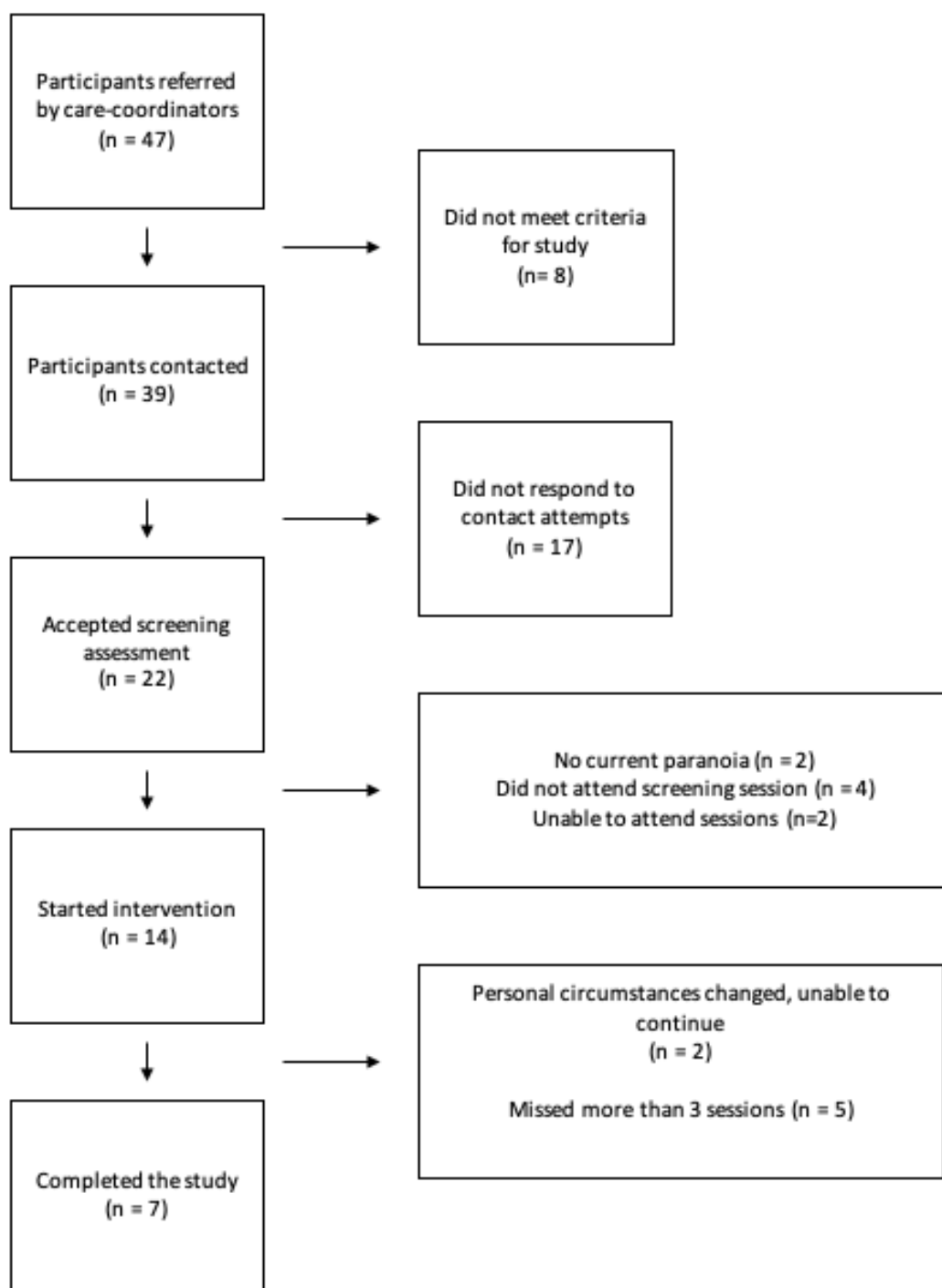
2.2.2.2 Exclusion criteria

Participants were excluded if they presented high risk of harm to self or others. They were also asked, during the screening assessment, about their intake of alcohol and illicit drugs. Participants were required to attend sessions sober. Participants were also excluded if they were engaged in another psychological therapy or could not attend sessions twice a week. Comorbidity with other psychiatric disorders (e.g. personality disorders, mood disorders) was not an exclusion criterion.

2.2.3 Recruitment

Following NHS and Trust ethical approval, clinicians working within the EIP and CMHT teams were contacted and given an information sheet about the study (Appendix B). The clinicians were asked to review their caseload, identify potential participants and discuss with them whether they would be interested in taking part. Those who agreed to take part in the study were contacted by the researcher and offered a screening assessment. Individuals who met the inclusion criteria and consented then commenced the baseline phase of the study. The flowchart below (Figure 3) summarises the recruitment process.

Figure 3 Recruitment Flowchart



2.2.4 Measures

- *Demographic questionnaire*: This measure included: age, gender, ethnicity, time since onset of psychotic symptoms, medication, and previous psychological therapy.

- *Trait paranoia*: Green Paranoid Thoughts Scale (GTPS; Green et al., 2008) is a dimensional measure of paranoia that assesses both content and severity of paranoid thoughts in clinical and non-clinical populations. It consists of thirty-two items divided into two subscales: ideas of reference and ideas of persecution. Each item is rated on a 5-point likert scale, ranging from 1 (not at all) to 5 (totally). Higher scores on the scale would indicate difficulties with paranoid thinking. The scale has excellent internal consistency for the clinical samples (Cronbach $\alpha = .90$), and good test-retest reliability ($r = .87$). Convergent validity has been shown with the Paranoia Scale (Fenigstein & Venable, 1992), Psychotic Symptoms Rating Scale (Haddock et al., 1999) and paranoid items of the Peters Delusions Inventory (Peters et al., 1999). The scores for both subscales range from 16-80. The clinical cut-off for social reference is 46.4 and for ideas of persecution is 55.4.

- *Emotion regulation* – Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36-items self-report questionnaire designed to assess Emotion Regulation difficulties in a population of treatment seeking individuals with one or more diagnosis of mood disorders. This measure conceptualises emotion regulation as a dimensional trait and it considers the different components necessary for effective emotion regulation in contrast with other existing questionnaires which focus on measuring the use of specific strategies. This questionnaire was used as it mirrors the understanding of emotion regulation from the DBT model. It also counteracts the potential limitations of using process focused measures, which is to oversimplify effective emotion regulation by assessing specific strategies to the detriment of others. The measure yields six subscales: non-acceptance of emotional responses; difficulties engaging in goal directed behaviour; impulse control difficulties; lack of emotional awareness; limited access to emotion regulation strategies; and lack of emotional clarity. Individuals score the individual items on a 5-point likert scale ranging from 1 (almost never) to 5 (almost always). Higher scores suggest

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greater problems with emotion regulation. The subscales have good internal consistency (Cronbach $\alpha > .80$) in clinical samples and the measure shows appropriate convergent validity with scales measuring experiential avoidance and emotional expressivity (Hallion, Steinman, Tolin & Diefenbach, 2018). As indicated before, this conceptualisation of emotion regulation is likely to offer more comprehensive findings, comprised of the different skills necessary to adaptively regulate emotions. No clinical cut-offs are reported for this measure.

- *Distress tolerance*: The Distress Tolerance Scale (DTS; Simons & Gaher, 2005) is a 15-item self-report measure examining the degree to which individuals can withstand negative emotional states. Items are assessed in a likert scale ranging from 1 (strongly agree) to 5 (strongly disagree), with higher scores indicating difficulties in tolerating distress. The questionnaire is comprised of four subscales measuring the individual's ability to: tolerate, appraise, absorb and regulate distress. The questionnaire has excellent internal consistency (Cronbach $\alpha > .90$) and good test-retest reliability ($r = .63$). It was developed using a non-clinical sample and therefore, no clinical cut-offs are reported. However, it has been used for research in eating disorders (Corstorphne et al., 2007), anxiety (Keough, et al., 2010) and drug use (Buckner et al., 2007). This questionnaire was used as it is in line with the DBT model and conceptualises distress tolerance as a dimensional construct.

- *State paranoia*: The Paranoia Checklist (PC; Freeman et al., 2005), brief 5-item version was devised to measure fluctuations in state paranoia. It includes items assessing ideas of persecution and reference each rated on a 11-point likert scale ranging from 0 (not at all) to 10 (very much). Individuals rate specific statements based on how they feel 'at the moment'. Higher scores in this scale represent difficulties with paranoid thoughts. The Paranoia Checklist has good internal consistency ($\alpha = .83$; Schlier, Moritz, & Lincoln, 2016). This brief questionnaire was used to diminish the burden of repeated measurement. No clinical cut-offs are reported.

- *Positive and negative affect*: The Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988) is self-report measure of 20 emotions. Individuals rate on a 5-point likert scale ranging from 1 (slightly or not at all) to 5 (extremely), how much they feel the listed emotion

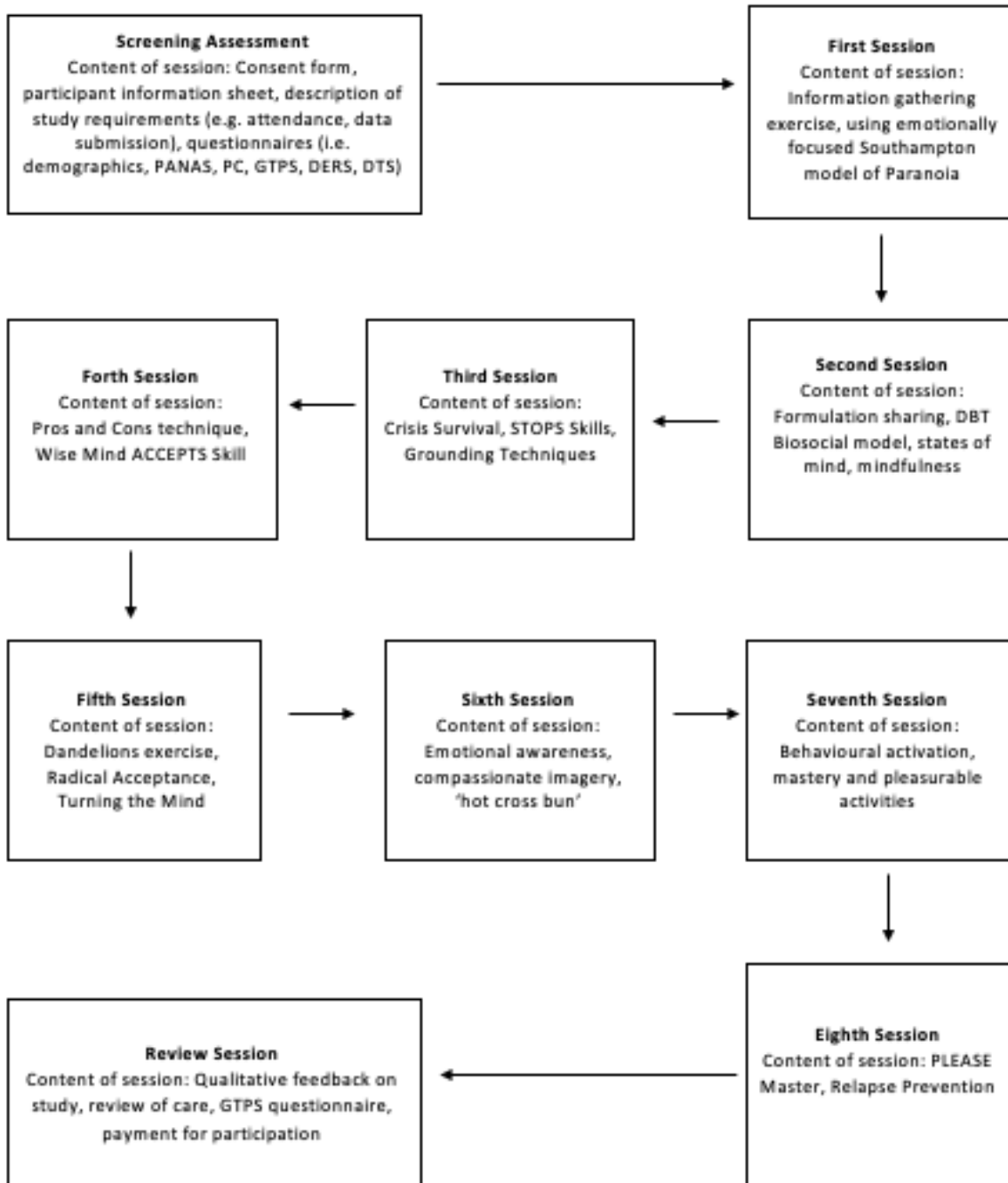
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at the moment. The measure has two subscale: positive valenced and negative valenced affect. Internal consistency for both negative and positive affect are good (Cronbach $\alpha > .85$). The PANAS is the most widely used measure of positive and negative affect, with the original paper being referenced over 32,000 times. No clinical cut-offs are reported.

2.2.5 Intervention

The intervention was based on the Dialectical Behavioural Therapy Skills Training Handbook (Linehan, 2014). The primary researcher and his supervisors, who have expertise in both psychosis and DBT, decided which specific skills would be most relevant for individuals with psychosis. Based on this information, a therapy protocol (Appendix C) and handouts (Appendix D) per session were developed. The two main modules of the intervention were: distress tolerance (DT) and emotion regulation (ER). Traditional DBT also includes mindfulness and interpersonal effectiveness modules. Mindfulness was introduced as an overarching process, and every session started with a short mindfulness exercise. However, this was not a focus of the intervention, due to the existing literature on the effectiveness of mindfulness for psychosis (Chadwick, 2014). Interpersonal skills were not included in the intervention, as it would be difficult for participants to practice skills between sessions over the short period of the intervention. The first session consisted of an information gathering exercise, based on the Newman-Taylor & Stopa (2013) model of paranoia, to consider how ER and DT skills could be relevant to the participant's presentation. The second session was an opportunity to share the developed formulation and explain the basic ideas of the DBT model. Sessions 3-5 consisted of DT skills and sessions 6-8 consisted of ER skills training. The specific techniques covered are summarised in the flowchart below (Figure 4).

Figure 4 Intervention Flowchart



2.2.6 Therapist

The therapy sessions were conducted by the researcher, who was a third year trainee clinical psychologist. In preparation for this study, he attended formal DBT training for eight days. The therapist also received one hour of clinical supervision per 10 hours of clinical contact throughout the study from experienced clinical psychologists. All participants were discussed and formulations individually revised during supervision. Participants with increased risk or deterioration in presentation were discussed in supervision on a weekly basis.

2.2.7 Ethical considerations

2.2.7.1 Ethical approval and guidance

Ethical approval was granted by the Southern Health NHS Foundation Trust Research and Development, Health Research Authority and the University of Southampton ethics committees.

2.2.7.2 Informed consent

Prospective participants were contacted by their referring clinician and provided with the participant information sheet (Appendix E). This document outlined the study's purpose, demands on participants and potential benefits from taking part. It also highlighted the participant's right to withdraw from the study at any point. Prospective participants were only contacted by the researcher after demonstrating interest in the study to their referring clinician.

The screening assessment involved discussion of the information sheet and clarification of any questions regarding the study, assessment of exclusion and inclusion criteria, and completion of the consent form.

If an individual was not eligible for the study, they were provided with a rationale and, with their agreement, the information was shared with the referring clinician.

2.2.7.3 Data protection and confidentiality

Paper questionnaires were anonymised using assigned participant numbers. These were stored securely in a locked cupboard in a NHS building, accessible only by the research team. Consent forms with participant numbers were kept in a separate room. Data was inputted to Excel using participant numbers. Paper copies of the data will be destroyed according to the University of Southampton data policies in 10 years.

The present study conformed to General Data Protection Regulation (2018) and Data Protection act (2018) and the University of Southampton School of Psychology Ethics Committee Codes of Practice.

2.2.7.4 Risks of participation

Care was taken to keep participant burden low. Only standardised measures were used and where possible, shorter versions included. It was also important to make clear to participants and/or referring clinicians that taking part in the study would not constitute usual treatment and participation would not affect access to other interventions.

There is no evidence that DBT skills training would generate negative effects. However, it was possible that individuals with psychosis might become distressed during the research process. It was agreed that if participants deteriorated in presentation this would be shared promptly with their care-coordinator. Likewise, NHS confidentiality procedures were clearly outlined with participants and followed where required (e.g. need to share risk related information with relevant services).

Participants were given £10 per therapy session (i.e. £80 if completed all therapy sessions) for their time and contribution to the study.

2.2.8 Procedure

Following the screening assessment, participants completed state paranoia, affect, emotion regulation and distress tolerance measures (Appendix F). Participants were asked to fill in the measures every other day for the two weeks prior to their first therapy session. This constituted the baseline phase of the study.

From the first intervention session, participants were required to continue filling in the questionnaires every other day and attend two one-hour long therapy sessions per week (intervention phase). The sessions took place in a NHS building. Participants who missed three sessions were terminated from the study and signposted to other forms of support that might be relevant for them (e.g. referral to psychological therapies). Any change in presentation, including risk, was discussed in session and the information shared with their care-coordinator.

On the last therapy session, participants were also given a pack with questionnaires to be filled in every other day for two weeks (follow-up phase). They were also offered the opportunity to bring their care-coordinators to their review session, in which their experience of the study was summarised and next steps could be discussed. With the consent of participants, care-

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coordinators who could not attend the review session were given information about the participant's experience of the study. In the review session, participants were paid for taking part in the study. Participants who were terminated from the study were offered a review session with their care-coordinators and were paid for the therapy sessions attended. Care-coordinators who wanted to continue using the skills developed during the study with their clients were offered a consultation session with the researcher.

2.2.9 Data preparation and analysis

2.2.9.1 Data entry

We have used Microsoft Excel to collate data and prepare graphs for visual inspection. We used the Statistical Package for the Social Sciences (SPSS) for MAC (Version 25) and the online calculator at www.singlecaseresearch.org (Vannest, Parker, & Gonen, 2011) for inferential data analysis.

2.2.9.2 Missing data

Participants submitted data at each therapy session. Questionnaires were jointly reviewed at these points and missing data would be noted. If a participant did not fill in a whole day or a whole questionnaire, data points were left blank.

2.2.9.3 Analysis plan

Visual exploration of the data followed the protocol described by Morley (2018), in which data points are presented alongside the broadened median score. The broadened median score, per phase, was calculated and presented alongside the data to counteract the impact of extreme scores (Morley, 2018). However, visual data explorations are susceptible to observer bias and consequently, have low interrater reliability (Ottenbacher, 1993). Therefore, formal statistical tests have been developed to aid interpretation of findings and avoid misleading conclusions (Jones, Weinrott, & Vaught, 1978). In this way, recent single case design guidelines suggest the use of both statistical analysis and visual inspection (Kratochwill, Levin, Horner, & Swoboda, 2014; Morley, 2018). The Tau-U test was used to calculate statistical differences in scores between phases. This is because the TAU-U is considered a more sensitive summary than mean or median differences between phases (Parker, Vannest, Davis & Sauber, 2011; Huberty & Lowman, 2000) as it controls for data that lacks central tendency (Wilcox & Keselman, 2003). Subjective feedback on the intervention was gathered at the end of the study on their review session. Themes from

the participants' answers were written down by the main researcher. This data was collated to demonstrate what aspects of the intervention were most/ least helpful per participant. It was beyond the scope of this project to formally analyse this data.

2.3 Results

2.3.1 Trait paranoia scores

The Green Paranoid Thoughts Scale (Green et al., 2008) showed that all participants scored in the clinical range for social reference and persecution at the start of the study (see table 4 below).

This measure was repeated at review.

Table 4 Participants Results on Trait Paranoia Measure

Referral source	Participant	Subscales	Pre	Interpretation	Post	Interpretation
EIP	1	Social Reference	59	Clinical	30	Non-Clinical
		Persecution	64	Clinical	20	Non-Clinical
EIP	2	Social Reference	46	Clinical	37	Non-Clinical
		Persecution	56	Clinical	51	Non-Clinical
CMHT	3	Social Reference	56	Clinical	51	Clinical
		Persecution	60	Clinical	54	Non-Clinical
CMHT	4	Social Reference	62	Clinical	59	Clinical
		Persecution	62	Clinical	57	Clinical
CMHT	5	Social Reference	74	Clinical	62	Clinical
		Persecution	69	Clinical	61	Clinical
CMHT	6	Social Reference	78	Clinical	63	Clinical
		Persecution	66	Clinical	56	Clinical
CMHT	7	Social Reference	68	Clinical	54	Clinical
		Persecution	69	Clinical	66	Clinical

Note. The GPTS was interpreted using non-clinical and clinical norms reported by Green et al., (2008).

2.3.2 Participant 1

Figure 5 shows the participant's score on the measures across the different phases of the study.

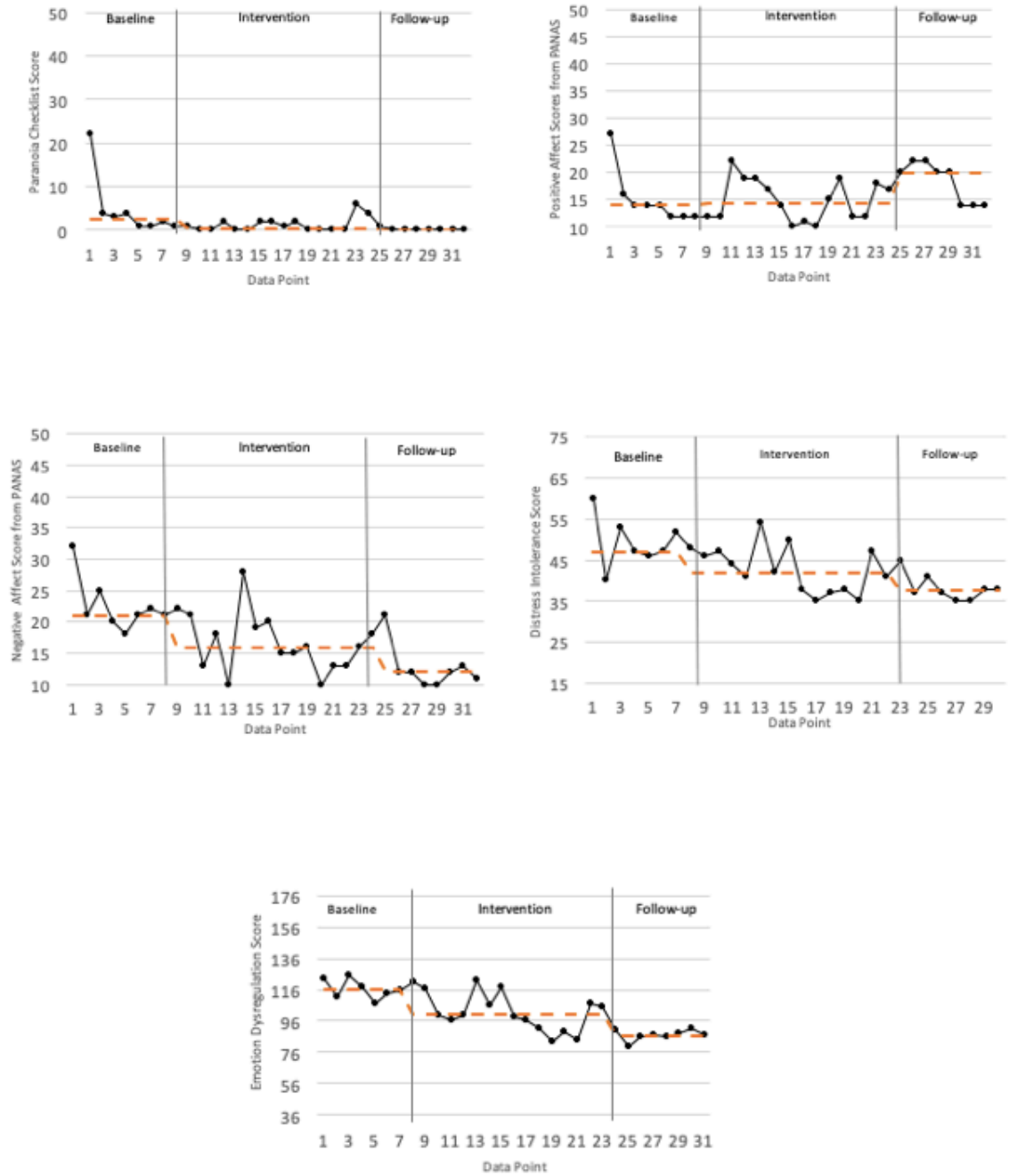


Figure 5 Participant 1 data points and broadened medians from outcome measures

Visual analysis of the data suggests a reduction in scores between phases for negative affect, distress intolerance and emotional dysregulation; and an increase in positive affect. The broadened median also indicates a slight reduction in state paranoia, though scores on this measure approach a floor effect.

The Tau-U test indicates statistical differences between phases, summarised in Table 5.

Table 5 TAU-U Results Between Phases for Participant 1 Across All Scales

Scale	Baseline/Intervention			Intervention/Follow-up			Baseline/Follow-up		
	Tau-U	z Score	p Value	Tau-U	z Score	p Value	Tau-U	z Score	p Value
State Paranoia - PC	-.53	-2.08	0.04*	-.42	-1.65	.10	-.95	-3.20	<.01**
Negative affect- PANAS	-.07	-2.73	0.01**	-.70	-2.73	.01**	-.89	-2.99	<.01**
Positive Affect - PANAS	0.02	0.09	0.93	.02	.09	.93	.52	1.73	.08
Emotion Dysregulation - DERS	-.06	-2.47	0.01**	-.74	-2.91	<.01**	-1.00	-3.24	<.01**
Distress Intolerance - DTS	-.05	-1.90	0.06	-.50	-1.94	.05*	-.93	-3.01	<.01**

Note. * $p < .05$. ** $p < .01$

Consistent with the visual inspection of data, the results demonstrate a reduction in state paranoia ($u = -.95$, $z = -3.20$, $p < .01$), negative affect ($u = -.89$, $z = -2.99$, $p < .01$), emotion dysregulation ($u = -1.00$, $z = -3.24$, $p < .01$) and distress intolerance ($u = -.93$, $z = -3.01$, $p < .01$) between baseline and follow-up. There was no significant difference in positive affect between the phases.

Subjective feedback

Participant 1 reported that she benefited from ‘learning about emotions’ and seeing how they impact on her ‘thoughts and behaviours’. She also described ‘liking’ being able to talk about her ‘worries about being crazy’ with someone who ‘understood her condition and was not judgemental’.

2.3.3 Participant 2

Figure 6 shows participant's score on the measures across the different phases of the study.

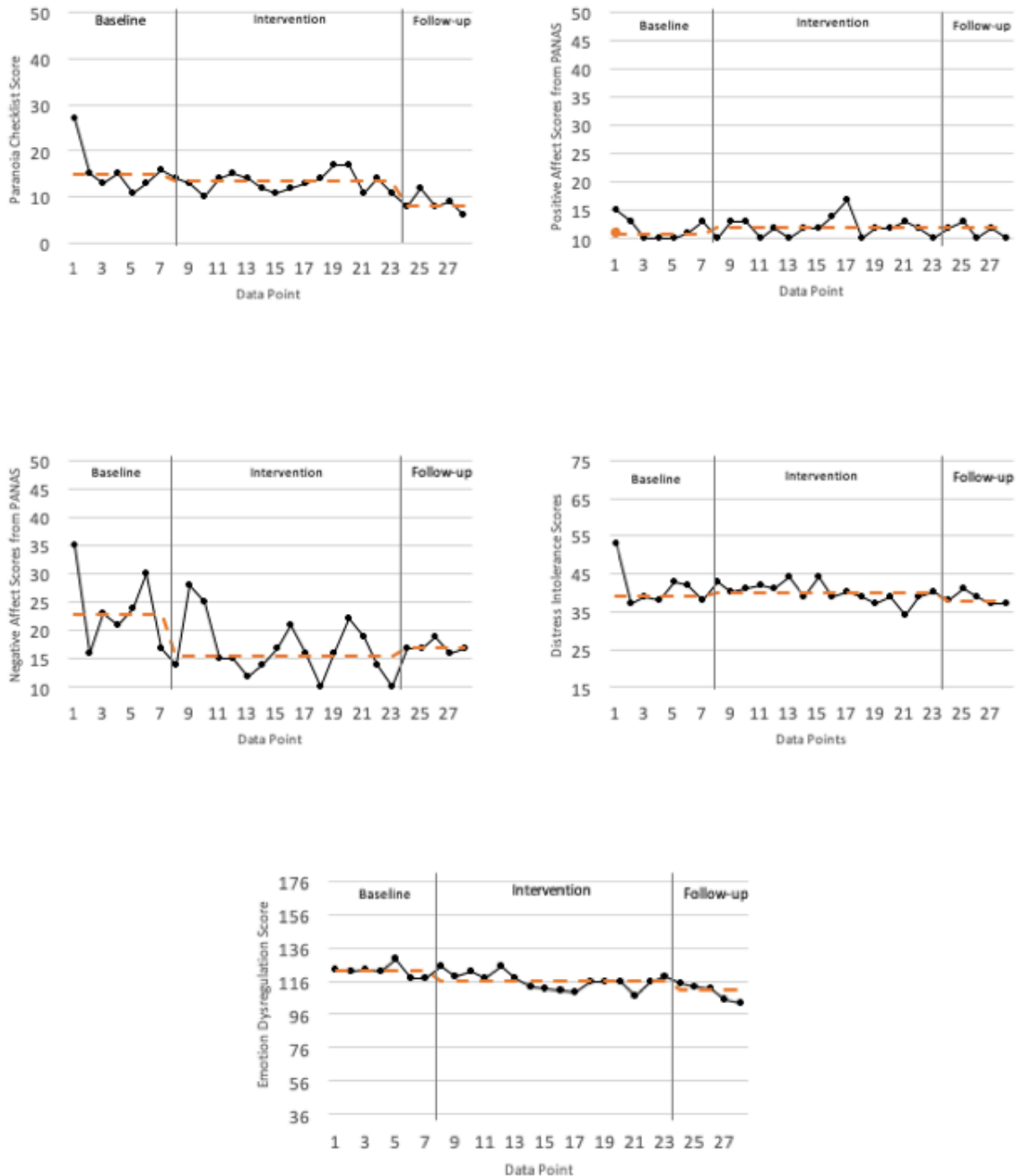


Figure 6 Participant 2 data points and broadened medians from outcome measures

Visual analysis of the data demonstrates a gradual reduction in scores between phases for state paranoia and emotional dysregulation. It also shows a decrease in negative emotions

between baseline and intervention phase, with a small increase between intervention and follow-up phases. The Tau-U test results for differences between the phases are summarised on Table 6.

Table 6 TAU-U Results Between Phases for Participant 2 Across All Scales

Scale	Baseline/Intervention			Intervention/Follow-up			Baseline/Follow-up		
	Tau-U	z Score	p Value	Tau-U	z Score	p Value	Tau-U	z Score	p Value
State Paranoia - PC	-.31	-1.17	.24	-.88	-2.89	.01**	-.94	-2.68	.01**
Negative affect-PANAS	-.64	-2.41	.02*	.30	.99	.32	-.60	-1.71	.09
Positive Affect - PANAS	.06	.23	.82	-.16	-.54	.59	-.64	-.24	.81
Emotion Dysregulation - DERS	-.63	-2.34	.02*	-.49	-2.23	.03*	-.40	-2.84	<.01**
Distress Intolerance - DTS	.07	.27	.79	-.50	-1.61	.11	-.93	-1.14	.26

Note. * $p < .05$. ** $p < .01$

Consistent with the visual inspection of data, the results demonstrate a reduction in state paranoia ($u = -.94$, $z = -2.68$, $p = .01$) and emotion dysregulation ($u = -.40$, $z = -2.84$, $p < .01$) between baseline and follow-up. There was a significant decrease in negative affect between baseline and intervention phases ($u = -.64$, $z = -2.41$, $p = .02$), but no significant increase between intervention and follow-up. There was no significant difference in the other measures.

Subjective feedback

Participant 2 reported they benefited from exercises about ‘understanding emotions’ and the ‘grounding exercises’. They found it difficult to talk about ‘how they felt’ but benefited from learning about emotions.

2.3.4 Participant 3

Figure 7 shows participant 3's score on the measures across the different phases of the study

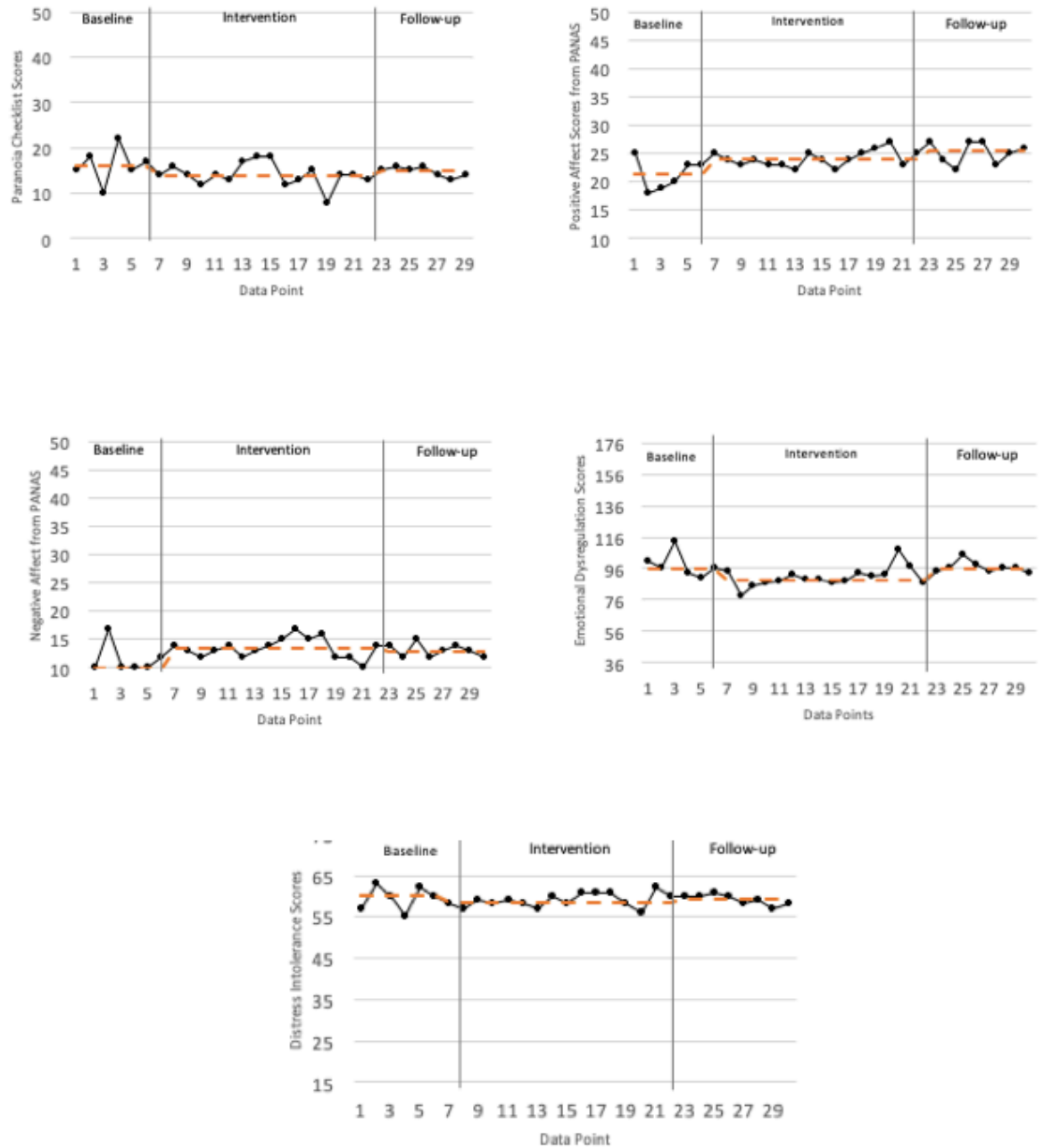


Figure 7 Participant 3 data points and broadened medians from outcome measures

Visual analysis of the data suggests a possible modest increase in positive affect between baseline and intervention. It also shows a slight decrease in emotion dysregulation between baseline and intervention followed by a slight increase between intervention and follow-up. The opposite pattern was observed in the negative affect graph. The Tau-U test results of differences between phases are summarised in Table 7.

Table 7 TAU-U Results Between Phases for Participant 3 Across All Scales

Scale	Baseline/Intervention			Intervention/Follow-up			Baseline/Follow-up		
	Tau-U	z Score	p Value	Tau-U	z Score	p Value	Tau-U	z Score	p Value
State Paranoia - PC	-.43	-1.51	.13	.24	.90	.37	-.38	-1.14	.25
Negative affect- PANAS	.57	2.03	.04*	-.14	-.55	.58	-.60	1.87	.06
Positive Affect - PANAS	.58	2.06	.04*	.34	1.35	.18	.73	2.26	.02*
Emotion Dysregulation - DERS	-.68	-2.40	.02*	.74	2.91	$p < .01^{**}$	0	0	1
Distress Intolerance - DTS	-.16	-.55	.58	.07	.28	.78	-.15	-.45	.65

Note. * $p < .05$. ** $p < .01$

The results demonstrate a reduction in emotion dysregulation ($u = -.68, z = -2.40, p = .02$) between baseline and intervention phases followed by an increase between intervention and follow-up ($u = .74, z = 2.91, p < .01$), with no significant difference between baseline and follow-up phases ($u = 0, z = 0, p = 1$). This indicates that the modest change during the intervention phase was not sustained at follow up. The opposite pattern was observed in the negative affect measure with a significant increase in negative affect between baseline and intervention ($u = .57, z = 2.03, p = .04$). There was a small but significant increase in positive affect between baseline and follow-up phases ($u = .73, z = 2.26, p = .02$). There were no significant differences in the other measures.

Subjective feedback

Participant 3 reported he benefited from ‘learning about emotions’. Most of his feedback related to the interpersonal relationship with the therapist. He reported ‘feeling safe’ and as ‘if someone had his best interest at heart’.

2.3.5 Participant 4

Figure 8 shows Participant 4's scores on the measures across the different phases of the study.

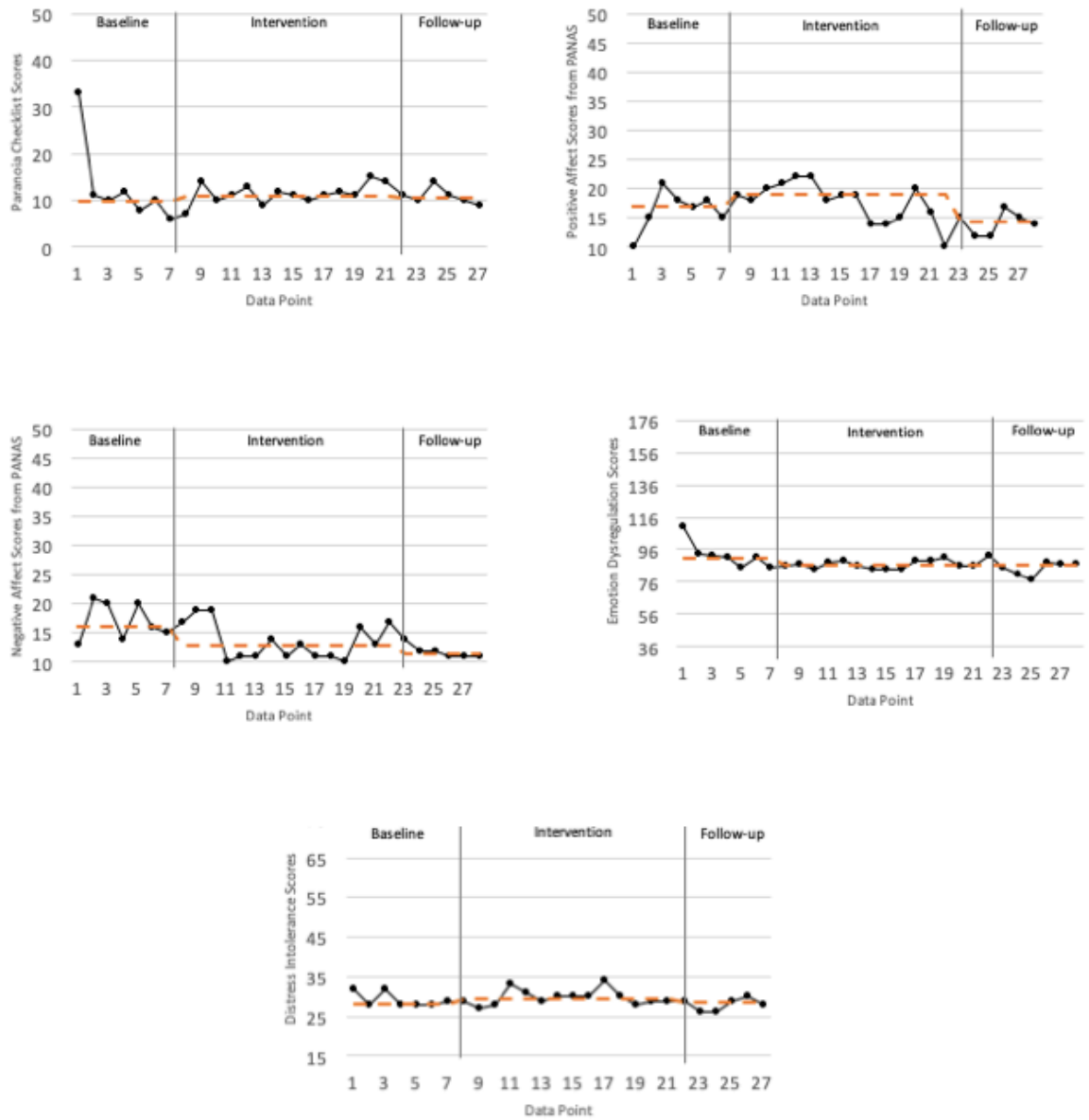


Figure 8 Participant 4 data points and broadened medians from outcome measures

Visual analysis of the data suggests an increase in positive affect during the intervention phase, and a decrease in negative affect across phases. The other measures show no clear pattern of change across the phases. The results of the TAU-U test between phases are summarised in Table 8.

Table 8 TAU-U Results Between Phases for Participant 4 Across All Scales

Scale	Baseline/Intervention			Intervention/Follow-up			Baseline/Follow-up		
	Tau-U	z Score	<i>p</i> Value	Tau-U	z Score	<i>p</i> Value	Tau-U	z Score	<i>p</i> Value
State Paranoia - PC	.27	.97	.33	-.25	-.87	.39	.10	.29	.78
Negative affect - PANAS	.30	1.09	.27	-.64	-2.26	.02*	-.50	-1.50	.13
Positive Affect - PANAS	-.58	-2.15	.03*	-.18	-.62	.53	-.93	-2.79	.01**
Emotion Dysregulation - DERS	-.51	-1.90	.06	-.32	-1.13	.26	-.67	-2.00	.05*
Distress Intolerance - DTS	.24	.90	.37	-.50	-1.73	.08	-.24	-.71	.48

Note. * $p < .05$. ** $p < .01$

The results demonstrate a reduction in positive affect ($u = -.93$, $z = -2.79$, $p < .01$) and emotion dysregulation ($u = -.67$, $z = -2.00$, $p = .05$) between baseline and follow-up phases. There was also a significant decrease in negative affect ($u = -.64$, $z = -2.26$, $p = .02$) between intervention and follow-up phases. There were no differences in the other measures.

Subjective feedback

Participant 4 reported he benefited from learning about how to 'act based on what the emotions want'. He reported using distraction techniques during periods of distress. He also described benefiting from the routine/ structure proposed by the behavioural activation exercise.

2.3.6 Participant 5

Figure 9 shows the participant 5's score on the measures across the different phases of the study.

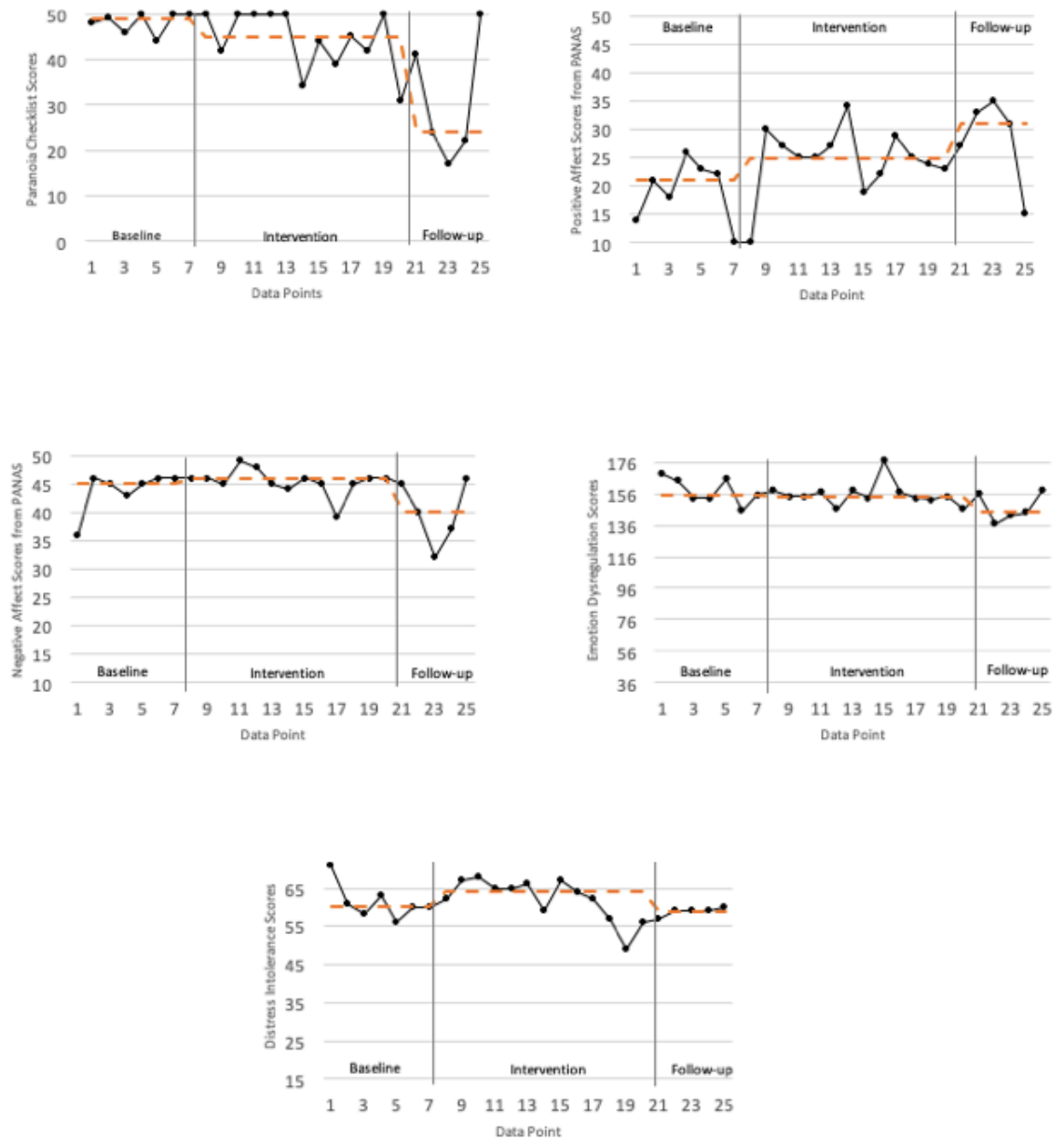


Figure 9 Participant 5 data points and broadened medians from outcome measures

Visual analysis of the data suggests variation between adjacent data points across phases. Scores on state paranoia, negative affect and emotion dysregulation are close to a ceiling effect. The data shows a decrease in state paranoia and an increase in positive affect, and no clear

pattern between phases for the other measures. The results for the TAU-U test between phases are summarised in Table 9.

Table 9 TAU-U Results Between Phases for Participant 5 Across All Scales

Scale	Baseline/Intervention			Intervention/Follow-up			Baseline/Follow-up		
	Tau-U	z Score	<i>p</i> Value	Tau-U	z Score	<i>p</i> Value	Tau-U	z Score	<i>p</i> Value
State Paranoia - PC	-.24	-.87	.38	-.60	-1.92	.05*	-.69	-1.95	.05*
Negative affect- PANAS	.24	.87	.38	-.58	-1.87	.06	-.40	-1.14	.26
Positive Affect - PANAS	.59	2.14	.03*	.45	1.43	.19	.71	2.03	.04*
Emotion Dysregulation - DERS	-.14	-.52	.61	-.42	-1.13	.18	-.54	-1.54	.12
Distress Intolerance - DTS	.22	.79	.43	-.48	-1.53	.13	-.43	-1.22	.22

Note. * $p < .05$. ** $p < .01$

The results demonstrate a significant reduction in state paranoia ($u = -.69$, $z = -1.95$, $p = .05$) and a significant increase in positive affect ($u = .71$, $z = 2.03$, $p = .04$) between baseline and follow-up phases. There were no significant differences in the other measures.

Subjective feedback

Participant 5 reported she benefited from the mindfulness exercises and the behavioural activation exercise. She reported being so 'caught up' in how she felt that she was no longer doing anything she enjoyed or that she could be proud of. Her support worker indicated that they used some of the distress tolerance skills learned in the sessions together, during 'periods of crises'.

2.3.7 Participant 6

Figures 10 show the participant 6's score on the measures across the different phases of the study.

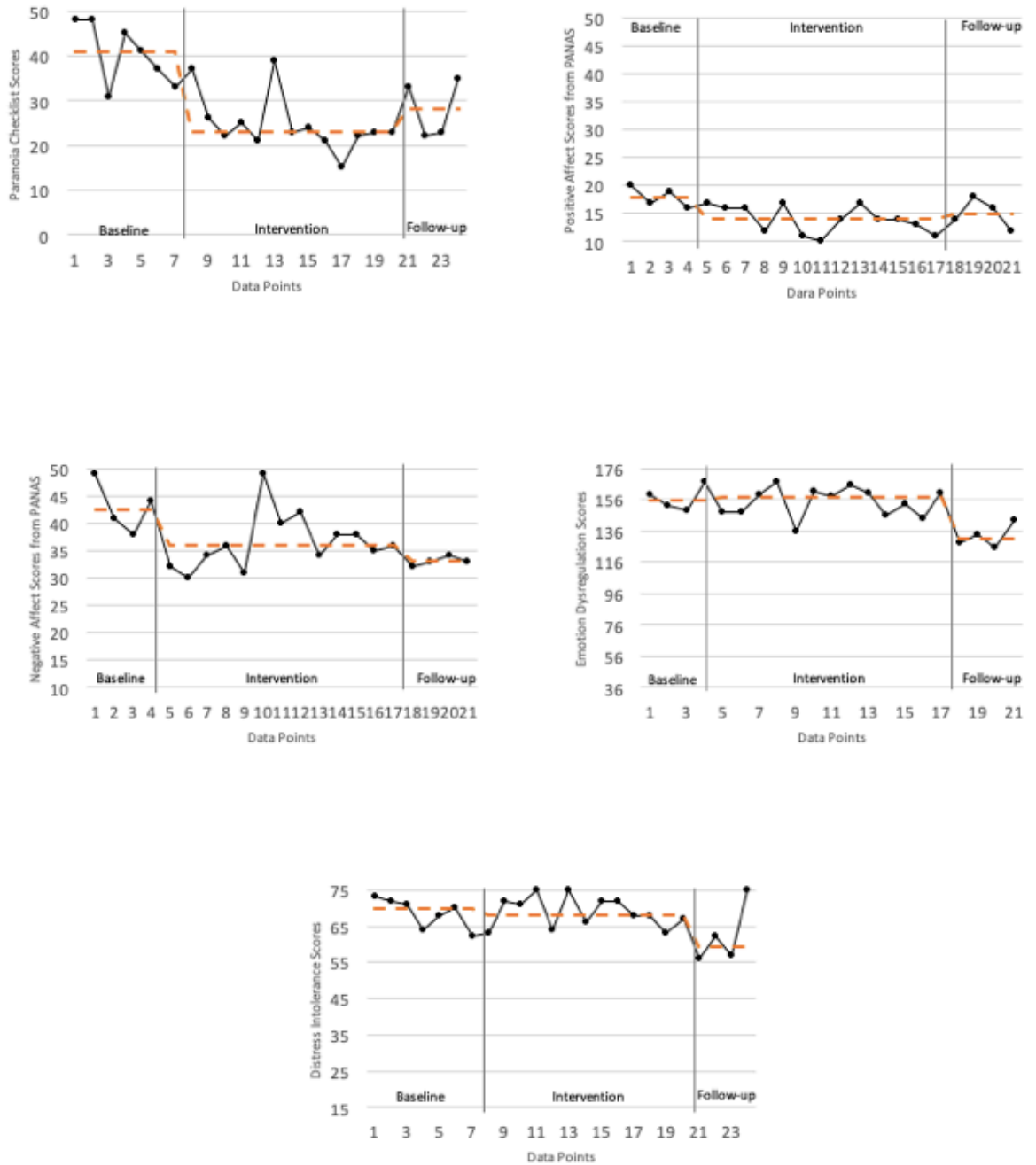


Figure 10 Participant 6 data points and broadened medians from outcome measures

Visual analysis of the data demonstrates variation between adjacent data points. Scores on emotion dysregulation and distress intolerance are close to showing a ceiling effect. The data suggests a decrease in state paranoia between baseline and intervention followed by an increase between intervention and follow-up. It also shows a gradual decrease in negative affect across the phases and a decrease in emotion dysregulation and distress intolerance between intervention and follow-up phases. There is no clear pattern of difference between phases for the other measures. The results for the TAU-U test between phases are summarised in Table 10.

Table 10 TAU-U Results Between Phases for Participant 6 Across All Scales

Scale	Baseline/Intervention			Intervention/Follow-up			Baseline/Follow-up		
	Tau-U	z Score	p Value	Tau-U	z Score	p Value	Tau-U	z Score	p Value
State Paranoia - PC	-.88	-3.17	<.01**	.25	.74	.46	-.75	-1.98	.05*
Negative affect - PANAS	-.71	-2.09	.04*	-.52	-1.53	.13	-1.00	-2.31	.02*
Positive Affect - PANAS	-.79	-2.32	.02*	.23	.68	.50	-.69	-1.59	.11
Emotion Dysregulation - DERS	-.15	-.45	.65	-.96	-2.83	<.01**	-1.00	-2.31	.02*
Distress Intolerance - DTS	.04	.16	.87	-.54	-1.59	.11	-.46	-1.23	.22

Note. * $p < .05$. ** $p < .01$

The results demonstrate a significant reduction in state paranoia ($u = -.88, z = -3.17, p < .01$) negative affect ($u = -.71, z = -2.09, p = .04$) and positive affect ($u = -.79, z = -2.32, p = .02$) between baseline and intervention phases. This change was maintained in the comparison between baseline and follow-up for state paranoia and negative affect. There was a significant decrease in emotion dysregulation between intervention and follow-up ($u = -.96, z = -2.83, p < .01$) as well as baseline and follow-up ($u = -1.00, z = -2.31, p = .02$). There were no significant differences in distress intolerance.

Subjective feedback

Participant 6 reported he benefited from the mindfulness exercises and ‘learning about emotions’, he described being ‘amazed by how little vocabulary he had to describe/ understand

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how he felt'. His wife reported that they both used the 'hot cross bun' to help him understand when/ why he was feeling upset.

2.3.8 Participant 7

Figures 11 show participant 7's score on the measures across the different phases of the study.

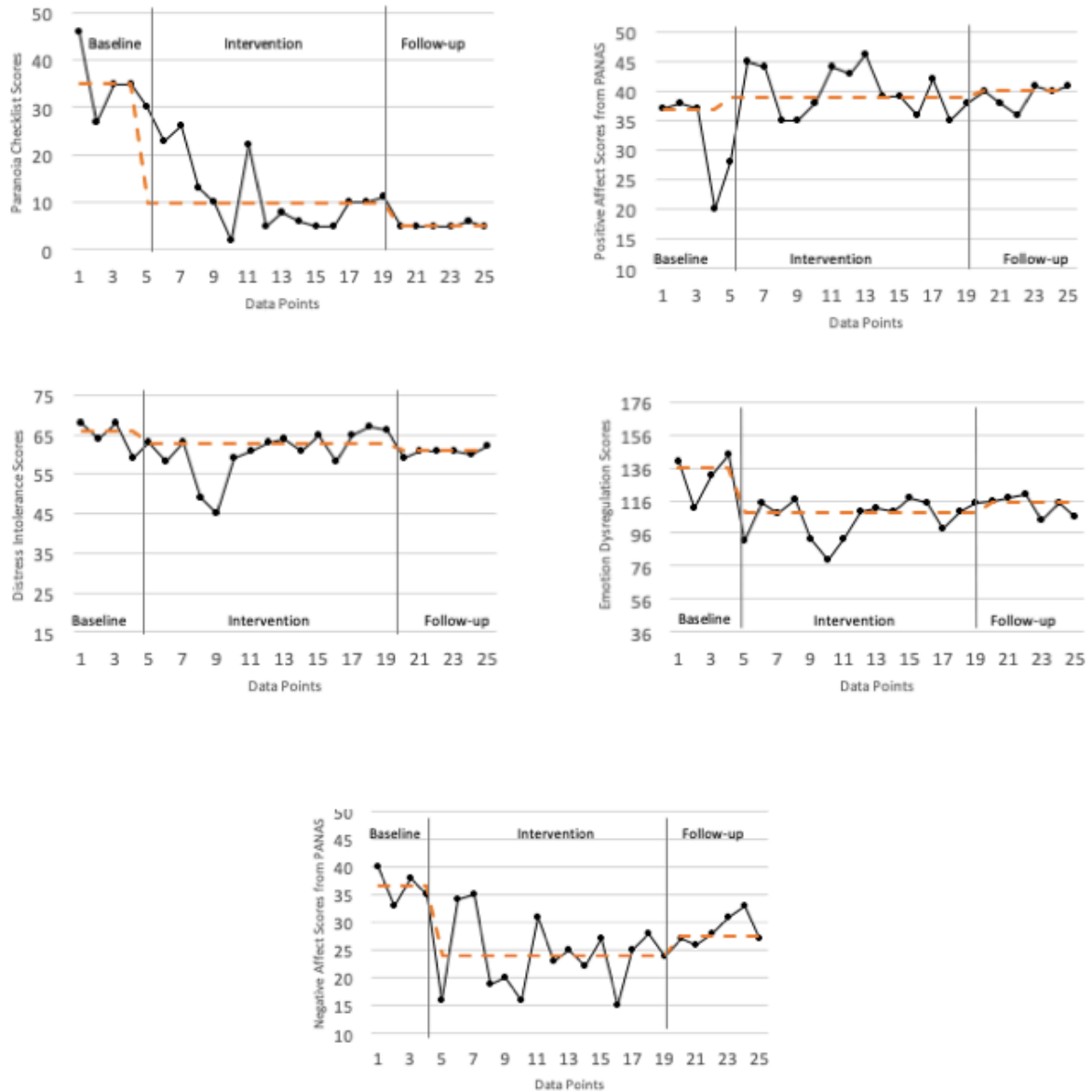


Figure 11 Participant 7 data points and broadened medians from outcome measures

Visual analysis of the data indicates considerable variation between adjacent data points across all measures. The data suggests a decrease in state paranoia across all phases and a decrease in negative affect and emotion dysregulation between the baseline and intervention

phases. There is no clear pattern of difference between phases for the other measures. The results for the TAU-U test between phases are summarised in Table 11.

Table 11 TAU-U Results Between Phases for Participant 7 Across All Scales

Scale	Baseline/Intervention			Intervention/Follow-up			Baseline/Follow-up		
	Tau-U	z Score	<i>p</i> Value	Tau-U	z Score	<i>p</i> Value	Tau-U	z Score	<i>p</i> Value
State Paranoia - PC	-.97	-2.90	<.01**	-.62	-2.17	.02*	1.00	-2.55	.01**
Negative affect- PANAS	-.91	-2.75	<.01**	.51	1.79	.07	-.96	-2.45	.01**
Positive Affect - PANAS	.46	1.41	.16	.03	.11	.91	.70	1.81	.07
Emotion Dysregulation - DERS	-.81	-2.45	.01**	.42	1.47	.13	-.66	-1.70	.08
Distress Intolerance - DTS	-.05	-1.5	.13	-.23	-.81	.41	-.54	-1.38	.16

Note. **p* < .05. ***p* < .01

The results demonstrate a significant reduction in state paranoia ($u=-.97$, $z=-2.90$, $p<.01$) negative affect ($u=-.91$, $z=-2.75$, $p<.01$) and emotion dysregulation ($u=-.81$, $z=-2.45$, $p<.01$) between baseline and intervention phases. This change was maintained between baseline and follow-up for state paranoia and negative affect. There were no significant differences in distress intolerance or positive affect.

Subjective feedback

Participant 7 reported she benefited from the 'learning about emotions' but she really disliked the distress tolerance exercises as it reminded her of being told to 'distract herself' when really upset. She also emphasized the importance of having 'someone she trusted' because they were listening' to her difficulties.

2.4 Discussion

The results from the study suggest that individuals experiencing psychosis can benefit from DBT informed interventions. The majority of participants reported reduced state paranoia and negative affect, and improved emotion regulation. Just one person reported improved distress tolerance, and no clear pattern emerged for positive affect across participants. There is also some indication that severity and/or duration of symptoms play a role in whether individuals benefit from the intervention, as participants from Early Intervention for Psychosis teams had more promising results than individuals from the Community Mental Health Teams. Subjective feedback from participants mentioned emotion regulation exercises as a helpful part of the intervention, together with mindfulness and the therapeutic relationship.

2.4.1 Relevance to the existing literature

The decrease in state paranoia during the study is in accordance with previous research that demonstrates a link between affect and psychosis (Freeman & Garety, 2003), and specifically, the role that negative affect and emotion regulation difficulties play on paranoia (Freeman et al, 2013; Lincoln et al., 2017). Negative emotions have been consistently associated with an increase in paranoia (Reeve, Emsley, Sheaves & Freeman, 2017; Mulligan, Haddock, Emsley, Neil & Kyle, 2016), as a predictor of paranoid episodes (Thewissen et al., 2011) and as a moderator between daily stress and paranoia (Lincoln, Peter, Schäfer & Moritz, 2009). Difficulties in emotion regulation have also been linked to an increase in paranoia. In a cross-sectional study, Westermann & Lincoln (2011) found a strong relationship between emotion regulation difficulties and persecutory delusion in individuals prone to psychosis. This study was followed-up in a longitudinal design, which corroborated these findings and found that maladaptive cognitive emotion regulation strategies predicted subclinical paranoia (Westermann, Boden, Gross & Lincoln, 2013). There is also indication that difficulties in emotion perception (i.e. ability to be aware of affect changes and understand them) are associated with increased paranoia (Combs, Michael & Penn, 2006). It has been argued that the increase in negative emotions coupled with the ineffective use of emotion regulation strategies means individuals experiencing psychosis feel overwhelmed and unable to effectively manage daily stressors (Lincoln, Sundag, Schier & Karow, 2017). In this way, they become more vigilant/preoccupied (paranoid) with such stressors. Consistent with this account, the present study suggests that DBT skills training is associated with reduction in both negative affect and paranoia.

The results with regards to positive emotions were variable and therefore, replication is needed before drawing any conclusions about the impact of DBT skills on positive affect for

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people experiencing psychosis. However, there is some evidence suggesting that DBT informed interventions do not have an impact on positive emotions. In a study devised for women with binge eating disorder (Telch, Agras & Linehan, 2001), a DBT intervention had a significant impact on measures of binge eating and eating pathology, conversely no change in positive affect was observed.

The research specifically looking at distress tolerance in individuals experiencing psychosis is very limited (Wright et al. 2014). It has been argued that distress tolerance skills are associated with functioning in individuals experiencing psychosis and should be targeted as part of an intervention (Nugent, Chiappelli, Rowland, Daughters & Hong, 2014). However, the results from the current study showed no change in self-reported distress intolerance for the majority of participants, despite of the decreases in paranoia and negative affect. Anecdotal information shared during individual sessions suggested that, prior to the beginning of the study, participants had been taught distress tolerance skills, at times, in an invalidating manner during previous contact with services (e.g. during inpatient admissions, contact with crisis teams). This led them to be dismissive or even feel resentful of the skills taught. Validation is a key process in DBT (Linehan, 1993; Dimeff et al., 2007) and it is used to develop the therapeutic relationship through interactions in which the client feels heard and understood. An invalidating discussion of skills is likely to stop the client from using and consequently, gaining benefit from them (Koerner, 2012).

Finally, the results indicate that severity and longevity of psychosis could play a role in the individual's responsiveness to treatment. This is consistent with a systematic review of the literature which found that the duration of untreated psychosis is strongly correlated with treatment outcomes, with longer waits being associated with higher levels of distress and poor functioning (Marshall & Rathbone, 2011). Harrison et al (2001) also found that outcomes within the first three years of psychosis predicts outcome 25 years later, concluding that early support is likely to elicit significant change in presentation. The current study's findings are also concordant with the positive results EIP teams have in supporting individuals experiencing psychosis (Craig et al., 2004; Grawe et al., 2006). A recent longitudinal retrospective study has found that individuals supported at EIP teams are more likely to gain employment, become accommodated in mainstream housing and improve in emotional wellbeing compared to individuals supported in non-EIP teams (e.g. CMHT, charities, in-patient facilities) (Tsiachristas, Thomas, Leal & Lennox, 2016). Such results highlight the importance of early access to treatment.

2.4.2 Strengths, limitations and implications of the study

The results of the study should be understood within the limitations posed by the methodology used. This study used a single case series design; this methodology is particularly useful as the first step towards researching new treatment pathways (Morley, 2018). Due to the lack of a control group and its relative small sample size, the generalizability of the findings is limited (Tsang, 2014). As the single case series design is an intrinsically within participants design each individual participant serves as their own control (Morgan & Morgan, 2001). In addition, the sample used in this study was exclusively Caucasian and European, further limiting the scope of the conclusions that can be drawn from the results. However, for this particular methodology, the sample size used (seven participants) was appropriate as, on average, samples range from two to ten participants (Lobo, Moeyaert, Cunha & Babik, 2018).

Careful consideration was given to the measures used due to the frequency of data collection. The aim was to ensure a lower burden to the participants whilst still maintaining construct validity (Morley, 2018). The measures of paranoia (i.e. GTPS and PC) covered both state and trait features, allowing for potential considerations about short and long term changes in paranoia. The measures of emotion regulation and distress tolerance were both dimensional which permitted an exploration of the individuals' skills beyond the use of specific strategies.

It is also important to highlight that this study did not use a full DBT programme, which would usually be at least a year long and include individual, group and telephone contact as well as consult for practitioners (Linehan, 1993). However, despite the brevity, it is interesting that a consistent change was noted across participants. Especially since brief DBT, in the literature, usually refers to a 6-months intervention with the same components (i.e. individual and group sessions) as the full DBT programme (Stanley, Brodsky, Nelson & Dulit, 2007).

A second limitation of this study is that the analysis used only assessed statistically significant change and that perhaps any reported improvements may not translate into change that is clinically significant (Leung, 2001). In other words, it could be argued that some of the participants only shown small differences in treatment effects and that this may not represent a meaningful decrease in their difficulties. However, a strength of the study was that most of the participants had a high level of complexity (e.g. comorbid diagnosis, recurrent hospital admissions, risk), and all still showed improvement in at least one outcome variable. It could be argued that considering the brevity of the intervention and the complexity of the participants any observable improvement is of significance. A limited exclusion criteria was used to overcome a known criticism of more substantial research methodologies (e.g. randomised controlled trials), which is how selective they are of their sample and the impact this has on the generalizability of

their findings (Kraus, 2018; Deaton & Cartwright, 2017). Consequently, the sample used was more representative of the clients that access mental health services.

Another consideration of the methodology used is that, for practical reasons (i.e. resources), the main researcher held the dual role of therapist. This choice poses a challenge as, sometimes, the goals of therapy and research do not coincide (Gabriel, 2005; Beauchamp & Childress, 1994). For instance, there were times during the study that based on the participant's presentation (e.g. level of distress/ risk) there was variance in the content of individual sessions. Having said this, all participants were taught all the skills described in the protocol. Supervision was used to reflect on any deviations from the therapy protocol and plan on how to resume sessions. In addition, the participants were briefed at the beginning of the intervention that there were no desired outcomes for the study, the project was exploratory in nature. Limiting the impact of social desirability responses to the self-report measures (Fisher & Katz, 2000).

It is also important to recognise that causality cannot be assumed, as changes in outcome could be related to a variety of other factors (e.g. change in medication, environmental factors) (Kratochwill & Levin, 2014; Portney & Watkins, 2015). A possible confounding variable in this study was the therapeutic relationship. The importance and impact of the relationship with the therapist in cognitive behavioural therapies has been consistently argued (Gilbert & Leahy, 2007; Evans-Jones, Peters & Barker, 2009) with some evidence suggesting that it is more important than the specific treatment modality (Ardito & Rabellino, 2011; Blow, Sprenkle & Davis 2007). Although, in the subjective feedback from this study, participants mentioned the relationship with the therapist as especially helpful, they have also mentioned specific emotion regulation strategies they found useful, indicating they had practiced DBT skills throughout therapy.

As indicated before, teaching mindfulness techniques was not a focus of the current study because the literature in this area for individuals experiencing psychosis is more established (Khoury, Lecomte, Gaudiano & Paquin, 2013; Chadwick, 2014). Instead, mindfulness was used as a grounding exercise at the beginning of each therapeutic session. However, it would have been informative to gather data regarding the participants' development in mindfulness. This would allow us to consider its impact in the decrease of paranoia, especially since mindfulness was subsequently mentioned by participants as one of the strategies they found helpful during in the subjective feedback.

The current study corroborates the importance of developing a better understanding of difficulties in affect in order to support people experiencing psychosis (O'Driscoll et al., 2014; Gumley et al., 2013; Wright et al., 2014). It also demonstrates preliminary evidence that, similar to other transdiagnostic approaches (i.e. CFT, ACT), DBT can have a positive impact on psychotic

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experiences (Kemp, 2018). Future research should develop a better understanding of the trait emotion regulation profile of individuals experiencing psychosis. Different from previous studies, that primarily focused on specific processes/ strategies, this dimensional conceptualisation of emotion regulation would allow for a deeper understanding of the psychological underpinnings of the difficulties experienced in psychosis as they might be different from other presentations associated with emotion regulation problems. For instance, psychosis has been linked to alexithymia, dissociation, interpersonal avoidance and flattened affect (Heshmati, Jafari, Hoseinifar & Ahmadi, 2010; Evensen et al., 2012; Ross, 2006; Berry et al., 2006), a profile somewhat different from typical emotion regulation difficulties, which are associated with impulsivity, emotional lability, chaotic interpersonal relationships (Linehan, 2010; Conklin et al., 2006). An emotion regulation profile akin to the one described by Lynch (2018), in which individuals are emotionally overcontrolled. This model of emotion regulation posits that individuals can develop 'too much self-control', this is maladaptive as they become detached from emotional experiences, can be overwhelmed by emotional arousal and lack interpersonal warmth (Hempel, Rushbrook, O'Mahen & Lynch, 2018). The development of a deeper understanding of the emotion regulation profile in psychosis might lead to potential beneficial adaptations to emotion regulation interventions more tailored to individuals with psychosis.

Conclusion

The results of the study indicate that teaching DBT informed emotion regulation strategies maybe helpful for individuals experiencing psychosis, and may have an impact on negative affect and paranoia levels, even when taught over a limited number of individual sessions. Conversely, the impact on positive affect is inconclusive with positive changes found for some participants. There were also no changes distress tolerance skills observed. Finally, there is some evidence to support the notion that offering support within the first years of experiencing psychosis may be more effective in impacting paranoia and affect. However, these findings are just preliminary, further research replicating these results would be essential, specifically, with regards to distress tolerance, as this particular treatment module has been helpful for various mental health presentations and has high face validity (Corstorphine, Mountford, Tomlinson, Waller & Meyer, 2007; Davoodi & Ghahari, 2017). From a clinical perspective, the results are important, and suggest that cognitive behavioural interventions should routinely incorporate emotion regulation skills training as a means of improving outcomes for people experiencing psychosis.

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Appendix A Quality Assessment

Study Quality Ratings using QualSyst

	Question/objective sufficiently described?	Study design evident and appropriate?	Method of subject/group selection is described and appropriate?	Subject and comparison group characteristics described sufficiently?	If interventional and random allocation possible, was it described?	If interventional and blinding of investigators possible, was it reported?	If interventional and blinding of subjects possible, was it reported?	Outcome measures well defined and robust to measurement bias?	Sample size appropriate?	Analytic methods described/justified and appropriate?	Some estimate of variance is reported for the main results?	Controlled for confounding?	Results reported in sufficient detail?	Conclusions supported by the results?	Summary Score (%)
Visser, Esfahlani, Sayama & Strauss (2018)	2	2	2	2	-	-	-	1	1	2	2	2	2	2	90%
Painter, Stellar, Moran & Kring (2018)	2	2	2	2	-	-	-	2	1	2	2	2	2	2	95%
Zou et al. (2018)	2	2	2	2	-	-	-	1	2	2	2	2	1	2	90%
Guimond et al. (2018)	2	2	2	2	-	-	-	2	1	2	2	1	2	2	90%
Nittel et al. (2018)	2	2	2	2	-	-	-	1	1	1	2	1	2	1	77%
Strauss et al. (2015)	2	2	2	2	-	-	-	1	1	1	2	1	2	1	77%
Lincoln, Hartmann, Köther & Moritz (2015)	2	2	2	2	-	-	-	1	1	2	2	2	2	2	90%
Lincoln, Hartmann, Köther & Moritz (2015 b)	2	2	2	2	-	-	-	1	1	2	2	1	2	2	86%
Grezellschak, Lincoln & Westermann (2015)	2	2	2	2	-	-	-	2	1	2	2	1	2	2	90%
Strauss et al., (2015)	2	2	2	2	-	-	-	1	1	2	2	1	2	2	86%
Clamor et al., (2015)	2	2	2	2	-	-	-	1	1	2	2	1	2	1	81%
O'Driscoll, Laing & Mason (2014)	2	2	2	2	-	-	-	2	1	1	2	1	2	2	86%
Van der Meer, et al. (2014)	2	2	2	2	-	-	-	1	1	1	2	1	1	2	77%
Strauss et al. (2013)	2	2	2	2	-	-	-	1	1	1	2	2	2	2	86%

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Rowland et al. (2013)	2	2	2	2	-	-	-	1	2	1	2	1	2	1	81%
Rowland et al. (2013 b)	2	2	2	2	-	-	-	1	2	2	2	1	2	1	86%
Horan, Hajcak, Wynn & Green (2013)	2	2	2	2	-	-	-	1	1	2	1	1	2	1	77%
Perry, Henry, Nangle & Grisham (2012)	2	2	1	2	-	-	-	1	1	2	2	2	1	1	77%
Kimhy et al. (2012)	2	2	2	2	-	-	-	2	1	2	2	2	2	2	95%
Perry, Henry & Grisman (2011)	2	1	2	2	-	-	-	1	1	2	2	1	2	1	77%
Badcock, Paulik & Maybery (2011)	2	2	2	2	-	-	-	2	1	2	2	1	2	2	90%
Livingstone, Harper & Gillanders (2009)	2	2	2	2	-	-	-	2	1	2	2	1	2	2	90%
Van der Meer, Wout & Aleman (2009)	2	2	2	2	-	-	-	2	1	2	2	2	2	2	95%
Henry, Rendell, Green, McDonald & O'Donnell (2008)	2	2	2	2	-	-	-	1	1	2	1	1	2	1	77%
Henry, Green, Lucia, Rendell, McDonald & O'Donnell (2007)	2	2	2	2	-	-	-	1	1	1	2	2	1	1	77%

Appendix B Participant information sheet

Study Title: The impact of DBT skills training for people with psychosis

Researcher: Daniel Silva, Trainee Clinical Psychologist

Supervisors: Dr. Tess Maguire (Clinical Psychologist), Dr. Katherine Newman-Taylor (Clinical Psychologist), Dr. Pamela McSherry (Clinical Psychologist)

ERGO number: 31652

You are being invited to take part in the above research study. To help you decide whether you would like to take part or not, it is important that you understand why the research is being done and what it will involve. Please read the information below carefully and ask questions if anything is not clear or you would like more information before you decide to take part in this research. You may like to discuss it with others but it is up to you to decide whether or not to take part. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

Thank you for considering taking part in this research project. I am a Trainee Clinical Psychologist at the University of Southampton and this project will be my Doctorate thesis. The aim of this study is to investigate how learning emotion regulation and distress tolerance skills can help individuals with psychosis on their day to day functioning and symptoms management. This study is sponsored by the University of Southampton

Why have I been asked to participate?

You have been considered as a candidate to take part in this study as you have been referred to the Early Interventions for Psychosis or Community Mental Health Team with symptoms of psychosis, specifically difficulty trusting others.

What will happen to me if I take part?

If you consent to take part in this project, you will meet with the main researcher to ensure it would be appropriate for you to take part in the study and for you to ask any questions. If you meet the inclusion criteria and you are happy to proceed, you will be required to monitor your mood for 8 weeks, this will happen through questionnaires that you will fill in every other day. You will also need to attend eight individual therapy sessions that will take place twice a week. We estimate that each individual session will take between 50-60 minutes and filling in the questionnaires each time

should take approximately 15 minutes. In order to support you in taking part of the study, you will be reimbursed for your time and travel expenses. Please note that throughout the study you will still have access to support from your team as usual.

Are there any benefits in my taking part?

Throughout the study you will be able to engage in an evidence based treatment which teaches people skills to regulate their emotions and tolerate distress. You will also help develop our understanding of the applicability of Dialectical Behaviour Therapy for the treatment of paranoia.

Are there any risks involved?

You will be required to reflect on your emotions throughout the study when filling in questionnaires. This is likely to elicit negative emotions and cause emotional distress. However, as the intervention is skills based (i.e. learning how to deal with difficult emotions differently), this is likely to be kept to a minimum. In addition, any increase in distress can be discussed with your care coordinator as usual. If you have any questions about who this person is or how to contact them this can be discussed at our initial meeting.

What data will be collected?

At the beginning of the study you will be given a booklet with all the questionnaires you have to fill in. At each individual therapy session, you will be required to bring this booklet and submit the questionnaires that have already been filled in to the primary researcher (Daniel Silva).

One of the questionnaires in this booklet asks for your gender, age, ethnicity, time since onset of psychosis symptoms, current medication, and engagement in previous/current psychological therapy. This measure will help us describe in general terms who took part in the study and therefore help us understand the scope of the study's findings. This information will not be shared with any agencies outside the research team.

Any identifiable information (e.g. name, date of birth) will be anonymised and kept in a secure folder in compliance with the Data Protection Act and the University of Southampton policy. This means that at the beginning of the study you will be assigned a participant number which will allow your data (i.e. questionnaires) to be identified, but your personal details and data will be kept separately. This information will be kept in encrypted files. In addition, all documents will be kept in locked cabinets throughout the duration of the study. At the end of the study, the files will be moved in a locked case to a locked cabinet at the University of Southampton. In accordance with the University of Southampton postgraduate research requirements, the anonymised data will be kept for a minimum of 15 years.

Will my participation be confidential?

Your participation and the information we collect about you during the course of the research will be kept strictly confidential.

Only members of the research team and responsible members of the University of Southampton may be given access to data about you for monitoring purposes and/or to carry out an audit of the study to ensure that the research is complying with applicable regulations. Individuals from regulatory authorities (people who check that we are carrying out the study correctly) may require access to your data. All of these people have a duty to keep your information, as a research participant, strictly confidential.

Confidentiality will only be broken if you disclose information that indicates you or someone else are at risk of harm. In such instances, this information will be shared with the appropriate agencies (e.g. your GP, care coordinator, social services, police as necessary). However, we will aim to involve you as much as possible in this process. This process is important to safeguard both you and the people around you.

As indicated before, your questionnaires and consent forms will be kept separately in locked cabinets throughout the study and will be transcribed to an electronic system at the end of the study. *The electronic data will be encrypted and password protected.*

Please note, your personal medical notes will not be accessed for research purposes, and you will not be contacted in the future for follow up.

Do I have to take part?

No, it is entirely up to you to decide whether or not to take part. If you decide you want to take part, you will need to sign a consent form to show you have agreed to take part.

What should I do if I want to take part?

If you are willing to take part in this study, you will sign a consent form and we will book your first individual session for approximately two weeks from now.

However, if you present with increased risk of harm to self or others that cannot be managed by your care coordinator in the community or you start another psychological therapy during the period of the study, you will need to stop taking part in the study.

What happens if I change my mind?

You have the right to change your mind and withdraw at any time without giving a reason and without your participant rights *or routine care* being affected.

If for any reason you decide that you no longer want to take part in the study, all you need to do is let me know. It is important to highlight that you do not have to provide me with a reason and this will not impact your ability to access support from the team. This will also not impact any travel expenses for the sessions you have attended.

If you withdraw from the study, we will keep the information about you that we have already obtained for the purposes of achieving the objectives of the study only.

What will happen to the results of the research?

Your personal details will remain strictly confidential. Research findings made available in any reports or publications will not include information that can directly identify you without your specific consent.

The results of this study will constitute part of my Doctorate thesis and will be submitted to the University of Southampton and, if appropriate, the findings will be prepared for publication in a peer reviewed journal.

If you would like to receive the results of the study please do let us know at any point during the study and you will receive a letter or email summarising the findings.

Please note that treatment and support from your mental health team will not be affected by participation in the study. At the end of treatment, you will return to treatment as usual. If you wish to continue working on the skills learned throughout the study, you can share this with your care coordinator in order for them to consider the appropriate next steps for you.

Where can I get more information?

If you have any further questions, please feel free to contact me on dms1e16@soton.ac.uk.

Please note: this email address is not to be used in the case of an emergency. If you are worried about immediate risk of harm to self or others, please contact your care coordinator or local crisis team.

What happens if there is a problem?

If you have a concern about any aspect of this study, you should speak to the researchers who will do their best to answer your questions.

If you remain unhappy or have a complaint about any aspect of this study, please contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

The University of Southampton holds insurance policies which apply to this study. If you experience harm or injury as a result of taking part in this study, you will be eligible to claim compensation. This does not affect your legal rights to seek compensation.

If you are harmed due to someone's negligence, then you may have grounds for legal action. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been treated during the course of this study then you may contact, in the first instance, Dr. Tess Maguire – Supervisor / Clinical Tutor / Clinical Psychologist. If you still believe your concerns have not been managed appropriately you can also contact the Patient Advice and Liaison Service (PALS) Phone: 023 8087 4065.

Data Protection Privacy Notice

The University of Southampton conducts research to the highest standards of research integrity. As a publicly-funded organisation, the University has to ensure that it is in the public interest when we use personally-identifiable information about people who have agreed to take part in research. This means that when you agree to take part in a research study, we will use information about you in the ways needed, and for the purposes specified, to conduct and complete the research project. Under data protection law, 'Personal data' means any information that relates to and is capable of identifying a living individual. The University's data protection policy governing the use of personal data by the University can be found on its website (<https://www.southampton.ac.uk/legalservices/what-we-do/data-protection-and-foi.page>).

This Participant Information Sheet tells you what data will be collected for this project and whether this includes any personal data. Please ask the research team if you have any questions or are unclear what data is being collected about you.

Our privacy notice for research participants provides more information on how the University of Southampton collects and uses your personal data when you take part in one of our research projects and can be found at <http://www.southampton.ac.uk/assets/sharepoint/intranet/Is/Public/Research%20and%20Integrity%20Privacy%20Notice/Privacy%20Notice%20for%20Research%20Participants.pdf>

Any personal data we collect in this study will be used only for the purposes of carrying out our research and will be handled according to the University's policies in line with data protection law. If any personal data is used from which you can be identified directly, it will not be disclosed to anyone else without your consent unless the University of Southampton is required by law to disclose it.

Data protection law requires us to have a valid legal reason ('lawful basis') to process and use your Personal data. The lawful basis for processing personal information in this research study is for the performance of a task carried out in the public interest. Personal data collected for research will not be used for any other purpose.

For the purposes of data protection law, the University of Southampton is the 'Data Controller' for this study, which means that we are responsible for looking after your information and using it properly. The University of Southampton will keep identifiable information about you for up to one year after the study has finished after which time any link between you and your information will be removed.

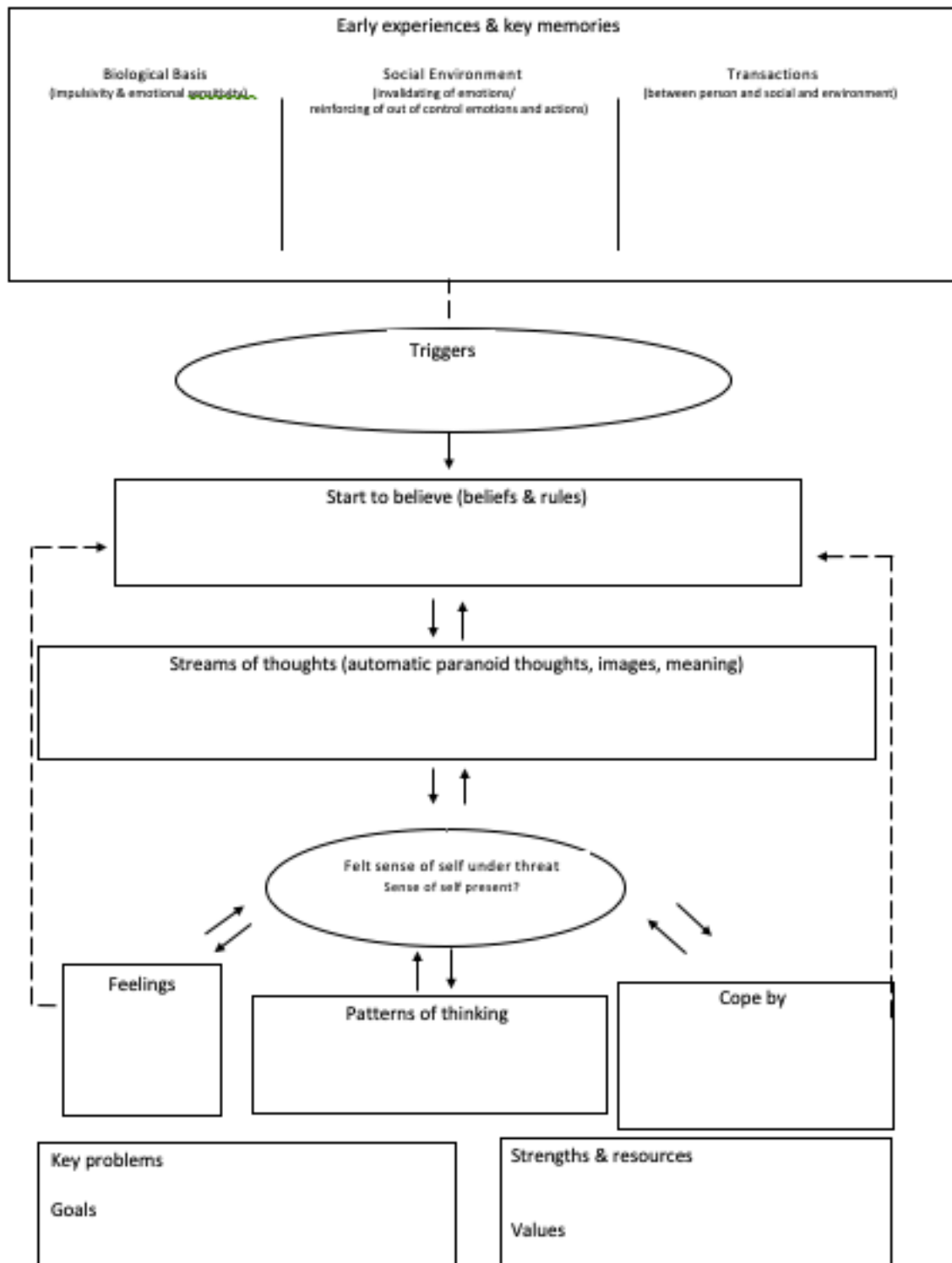
To safeguard your rights, we will use the minimum personal data necessary to achieve our research study objectives. Your data protection rights – such as to access, change, or transfer such information - may be limited, however, in order for the research output to be reliable and accurate. The University will not do anything with your personal data that you would not reasonably expect.

If you have any questions about how your personal data is used, or wish to exercise any of your rights, please consult the University's data protection webpage (<https://www.southampton.ac.uk/legalservices/what-we-do/data-protection-and-foi.page>) where you can make a request using our online form. If you need further assistance, please contact the University's Data Protection Officer (data.protection@soton.ac.uk).

Thank you for taking the time to read the information sheet and consider taking part in the research. If you would like to take part in this study, please contact your care coordinator. They will share this information with me and I will contact you to book a face to face meeting. In this meeting you will have the opportunity to ask further questions about the study as well as gather the materials (i.e. questionnaires) you need to take part.

Appendix C Therapy Protocol

Formulation Diagram



Session 2: Formulation sharing and Familiarisation to model

Discussion of Formulation – Establishing links between information gathered and current difficulties. Link to Psychosis, recognise most pervasive aspects of presentation (e.g. voices, paranoia, delusion). Discussion of states of mind. Formulation and rationale for focus on emotion regulation and distress tolerance.

Based on formulation, consider how the different aspects of the model relate to the participants' experience of Psychosis.

Biosocial Theory

Why do I have so much trouble controlling my emotions and my actions?

**Emotional vulnerability is BIOLOGICAL:
It's simply how some people are born.**

- They are more *sensitive* to emotional stimuli; they can detect subtle emotional information in the environment that others don't even notice.
 - They experience emotions *much more often* than others.
 - Their emotions seem to hit for no reason, from *out of the blue*.
- They have more *intense* emotions.
 - Their emotions hit like a *ton of bricks*.
 - And their emotions are *long-lasting*.

**Impulsivity also has a BIOLOGICAL basis:
Regulating action is harder for some than for others.**

- They find it *very hard to restrain* impulsive behaviors.
 - Often, without thinking, they do things that *get them in trouble*.
 - Sometimes their *behavior seems to come out of nowhere*.
- They find it very *hard to be effective*.
 - Their moods get in the way of *organizing* to achieve their goals.
 - They *cannot control* behaviors linked to their moods.

**An invalidating SOCIAL environment
can make it very hard to regulate emotions.**

- An invalidating environment doesn't seem to understand your emotions.
 - It tells you your emotions are *invalid, weird, wrong, or bad*.
 - It often *ignores* your emotional reactions and does nothing to help you.
 - It may say things like "Don't be such a baby!" "Quit your blubbing." "Quit being such a chicken and just solve the problem." or "Normal people don't get this frustrated."
- People who invalidate are **OFTEN DOING THE BEST THEY CAN**.
 - They *may not know* how to validate or how important it is to validate, or they *may be afraid* that if they validate your emotions, you will get more emotional, not less.
 - They *may be under high stress* or time pressure, or they may have too few resources themselves.
 - There may be just a *poor fit* between you and your social environment: **You may be a tulip in a rose garden.**

**An ineffective SOCIAL environment
is a big problem when you want
to learn to regulate emotions and actions.**

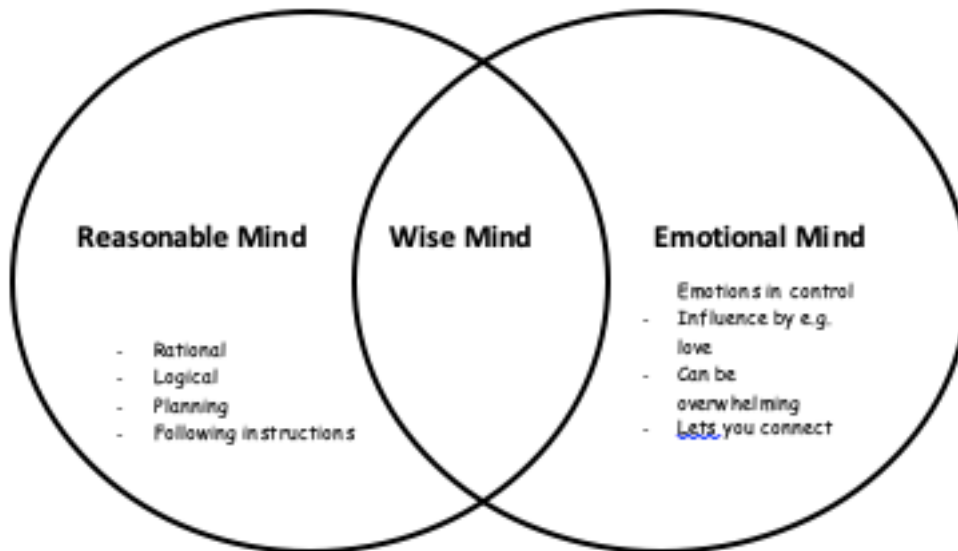
- Your environment may *reinforce out-of-control emotions and actions*.
 - If people give in when you get out of control, it will be hard for you to get in control.
 - If others command you to change, but don't coach you on how to do this, it will be hard to keep on trying to change.

**It's the TRANSACTIONS that count
between the person and the social environment.**

- Biology and the social environment influence the person.
- The person reciprocates and influences his or her social environment.
- The social environment reciprocates and influences the person.
- And so on and on and on.

Taking Hold of Your Mind

States of Mind



WISE MIND

- Integration of emotional and rational mind
- Intuition
- Going with your gut reaction
- Getting the whole picture: "helicopter view"

Explore with participants in turn what reasonable mind, emotional mind and wise mind look like in the moment.

Reflect on most frequent mind state. Why? What would happen to make it shift?

Consider most pervasive symptom of Psychosis, how does it relate to the mind states. What would have to happen/ what makes it more likely to move to wise mind?

Discuss the impact of emotions on psychotic symptoms. Do psychotic symptoms lead to distressing emotions or do distressing emotions lead to psychotic symptoms.

Session 3: Distress Tolerance

What is Distress tolerance?

Distress tolerance is the ability to tolerate and survive crises without making things worse.

The ability to tolerate and accept distress is essential for two reasons:

First, pain and distress are part of life; they cannot be entirely avoided or removed. The inability to accept this immutable fact increases pain and suffering.

Second, distress tolerance, at least over the short run, is part of any attempt to change yourself. Otherwise, efforts to escape pain and distress will interfere with your efforts to establish desired changes.

If you are hearing voices / paranoid what does it trigger for you?

Crisis survival – Use a guided discovery style/ Elicit information that relates to their experience.

What does a crisis look like for you?

What would be happening? What makes things worse?

What would happen if you did not do anything?

When to use crisis Survival Skills:

You are in a crisis when the situation is:

- Highly stressful.
- Short-term (that is, it won't last a long time).
- Creates intense pressure to resolve the crisis now.

Use crisis Survival Skills when:

1. You have intense pain that cannot be helped quickly.
2. You want to act on your emotions, but it will only make things worse.
3. Emotion mind threatens to overwhelm you, and you need to stay skilful.
4. You are overwhelmed, yet demands must be met.
5. Arousal is extreme, but problems can't be solved immediately.

Don't use crisis Survival Skills for:

- Everyday problems.
- Solving all your life problems.
- Making your life worth living.

STOP Skill

STOP Skill



S top	Do not just react. Stop! Freeze! Do not move a muscle! Your emotions may try to make you act without thinking. Stay in control!
T ake a step back	Take a step back from the situation. Take a break. Let go. Take a deep breath. Do not let your feelings make you act impulsively.
O bserve	Notice what is going on inside and outside you. What is the situation? What are your thoughts and feelings? What are others saying or doing?
P roceed mindfully	Act with awareness. In deciding what to do, consider your thoughts and feelings, the situation, and other people's thoughts and feelings. Think about your goals. Ask Wise Mind: Which actions will make it better or worse?

Homework – What was good about this session / What do I need to do for next session?

Grounding Techniques

- 1- **Ask yourself questions** in order to bring yourself into the present. Write down your own questions, for example:

Where am I, right now?

What day is it?

What year is it?

How old am I?

Where do I live?

- 2- **Use 5,4,3,2,1:** Think about 5 things you can see, 4 things you can hear, 3 things you can touch (and touch them), 2 things you can smell or like the smell of, and 1 slow, deep breath.
- 3- Try to **think about different things**, almost like playing mental games, for example: count backwards in 7s from 100, think of 10 different animals, 10 blue things, one animal or country for each letter of the alphabet, say the alphabet slowly, say the alphabet backwards etc.
- 4- **Carry a grounding object with you.** Some people carry a stone or other small object, perhaps which has personal meaning, to comfort and touch when you need to.
- 5- **Move about:** stretch, stamp your feet, jump up and down, dance, run on the spot, rub your arms and legs, clap your hands, walk, remind yourself where you are right now.
- 6- **Focus on your breathing:** breathe deeply down to your belly; put your hand there (just above your navel) and breathe so that your hand gets pushed up and down. Imagine you have a balloon in your tummy, inflating it as you breathe in, and

deflating as you breathe out. When we get scared, we breathe too quickly and shallowly and our body begins to panic because we're not getting enough oxygen. This causes dizziness, shakiness and more panic. Breathing slower and deeper will stop the panic.

- 7- **Walk, and really think about walking** - Notice the way your body moves, how your feet move and feel as you walk, notice your leg muscles, and the way your arms feel as they swing. Notice the movement in your hair, and the sensation of moving air on your skin. Notice the sensations of breathing as you walk.

Discuss when they might use grounding

What could they do in the next couple of days?

Session 4: Distress tolerance

Review of grounding exercise task

PROS AND CONS – Relate back to formulation and consider how it relates to their presentation. Pick out an relevant example in which this exercise would fit.

Before an overwhelming crisis urge hits: Write out your pros and cons; carry them with you. Rehearse your pros and cons over and over.

When an overwhelming crisis urge hits: Review your pros and cons. Get out your list and read it over again. Imagine the positive consequences of resisting the urge. Think of the negative consequences of giving in to crisis behaviours. Remember past consequences when you have acted on crisis urges.

	PROS	CONS
Acting on crisis urges	<p>Pros of acting on impulsive urges, giving in, giving up, or avoiding what needs to be done.</p> <hr/> <hr/> <hr/> <hr/>	<p>Cons of acting on impulsive urges, giving in, giving up, or avoiding what needs to be done.</p> <hr/> <hr/> <hr/> <hr/>
Resisting crisis urges	<p>Pros of resisting impulsive urges, doing what needs to be done, and not giving up.</p> <hr/> <hr/> <hr/> <hr/>	<p>Cons of resisting impulsive urges, doing what needs to be done, and not giving up.</p> <hr/> <hr/> <hr/> <hr/>

DISTRACTING - Wise Mind ACCEPTS

With Activities

- Exercise or hobbies
- Call/ visit a friend
- Go for a walk
- Play a sport
- Go out for a meal
- Do gardening

With Contributing:

- Do volunteer work
- Make something nice for someone else

With Comparisons:

- Compare yourself to those less fortunate than you
- Compare yourself to people coping the same as you or less well than you.

With opposite Emotions:

- Read emotional books or go to emotional movies
- Be sure the event creates different emotions

With Pushing away:

- Push the situation away by leaving it for a while.
- Leave the situation mentally: build an imaginary wall between yourself and the situation.
- Refuse to think about the painful aspects of the situation. Put the pain on a shelf, box it up and put it away for a while.

With other Thoughts:

- Count to 10
- Watch TV
- Read
- Do puzzles

With intense other Sensations:

- Hold ice in your hand
- Listen to very loud music
- Put rubber band on wrist, pull out and let go.
- Squeeze a rubber ball very hard.

It is important to reflect on how these skills are only for moments of extreme distress and that they are helpful in the short term. However, long term they cannot be relied on.

Session 5: Distress tolerance

Dandelions Metaphor

A man bought a new house and decided that he was going to have a very beautiful lawn. He worked on it every week, doing everything the gardening books told him to do. His biggest problem was that the lawn always seemed to have dandelions growing where he didn't want them. The first time he found dandelions, he pulled them out. But, alas, they grew back. He went to his local gardening store and bought weed killer. This worked for some time, but after summer rains, alas, he found dandelions again. He worked and pulled and killed dandelions all summer. The next summer he thought he would have no dandelions at all, since none grew over the winter. But, then, all of the sudden, he had dandelions all over again. This time he decided the problem was with the type of grass. So he spent a fortune and had all new sod put down. This worked for some time and he was very happy. Just as he started to relax, a dandelion came up. A friend told him it was due to the dandelions in the lawns of his neighbors. So he went on a campaign to get all his neighbors to kill all their dandelions. By the third year, he was exasperated. He still had dandelions. So, after consulting every local expert and garden book, he decided to write the U.S. Department of Agriculture for advice. Surely the experts could help him. After waiting several months, he finally got a letter back. He was so excited. Help at last!!!! He tore open the letter and read

the following: "Dear Sir: We have considered your problem and have consulted all of our experts. After careful consideration, we think we can give you very good advice. Our advice is that you learn to love those dandelions." (Linhean, 1993, p.94)

How does this relate to you?

What are your Dandelions?

What are you doing/ not doing because of the Dandelions?

What if you accepted your dandelions? What would that be like? What would you be doing?

Radical Acceptance

Turning the Mind

TURNING THE MIND is like facing a fork in the road. You have to turn your mind toward the acceptance road, and away from the road of rejecting reality.

TURNING THE MIND is choosing to accept.

The CHOICE to accept does not itself equal acceptance. It just puts you on the path.



TURNING THE MIND, STEP BY STEP

1. **OBSERVE** that you are not accepting. (Look for anger, bitterness, annoyance; avoiding emotions; saying "Why me?", "Why is this happening?", "I can't stand this," "It shouldn't be this way.")
2. Go within yourself and **MAKE AN INNER COMMITMENT** to accept reality as it is.
3. **DO IT AGAIN**, over and over. Keep turning your mind to acceptance each time you come to the fork in the road where you can reject reality or accept it.
4. **DEVELOP A PLAN** for catching yourself in the future when you drift out of acceptance.

Review of Distress Tolerance Skills

What you have learned?

What was helpful?

What was not helpful?

Session 6: Emotional regulation

The goal of emotion regulation is to reduce emotional suffering. The goal is not to get rid of emotions; emotions have important functions in our lives. Emotion regulation skills help you to change emotions that you (not other people) want to change, or to reduce the intensity of your emotions. Emotion regulation skills can also reduce your vulnerability to becoming extremely or painfully emotional and increase your emotional resilience.

Imagery exercise: Compassionate other

Creating a Compassionate Ideal

First, engage with your soothing rhythm breathing and compassionate expression; bring to mind your safe place, the sounds, the feel, and the sights. Remind yourself that this is your place and it delights in you being here. This may now be the place where you wish to create and meet your compassionate image. You can imagine your image being created out of a mist in front of you, for example. The image may be walking towards you.

Here are some questions that might help you build an image:

- How would you like your ideal caring, compassionate image to look or appear? Would you want your ideal compassionate image to feel/look/seem old or young; to be male or female (or non- human looking, e.g. an animal, sea or light)?
- How would you like your compassionate image to sound? What would be a compassionate voice tone for you?
- Are there any other sensory qualities that would come with your image? Such as colours and sounds?
- How would you like your ideal compassionate image to relate to you? What would help you sense their commitment and kindness for you?
- How would you like to relate to your compassionate image?

Remember your image really wants for you to be free of suffering, to be able to deal with the difficulties, and to flourish. It knows that we all just find ourselves here, living as we do, trying to make the best of our minds and lives. It understands that our minds are difficult, that emotions can run riot in us and that this is not our fault.

Practice experiencing what it is like to focus on the feeling that another mind really values you and cares about you unconditionally. Now focus on the idea that your compassionate ideal is looking at you with great warmth. Imagine that they have the following deep desires for you:

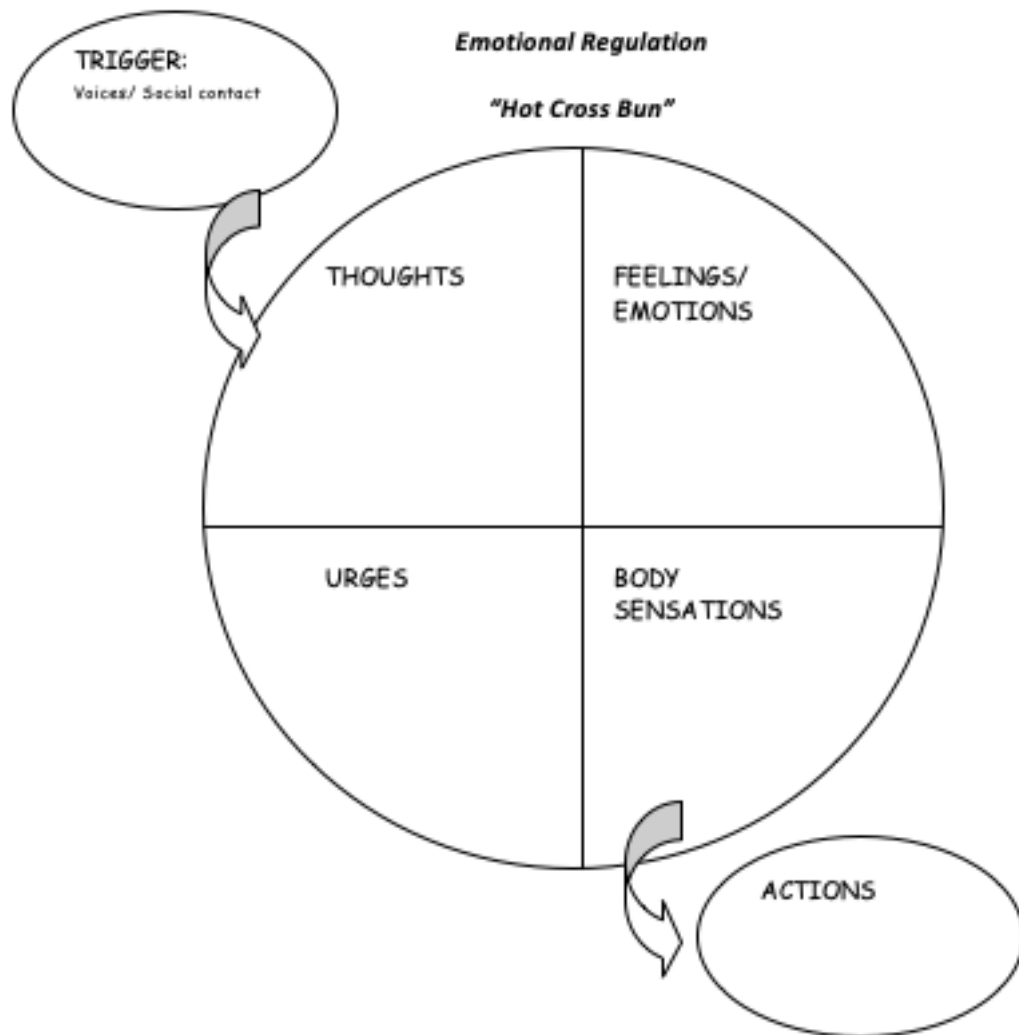
- That you be well

- That you be happy
- That you be free of suffering

Bob exercise: Imagine you can create a new person and give them the power to experience different emotions. What emotions would you give them/ not give them and why?

IDENTIFY (OBSERVE AND DESCRIBE) YOUR EMOTIONS.

Emotion		What it's for	What it makes you want to do	
Anger		Achieving goals/ getting needs met/ protecting rights	Attack	
Guilt		Repairing relationships/ righting wrongs	Say sorry, get punished	
Fear		Protection from harm	Run away	
Shame		Preserve social relationships/ rules	Hide	
Joy/ happiness		Built in positive reinforcement (reward) for achieving goals/ getting needs met	Laugh/ jump about/ do it again	
Disgust		Preserve health/ protect from disease	Avoid/ be sick	
Sadness		Getting back what's lost	Cry, look for what is lost	
Excitement		Improve performance	Perform	
Surprise		Refocus attention	Find out what's new	
Interest			Acquire important information	Learn things
Love	Relationship glue	Be with the loved one		



Session 7: Emotion Regulation

Review of imagery exercise

Review of Hot Cross Bun

Behavioural Activation

The first step of Behavioural Activation is to identify activities that you think you're not doing. These may be things you used to do but no longer find pleasure in, or those that you seem to have little time in your week to do. You can also include activities that you have always wished to do but have never had the motivation to begin.

Activities can be broken up into two broad categories: pleasurable and Mastery activities. Evidence shows that in order to have a healthy balance of mood we should include these main types of activities as part of our weekly routine.

Pleasure involves activities that we enjoy for the sake of the activity itself. There are many different kinds of pleasure. Those that are most sustainable involve "play" such as hobbies and other recreational activities. Social activities can also involve pleasure. Other types of pleasure, such as sensory experiences (food, drink, images, touch, etc.) can also be enjoyable if done in moderation.

Mastery involves activities, such as work or sports, that involve the development of skills; we are able to accomplish things and feel a sense of mastery over our environment. When enjoyed in moderation and diversified well with other activities, they can increase positive emotions and improve how we feel about ourselves.

The second step of Behavioural Activation is to rank activities in order of how difficult they would be to carry out currently. Think of which activities would be easiest to do, or most difficult to carry out depending on your mood.

Behavioural Activation works best if it is graded, only carry out activities to begin with that you feel are achievable, before moving on to activities that may be more difficult.

Pleasure

Social activities

- Spending time with family
- Enjoying own children and/or young relatives
- Enjoying close friends • Hanging out with large groups of friends/acquaintances
- Parties, meeting new people
- Romance
- Pets
- Clubs: meeting people with similar interests
- Enjoying food and drink with others

Hobbies, Interests, and other “play”

- Reading
- TV, movies, plays
- Dancing
- Playing or listening to music
- Board games or cards
- Arts and crafts, sewing, painting
- Cooking
- Walking, hiking, enjoying nature, fishing
- Sports (basketball, softball, swimming, etc.) or going as a spectator
- Martial arts (karate, etc.)
- Museums/zoo
- Video games
- Traveling, sightseeing, going to the beach, sunbathing
- Shopping
- Gardening/decorating
- Photography
- Comedy: TV, recordings, live
- Religion or spirituality

Sensory experiences

- Pleasant smells, images, sounds, physical touch, tastes
- Taking a bath
- Listening to soothing music
- Mindful tasting

Mastery

Job or Meaningful Daytime Activity

Look for or attempt to develop some of these qualities in your occupation volunteer work, or other meaningful daytime activity:

- Enjoyment
- Creativity
- Feelings of competence (able to accomplish tasks satisfactorily)
- Potential for development of skills
- Ability to “move up” in the organization or take on more responsibility, if this is desired
- Social contact with coworkers, colleagues, others in the field

Other skill-based activities

- Sports
- Music practice and performance
- Home improvement/building
- Woodworking
- Visual art (painting, drawing, pottery, sewing, knitting)
- Learning about interests (history, politics, food, language, culture, etc.)
- Crafting, pottery, and other creative skills

Homework: Give out activities diary. Collaboratively add 1 mastery and 1 pleasurable activity to be performed for next week.

Next session will be our last session and we will be writing up some of the things we have done together. Some people find it useful to have a care-coordinator or significant other in the room to consider what you have learned.

Session 8: Emotion Regulation

Review of Behavioural Activation

How to stay out of emotional mind

“PLEASE MASTER”

Treat Physical illness
Balance Eating
Avoid mood-Altering drugs
Balance Sleep
Get Exercise
Build MASTERY

1. Treat Physical illness: Take care of your body. See a Doctor when necessary. Take prescribed medication.
2. Balance Eating: Don't eat too much or too little. Stay away from foods that make you feel overly emotional
3. Avoid mood- Altering drugs: Stay off non-prescribed drugs, including alcohol.
4. Balance Sleep: Try to get the amount of sleep that helps you feel good. Keep to a sleep program if you are having difficulty sleeping.
5. Get Exercise: Do some sort of exercise every day; try to build up to 20 minutes of vigorous exercise.
6. Build MASTERY: Try to do one thing a day to make yourself feel competent and in control.

Review of Emotion Regulation

What you have learned?

What was helpful?

What was not helpful?

Maintaining Progress

What have I learned?
What was most useful?
What can I continue to do to prevent a setback?
What are my high risk situations of this happening? (What events / situations / triggers cause me to be more vulnerable?)
What are the signs? (<i>Thoughts / feelings / behaviours</i>)
What can I do to avoid losing control? (<i>What could I do differently? What would work best? When I'm struggling or feeling bad, what could I do that will help?</i>)
What could I do if I did lose control? (<i>What has helped? What have I learned? Who can help?</i>)

Appendix D Participant's handouts

**Managing Overwhelming
Emotion for People with
Psychosis**

Thank you for taking part in this study. We will be working together to understand your experiences and develop skills to support you to manage strong emotions.

This booklet can be used as a record of our conversations and to help us remember what is useful to you.

We will work through this together session by session. If you have any questions or concerns at any point, do let me know so that we can think these through together.

I look forward to working with you.

Warm wishes,

**Daniel Silva
(Trainee Clinical Psychologist)**

Session 1

Session 1

In this session, we will talk about key aspects of your current and past experiences. You can choose what you would like to share with me.

Here is an overview of what we talked about:

Key aspects of my current experience:

Key aspects of my past (that I am happy to share):

My values and goals (i.e. what is important to me):

Session 2

Session 2

In this session, we will talk about some of the things that may have happened to us that make it difficult for us to manage our emotions.

Here's some examples that you spoke about:

Your Temperament (your biology and genetics)

e.g. are you emotionally sensitive? Do you have intense emotions?

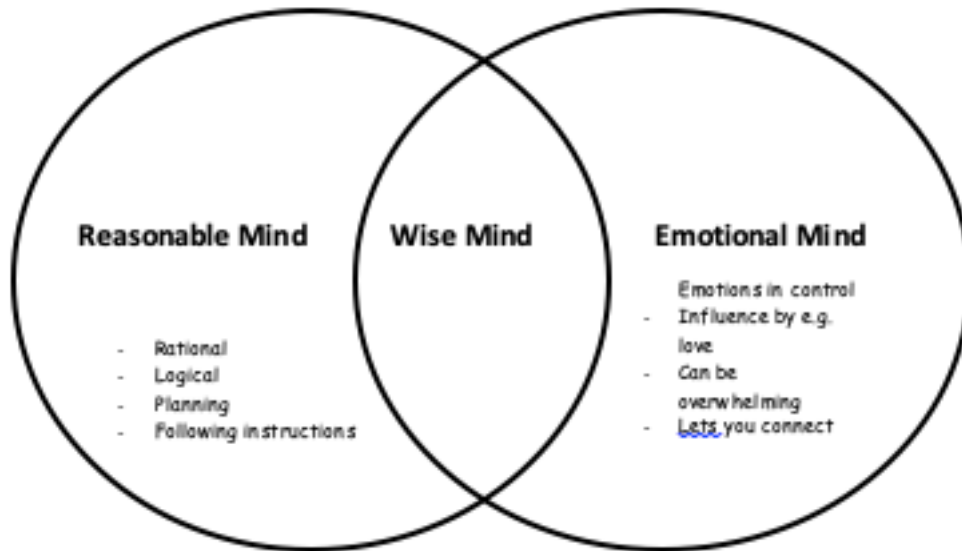
Your early environment (what was it like when you were growing up?)

e.g. did you have your emotions recognised and responded to ('validated') when you were growing up? Did you experience any difficult or traumatic situations when you were growing up?

These experiences can 'transact' (interact) with each other to make coping in the present more difficult.

We will also spend time thinking about the idea of 'states of mind' as a way to help us understand our emotional response in situations and the challenges of being stuck in one mind state for too long.

Here is how that relates to me:



An example of rational mind is...

An example of emotional mind is...

An example of wise mind is...

When I am in rational mind I feel like...

When I am in emotional mind I feel like...

Wise mind is that 'magic half second' when I can step back, observe and feel able to make a choice about how I respond.

Mindfulness is a way to access wise mind. We will now introduce you to a brief 3 minute mindfulness exercise. We will start each session from now on with this exercise.

Session 3

Session 3

We will start this session with a 3 minute mindfulness exercise. You will be guided through this, then asked about what you noticed during the 3 minutes.

In this session, we'll think about what it means for you when you experience an emotional crisis and some of the helpful ways you have coped with this experience in the past.

What do I notice when I am in an emotional crisis?

How have I coped when I have experienced a crisis?

Crises can be highly stressful, they may be short term and there can be pressure to resolve the crisis now.

You may notice

- **intense pain that cannot be helped quickly**
- **you want to act on your emotions, but this may only make things worse**
- **you emotion mind is threatening to overwhelm you**

This is when distress tolerance skill can be helpful.

We will also learn the skill STOP!

You will be provided with a handout about this skill.

In summary, the steps are below. You may want to make some notes on how you could use or remember each step yourself.

STOP

TAKE A STEP BACK

OBSERVE

PROCEED MINDFULLY

Finally, we will introduce you to (and practice) some grounding techniques.

You will be provided with a handout about this skill.

Here are a list of some of the grounding techniques suggested. Which one would you like to try in session. Note down next to it what you tried and what you noticed.

Asking yourself questions

Using 5,4,3,2,1

Trying to think about different things

Identifying and using a grounding object

Moving about

Focusing on your breathing

Walking, and really thinking about walking

Session 4

Session 4

We will start this session with a 3 minute mindfulness exercise. You will be guided through this, then asked about what you noticed during the 3 minutes.

In this session, we will talk about how difficult it is to be in the middle of a crisis and how sometimes you can get stuck between doing what your body is urging you to do and what your mind tells you would be best.

We will think about the pros and cons of both acting on and resisting unhelpful urges while in crisis to help you make more helpful decisions the next time a crisis occurs.

What does this look like for you?

	PROS	CONS
Acting on crisis urges	Pros of acting on impulsive urges, giving in, giving up, or avoiding what needs to be done	Cons of acting on impulsive urges, giving in, giving up, or avoiding what needs to be done
Resisting crisis urges	Pros of resisting impulsive urges, doing what needs to be done, and not giving up	Cons of resisting impulsive urges, doing what needs to be done, and not giving up

We will also talk about some distraction techniques that can be helpful in the moment. Distractions can be a useful way of giving us some breathing space to settle down and think more clearly before making a decision

You will be provided with a handout about this skill.

Here is a summary of the types of distractions that can be useful. What types are most useful for you? Can you identify any specific examples?

Activities

Contributing

Comparisons

Different Emotions

Pushing Away

Other Thoughts

Other Sensations

Session 5

Session 5

We will start this session with a 3 minute mindfulness exercise. You will be guided through this, then asked about what you noticed during the 3 minutes.

In this session, we will talk about how fighting against how we feel can be exhausting. We will use the metaphor of dandelions to think about how we can relate to difficult experiences differently.

A man bought a new house and decided that he was going to have a very beautiful lawn. He worked on it every week, doing everything the gardening books told him to do. His biggest problem was that the lawn always seemed to have dandelions growing where he didn't want them. The first time he found dandelions, he pulled them out. But, alas, they grew back. He went to his local gardening store and bought weed killer. This worked for some time, but after summer rains, alas, he found dandelions again. He worked and pulled and killed dandelions all summer. The next summer he thought he would have no dandelions at all, since none grew over the winter. But, then, all of the sudden, he had dandelions all over again. This time he decided the problem was with the type of grass. So he spent a fortune and had all new sod put down. This worked for some time and he was very happy. Just as he started to relax, a dandelion came up. A friend told him it was due to the dandelions in the lawns of his neighbors. So he went on a campaign to get all his neighbors to kill all their dandelions. By the third year, he was exasperated. He still had dandelions. So, after consulting every local expert and garden book, he decided to write the U.S. Department of Agriculture for advice. Surely the experts could help him. After waiting several months, he finally got a letter back. He was so excited. Help at last!!!! He tore open the letter and read the following: "Dear Sir: We have considered your problem and have consulted all of our experts. After careful consideration, we think we can give you very good advice. Our advice is that you learn to love those dandelions." (Linhean, 1993, p.94)

What do you understand by this story? How does this relate to your experiences?

We will also spend some time talking about willingness and willfulness.

You will be provided with a handout about this idea.

Can you think of a time when you have been wilful?

Can you identify a time when you have been willing?

How did these differ? What did you notice?

**You will also be provided a handout about turning the mind.
This can be a useful skill when acceptance may be useful.
Acceptance doesn't mean that what has happened is okay or good,
it simply means that it cannot be changed.**

**Finally, we reviewed the techniques covered so far and considered
your thoughts on what has been helpful.**

What has been helpful?

What has been less helpful?

Any other comments:

Session 6

Session 6

We will start this session with a 3 minute mindfulness exercise. You will be guided through this, then asked about what you noticed during the 3 minutes.

In this session, we will talk about emotions (both pleasant and unpleasant) and think about how important they are in our day-to-day lives.

Here is Bob. He doesn't currently have any emotions. What emotions would you give him and why?

We will also practice an imagery exercise in which you will create a compassionate image of yourself to help you bring some compassion towards yourself and your life experiences in difficult moments.

You will be provided with a handout to help you with this practice.

What was using the imagery like for you?

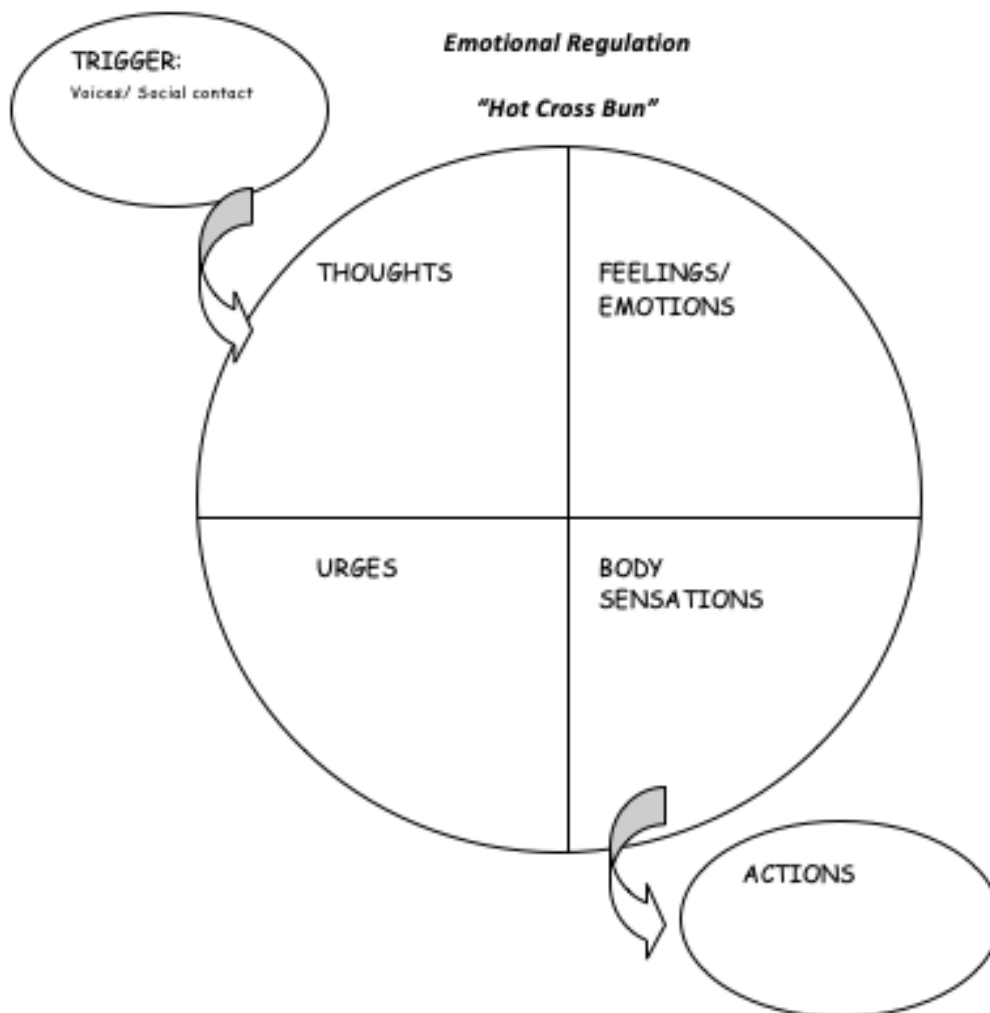
What did you notice?

When might you use this?

Finally, we will use the 'hot cross bun' worksheet to develop a better understanding of how a situation can impact thoughts, emotions, urges, actions and bodily sensations.

Here is a hot cross bun. We will work through it using an example.

Firstly, let's use the example of someone we see appearing to ignore us in the street. Can you complete the hot cross bun on the next page, relating to this?



The hot cross bun on the following is for you to consider how you have responded to either a social trigger or an experience of psychosis.

There is also an additional hot cross bun for you to complete if you would like to, before the next session

Session 7

Session 7

We will start this session with a 3 minute mindfulness exercise. You will be guided through this, then asked about what you noticed during the 3 minutes.

In this session, we will review your use of the Hot Cross Bun worksheet and (if you have been able to practice between our sessions) of the imagery exercise.

My experience of completing the hot cross bun. What did I notice?

My experience of practicing imagery between sessions. What was that like? What did I notice?

We will spend some time talking about how emotions can be misleading and may not represent what is objectively happening.

You will be provided with a handout called 'check the facts' to give you some information about this.

Use these handouts to help you answer the following questions in relation to a specific experience:

- 1. What do I want to change?**
- 2. What is the event/experience prompting my emotion?**
- 3. What are my interpretations, thoughts and assumptions about the event/experience?**
- 4. Am I assuming a threat?**
- 5. What's the catastrophe?**
- 6. Does my emotions and it's intensity fit the actual facts?**

In addition, we will discuss the idea of the importance of having a balance between pleasurable and mastery based activities.

You will be provided with a handout to give you some information about this.

You can use the handout to help you complete and activity diary below.

Activity Diary

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Morning							
Afternoon							
Evening							

Session 8

Session 8

**We will start this session with a 3 minute mindfulness exercise.
You will be guided through this, then asked about what you
noticed during the 3 minutes.**

**In this session, we will review your use of the activity diary and
encourage you to continue to plan meaningful activities into your
diary.**

**We will also spend some time considering how important it is to
take care of your physical needs to have a healthy mind.**

**You will be provided with a handout to give you some
information about this.**

**In summary, these are the PLEASE skills used to help remind
people to take care of their physical needs and have a healthy
mind.**

**Treating physical illness
Balance Eating
Avoid mood altering substances
Balance sleep
Get exercise
Build mastery**

**Are there any particular areas that you would like to work on?
What would you need to do to do this? What might a first step
be?**

As this is our last session, we will complete a relapse prevention worksheet that summarises all of the work we have done together and highlights areas to be mindful of in your recovery journey.

What are the key learning points that you will take away from these sessions?

Is there anything else that you have noticed that is important for you that you would like to note here?

I hope that you have found the sessions helpful and wish you well for the future.

Appendix E Consent Form

CONSENT FORM

Study title: The impact of DBT skills training for people with psychosis

Researcher name: Daniel Silva, Trainee Clinical Psychologist

Researcher's Supervisor: Dr. Tess Maguire (Clinical Psychologist), Dr. Katherine Newman-Taylor (Clinical Psychologist), Dr. Pamela McSherry (Clinical Psychologist)

ERGO number: 31652

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (21/03/2018 / Version 1) and have had the opportunity to ask questions about the study.	
I agree to take part in this research project and agree for my data to be used for the purpose of this study.	
I understand my participation is voluntary and I may withdraw at any time for any reason without my rights being affected.	
I understand my responses will be anonymised in reports of the research	
I understand that I may be quoted directly in reports of the research but that my name will not be used.	
I agree to my General Practitioner (GP) being informed of my participation in the study.	
I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this	

information will only be used for the purpose of ethically approved research studies.	
I understand that confidentiality will be broken if I disclose information that indicates myself or someone else is at risk of harm. In such instances, this information will be shared with the appropriate agencies (e.g. GP, care coordinator, social services, police as necessary).	

Name of participant (print name).....

Signature of participant.....

Date.....
.....

Name of researcher (print name).....

Signature of researcher

Date.....
.....

Appendix F Questionnaires booklet

Daily Ratings Booklet

Participant Number: _____

Thank you for agreeing to participate in the current study.

Consent Reminder

- Your participation in this study is voluntary and you may withdraw at any time without your rights being affected.
- Any data collected will remain anonymous and kept confidential.
- Your care coordinator and GP will be informed of your participation in the study and should the researcher become concerned about your own safety or the safety of others, they must break confidentiality and inform relevant agencies.

How to Use this Booklet

To ensure confidentiality please avoid putting any identifying details, such as your name, anywhere on the booklet; you will be assigned a participant number instead. This booklet is separated into 3 parts:

- 1) Before the start of the individual sessions you will be asked to complete 4 brief questionnaires every other day for 2 weeks.
- 2) The researcher will then arrange to meet with you twice a week for 4 weeks. This part of the process will take 4 weeks. Please continue to fill in the questionnaires every other day.
- 3) At the end of the individual sessions, you will be asked to fill in the questionnaires for a further 2 weeks.
- 4) At the end of the study you will be required to answer several questions, which we encourage you to complete as honestly as possible.

To help you remember filling in the questionnaires every other day, please complete these at the same time every day. Time: _____

Please complete questionnaires in pen and avoid providing more than one answer for each

Questions or Concerns

If you have any questions or concerns you can contact the researcher via email:

dms1e16@soton.ac.uk

DAY ONE: _____

The following questionnaire deals with thoughts and feelings that one may experience in certain situations. For each of the feelings and thoughts described below, please indicate how much they apply to you at the moment.

Feel free to answer based on what first came to your mind. There are no right or wrong answers.

	0 =											10 =
	Not											very much
	at all											
1. I need to be on my guard against others.	0	1	2	3	4	5	6	7	8	9	10	
2. People are trying to make me upset.	0	1	2	3	4	5	6	7	8	9	10	
3. Strangers and friends look at me critically.	0	1	2	3	4	5	6	7	8	9	10	
4. People are laughing at me.	0	1	2	3	4	5	6	7	8	9	10	
5. My actions and thoughts might be controlled by others.	0	1	2	3	4	5	6	7	8	9	10	

(Freeman et al., 2005)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate to what extent you feel this way right now, that is, at the present moment.**

1	2	3	4	5
Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely

_____ 1. Interested	_____ 11. Irritable
_____ 2. Distressed	_____ 12. Alert
_____ 3. Excited	_____ 13. Ashamed
_____ 4. Upset	_____ 14. Inspired
_____ 5. Strong	_____ 15. Nervous
_____ 6. Guilty	_____ 16. Determined
_____ 7. Scared	_____ 17. Attentive
_____ 8. Hostile	_____ 18. Jittery
_____ 9. Enthusiastic	_____ 19. Active
_____ 10. Proud	_____ 20. Afraid

(Watson, Clark, & Tellegen, 1988)

Please indicate how often the following 36 statements apply to you by writing the appropriate number from the scale above (1 – 5) alongside each item.

1	2	3	4	5
Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)

I am clear about my feelings _____

I pay attention to how I feel _____

I experience my emotions as overwhelming and out of control _____

I have no idea how I am feeling _____

I have difficulty making sense out of my feelings _____

I am attentive to my feelings _____

I know exactly how I am feeling _____

I care about what I am feeling _____

I am confused about how I feel _____

When I'm upset, I acknowledge my emotions _____

When I'm upset, I become angry with myself for feeling that way _____

When I'm upset, I become embarrassed for feeling that way _____

When I'm upset, I have difficulty getting work done _____

When I'm upset, I become out of control _____

- When I'm upset, I believe that I will remain that way for a long time _____
- When I'm upset, I believe that I'll end up feeling very depressed _____
- When I'm upset, I believe that my feelings are valid and important _____
- When I'm upset, I have difficulty focusing on other things _____
- When I'm upset, I feel out of control _____
- When I'm upset, I can still get things done _____
- When I'm upset, I feel ashamed with myself for feeling that way _____
- When I'm upset, I know that I can find a way to eventually feel better _____
- When I'm upset, I feel like I am weak _____
- When I'm upset, I feel like I can remain in control of my behaviours _____
- When I'm upset, I feel guilty for feeling that way _____
- When I'm upset, I have difficulty concentrating _____
- When I'm upset, I have difficulty controlling my behaviours _____
- When I'm upset, I believe that there is nothing I can do to make myself feel better _____
- When I'm upset, I become irritated with myself for feeling that way _____
- When I'm upset, I start to feel very bad about myself _____
- When I'm upset, I believe that wallowing in it is all I can do _____
- When I'm upset, I lose control over my behaviours _____
- When I'm upset, I have difficulty thinking about anything else _____
- When I'm upset, I take time to figure out what I'm really feeling _____
- When I'm upset, it takes me a long time to feel better _____
- When I'm upset, my emotions feel overwhelming _____

(Gratz & Roemer, 2004)

Think of times that you feel distressed or upset. Select the item from the menu that best describes your beliefs about feeling distressed or upset

1	2	3	4	5
Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely

Feeling distressed or upset is unbearable to me _____

When I feel distressed or upset, all I can think about is how bad I feel _____

I can't handle feeling distressed or upset _____

My feelings of distress are so intense that they completely take over _____

There's nothing worse than feeling distressed or upset _____

I can tolerate being distressed or upset as well as most people _____

My feelings of distress or being upset are not acceptable _____

I'll do anything to avoid feeling distressed or upset _____

Other people seem to be able to tolerate feeling distressed or upset better than I can _____

Being distressed or upset is always a major ordeal for me _____

I am ashamed of myself when I feel distressed or upset _____

My feelings of distress or being upset scare me _____

I'll do anything to stop feeling distressed or upset _____

When I feel distressed or upset, I must do something about it immediately _____

When I feel distressed or upset, I cannot help but concentrate on how bad the distress actually feels. _____

(Simons & Gaher, 2005)

Green *et al.* Paranoid Thoughts Scale (Green, Freeman, Kuipers *et al.* 2008)

Please read each of the statements carefully.

They refer to thoughts and feelings you may have had about others over the last month.

Think about the last month and indicate the extent of these feelings from 1 (Not at all) to 5 (Totally). Please complete both Part A and Part B.

(N.B. Please do not rate items according to any experiences you may have had under the influence of drugs.)

Part A	Not at all	Totally
1 I spent time thinking about friends gossiping about me	1 <input type="radio"/>	5 <input type="radio"/>
2 I often heard people referring to me	1 <input type="radio"/>	5 <input type="radio"/>
3 I have been upset by friends and colleagues judging me critically	1 <input type="radio"/>	5 <input type="radio"/>
4 People definitely laughed at me behind my back	1 <input type="radio"/>	5 <input type="radio"/>
5 I have been thinking a lot about people avoiding me	1 <input type="radio"/>	5 <input type="radio"/>
6 People have been dropping hints for me	1 <input type="radio"/>	5 <input type="radio"/>
7 I believed that certain people were not what they seemed	1 <input type="radio"/>	5 <input type="radio"/>
8 People talking about me behind my back upset me	1 <input type="radio"/>	5 <input type="radio"/>
9 I was convinced that people were singling me out	1 <input type="radio"/>	5 <input type="radio"/>
10 I was certain that people have followed me	1 <input type="radio"/>	5 <input type="radio"/>
11 Certain people were hostile towards me personally	1 <input type="radio"/>	5 <input type="radio"/>
12 People have been checking up on me	1 <input type="radio"/>	5 <input type="radio"/>
13 I was stressed out by people watching me	1 <input type="radio"/>	5 <input type="radio"/>
14 I was frustrated by people laughing at me	1 <input type="radio"/>	5 <input type="radio"/>
15 I was worried by people's undue interest in me	1 <input type="radio"/>	5 <input type="radio"/>

Daniel Freeman, Richard Bentall, Philippa Garety
 Persecutory Delusions: The assessment of persecutory ideation.
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Oxford Clinical Psychology | Oxford University Press

- 16 It was hard to stop thinking about people talking about me behind my back 1 2 3 4 5

Part B

- 1 Certain individuals have had it in for me 1 2 3 4 5
- 2 I have definitely been persecuted 1 2 3 4 5
- 3 People have intended me harm 1 2 3 4 5
- 4 People wanted me to feel threatened, so they stared at me 1 2 3 4 5
- 5 I was sure certain people did things in order to annoy me 1 2 3 4 5
- 6 I was convinced there was a conspiracy against me 1 2 3 4 5
- 7 I was sure someone wanted to hurt me 1 2 3 4 5
- 8 I was distressed by people wanting to harm me in some way 1 2 3 4 5
- 9 I was preoccupied with thoughts of people trying to upset me deliberately 1 2 3 4 5
- 10 I couldn't stop thinking about people wanting to confuse me 1 2 3 4 5
- 11 I was distressed by being persecuted 1 2 3 4 5
- 12 I was annoyed because others wanted to deliberately upset me 1 2 3 4 5
- 13 The thought that people were persecuting me played on my mind 1 2 3 4 5
- 14 It was difficult to stop thinking about people wanting to make me feel bad 1 2 3 4 5
- 15 People have been hostile towards me on purpose 1 2 3 4 5
- 16 I was angry that someone wanted to hurt me 1 2 3 4 5

